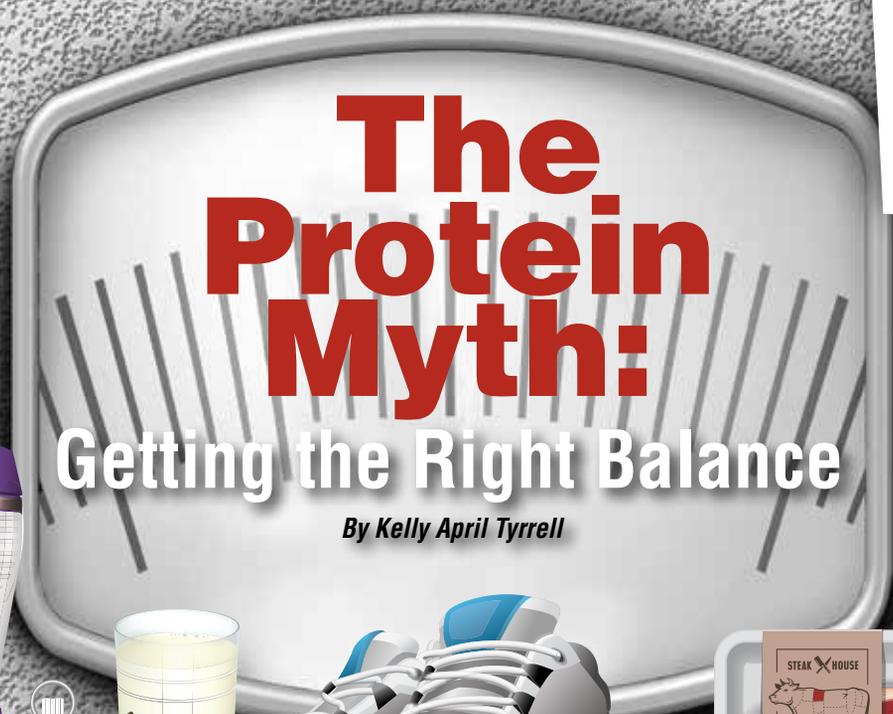


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# The Protein Myth:

## Getting the Right Balance

By Kelly April Tyrrell



**F**ROM ATKINS TO PALEO, DIET TRENDS HAVE LARGELY VILIFIED carbohydrates, but proteins (and exercise) remain a trusty, glorified staple. According to the makers of many popular food products and supplements, not only can consuming proteins help you build muscle, it can also help you lose weight and burn fat. Many teens seek out products, such as protein bars, powders, and shakes, to slim down or bulk up.

**Take 16-year-old Sarah**, who is interested in burning fat and building lean muscle for improving her long-distance running times. She heard that if she swaps her morning cereal for two egg whites, she will be healthier and slimmer, and will feel fuller throughout the day. Sarah also heard that carbohydrates are bad, but proteins are good for her health. So she started to bring low-carbohydrate, high-protein energy bars with her to school instead of the sandwich she used to routinely eat for lunch. Because she doesn't want to forget her vegetables, dinner is now usually broccoli and a piece of lean chicken breast. Her dad will offer her brown rice or a slice of hearty wheat bread, but she often turns him down.

**Anthony, who is 15 years old**, wants to build muscle to try out for the Junior Varsity football team at school. He hits the gym for two hours per day to get a head start on the season. He also orders a large container of protein powder advertised online to help him build muscle and recover from workouts. Anthony makes sure he has meat at every meal, especially red meat such as steak and hamburger, because if some protein helps him gain muscle, he reasons that a lot should really help him bulk up.



Sound familiar? Sarah and Anthony's approaches are probably not unlike those of many teens around the country. But will their protein-heavy diets really help them achieve their goals?

### Too much of a good thing?

Of course, Sarah and Anthony are correct in recognizing the importance of protein. Proteins are large biomolecules consisting of long chains of amino acids, and like carbohydrates and fat, are macronutrients. Macronutrients are compounds that humans (and many other animals) need in their diets to meet their nutritional needs and provide the energy, or calories, they need to survive.

But what Sarah and Anthony don't know is that they may be eating unhealthy amounts of protein. While all that protein might provide some of the benefits they have heard about, scientists and doctors don't know whether eating extra protein—particularly in the form of supplements such as protein powders and bars—lives up to all the hype.

By loading up on protein at the expense of other foods, Sarah and Anthony might be

missing out on important nutrients, such as those found in whole grains and fresh fruits and vegetables. In addition to dairy or dairy substitutes, these foods are part of a balanced diet, providing the vitamins, minerals, and other nutrients needed to stay healthy. Consuming too little of any one food group, or too much, can cause imbalances that can be detrimental to one's health.

## Making calories count

At the heart of many diet trends is the calorie. For people trying to lose weight, counting and limiting how many calories they consume becomes a regular and sometimes tedious task.

While it's true that, of the macronutrients, fat provides the most food calories at nine kilocalories per gram (g). **Proteins and carbohydrates both provide four kilocalories per gram.**

So, what is a calorie anyway, and how much should we be getting from protein sources? A calorie with a lower case "c" is a unit of measurement, defined as the amount of heat energy required to raise the temperature of one gram of water by one degree Celsius, for example, from 14.5 °C to 15.5 °C.



When talking about food, 1,000 calories (one kcal) is often noted Calorie with a big "C." A medium banana with 70 Calories (70 kcal) provides 70,000 calories of energy.

**The National Academy of Medicine suggests that 10% to 35% of the calories we consume each day should come from protein.**

Most sources say 52 g of protein per day and 46 g of protein per day are adequate for teen-

age boys and girls, respectively, or 0.85 g per kilogram of body weight (1 kg is the same as 2.2 pounds). Teen athletes might need more.

But what can happen if you have too much protein? Anthony might not realize it, but he could be consuming more calories than he needs through the additional protein in his diet. If he is eating more calories than he is burning each day, even in the form of protein, those extra



calories might be stored by his body as fat. He may gain the weight he is looking for, but not in the form he wants.

Conversely, Sarah might not be getting enough calories. According to the National Academy of Medicine's Dietary Reference Intake, if Sarah is 5-feet, 4-inches tall and weighs 120 pounds, with her activity level she should consume more than 2,300 Calories a day, including at least 58 g of protein. However, Sarah has increased her protein at the expense of other foods, such as whole grains, and the healthy fats found in foods, such as avocado and nuts.



**How should you fill your plate? The answer is: It's complicated—it depends in large part on your age, weight, and physical activity level. Go to [choosemyplate.gov](http://choosemyplate.gov) for more information, or talk to your doctor.**

# PROTEIN

**provides the 20 amino acids our bodies need to build new proteins that keep us alive.**

## Why you really need proteins

Protein is important in our diets because it provides the 20 amino acids our bodies need to build new proteins that keep us alive.

These important macromolecules make up most of our physical structure (skin, hair, muscles, and organs), act as enzymes that catalyze reactions, enable our nerves to communicate, and help protect us from getting sick.

**There are nine essential amino acids we must get from food because our bodies cannot produce them. These are: 1) histidine, 2) leucine, 3) tryptophan,**



**4) valine, 5) threonine, 6) lysine, 7) methionine, 8) isoleucine, and 9) phenylalanine.**

Animal proteins contain all 20 of the amino acids we need, and are called complete protein sources. Most plant sources have only some of the essential amino acids. So eggs, milk, cheese, and meat are complete protein sources, while non-meat foods, such as nuts, legumes, grains, and some fruits and vegetables, each lack some or most of the essential amino acids. (But vegetarians can rest assured that they can still get all the amino acids they need with the right combinations of plant-based foods.)

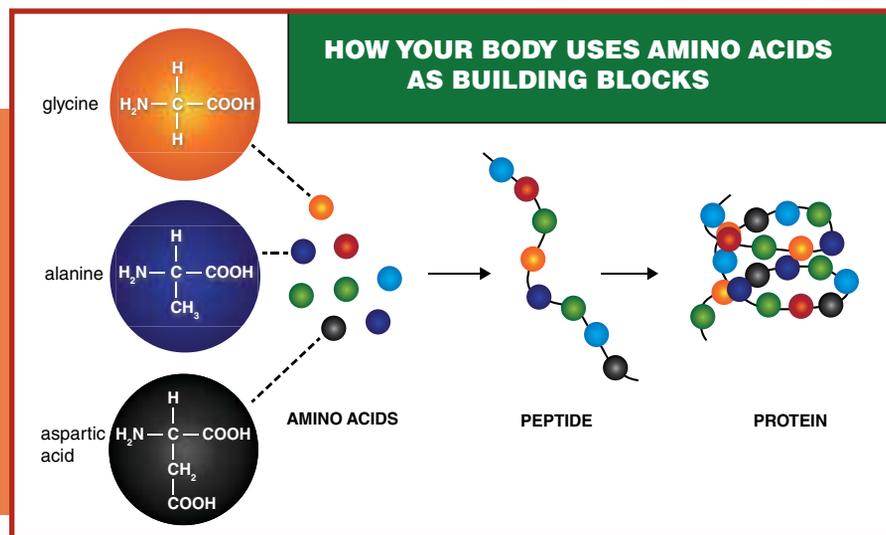
reach his goals without contributing to other unhealthy risk factors.

As for his expensive protein powder, many dietitians would probably advise Anthony to save his money. Exercise, not extra protein, builds muscle. Most teens can get all the protein they need through a balanced diet.



leach from the bones when protein is consumed in excess. This can cause bones to weaken, leading to breaks.

Nutrition experts agree that Sarah and Anthony should continue to get the majority of their nutrition—including protein—from real-food sources and a balanced diet that includes protein, whole grains, fruits, and vegetables. Anthony may gain the weight he wants for football season by lifting weights and eating a healthy diet, while Sarah can improve both her running time and her diet by consuming enough calories from a variety of food sources. <sup>GM</sup>



Glycine, alanine, aspartic acid and 17 other amino acids are strung together by the hundreds to create peptide chains. These chains then fold and interact with other chains, leading to the formation of proteins.

## Choose your proteins wisely

Anthony is a big fan of red meat because he prefers the taste, plus a single half-pound hamburger patty provides him with more than 30 g of protein. But Anthony should exercise caution because research suggests that regularly eating red meat can lead to an increased risk of certain diseases, such as heart disease, cancer, and diabetes.

On the other hand, a 6-ounce piece of salmon has 34 g of protein. It is low in unhealthy saturated fats and high in omega-3 fatty acids, which are associated with heart health. Beans or nuts and lean poultry would be other good choices for helping Anthony

## Just balance it

Although Sarah's sources of protein—egg whites, lean chicken—are healthier for the heart than other options, her diet is lacking in the necessary fats and carbohydrates she needs to sustain her athletic lifestyle and avoid becoming sick. And she could be feeding herself too much of a good thing.

**Some research shows that consuming too much protein can overload the kidneys, contribute to metabolic disease, and especially in women lead to an increased risk of bone fractures.**

This is because the breakdown of protein in the body releases acidic byproducts, which can lower blood pH and cause calcium to

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