Limit Protein to 20g Per Meal?


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Two recent studies have shaken up the weight lifting and athletic worlds with respect to protein intake. For those research geeks among you, here are the references:


So, what did these landmark studies show?

Well, the first study showed that when college-aged weight-trainers drink 0g, 5g, 10g, 20g, or 40g of protein after a weight training session, muscle protein synthesis is stimulated maximally at the 20g dose. Interestingly, there were no further increases in muscle protein synthesis at the 40g dose.

Similarly, in the second study, when young and elderly volunteers were given 30 or 90g of dietary protein in a single meal, the 30g dose maximally stimulated muscle protein synthesis. Again, there were no further increases in muscle protein synthesis at the 90g dose.

20-30 Grams and No More

Oddly, since the publication of these two studies, I’ve read no less than 2 dozen articles and blog posts suggesting that these two studies definitively close the case on protein intake. Indeed, some authors have even suggested that we’re ignorant wastrels if we dare eat more than 20-30g of protein in a single sitting.

Milk? This is the best you can do? Maybe you should read PN's All About Milk article.
Here are a few quotes:

“So basically what you’re saying is that we don’t need to consume any more than 20g of high quality protein after exercise. You could get that in a 500ml serving of milk…This info is really going to piss off a bunch of internet keyboard jockeys.”

“I’ve cut back on the amount of protein I eat during most meals…No more slogging down 50-60g in a sitting.”

“Looks like 3 eggs post workout is just as effective as drinking a protein shake. Plus all that extra shake will be wasted.”

And so on…

Is Muscle The Only Reason We Eat Protein?

Now, while I can always appreciate a good muscle protein synthesis study, I sorta wonder if all the hoopla regarding these two studies is doing healthy eaters a service or not.

I mean, it’s definitely a good thing to discover that 30g of protein provides the upper limit of amino acids necessary for maximal protein synthesis at a particular point in time. However, the important, big-picture question is this one…is building muscle the only reason we eat protein?

I think not.

Challenging the notion that eating more than 30g in a sitting is wasteful, here are a few thoughts I sent to a group of colleagues:

1) What Else Will You Eat?
Let’s say you’re on a high calorie diet. Maybe you’re into bodybuilding or you’re training for an athletic event. And now you limit your protein intake to 20-30g per meal. What else do you fill up with? Carbs or fats?

Let’s take an example. Say you’re eating 4000-4500kcal per day for competition, which many larger lifers and athletes will need to do. And let’s say, because of these studies, you limit your protein intake to 5 meals of 20g each. In the end you’ll be getting 100g and 400kcal from protein.

Well, that’s 8% of your diet. What makes up the other 92%? If you’re loading up with that many carbs or fats, body comp can suffer. Remember, the protein is being replaced by macronutrients with lower thermic effects (more on this below).

2) What About The Other Benefits?
Muscle protein synthesis isn’t the only reason to eat more protein. There’s satiety, the thermogenic effects, the impact on the immune system, and more (see below).

Plus, there are probably a few benefits science can’t measure yet. I say the last part because there’s so much experiential evidence suggesting that when you’re training hard and you up your protein, you do better. So maybe we just haven’t looked in the right places to notice the real benefits.

Other Protein Benefits
In an article I wrote a few years back, I listed some of the benefits of eating more protein. And although the article is a few years old, nothing’s really changed since then. Here’s the list:

**Increased Thermic Effect of Feeding** — While all macronutrients require metabolic processing for digestion, absorption, and storage or oxidation, the thermic effect of protein is roughly double that of carbohydrates and fat. Therefore, eating protein is actually thermogenic and can lead to a higher metabolic rate. This means greater fat loss when dieting and less fat gain during overfeeding/muscle building.

**Increased Glucagon** — Protein consumption increases plasma concentrations of the hormone glucagon. Glucagon is responsible for antagonizing the effects of insulin in adipose tissue, leading to greater fat mobilization. In addition, glucagon also decreases the amounts and activities of the enzymes responsible for making and storing fat in adipose and liver cells. Again, this leads to greater fat loss during dieting and less fat gain during overfeeding.

**Metabolic Pathway Adjustment** — When a higher protein (20-50% of intake) is followed, a host of metabolic adjustments occur. These include: a down regulation of glycolysis, a reduction in fatty acid synthesis enzymes, increase in gluconeogenesis, a carbohydrate “draining” effect where carbons necessary for ridding the body of amino nitrogen is drawn from glucose.

**Increased IGF-1** — Protein and amino-acid supplementation has been shown to increase the IGF-1 response to both exercise and feeding. Since IGF-1 is an anabolic hormone that’s related to muscle growth, another advantage associated with consuming more protein is more muscle growth when overfeeding and/or muscle sparing when dieting.

**Reduction in Cardiovascular Risk** — Several studies have shown that increasing the percentage of protein in the diet (from 11% to 23%) while decreasing the percentage of carbohydrate (from 63% to 48%) lowers LDL cholesterol and triglyceride concentrations with concomitant increases in HDL cholesterol concentrations.

**Improved Weight-Loss Profile** — Research by Layman and colleagues has demonstrated that reducing the carbohydrate ratio from 3.5 – 1 to 1.4 – 1 increases body fat loss, spares muscle mass, reduces triglyceride concentrations, improves satiety, and improves blood glucose management (Layman et al 2003 — If you’re at all interested in protein intake, you’ve gotta go read the January and February issues of the Journal of Nutrition. Layman has three interesting articles in the two journals).

**Increased Protein Turnover** — All tissues of the body, including muscle, go through a regular program of turnover. Since the balance between protein breakdown and protein synthesis governs muscle protein turnover, you need to increase your protein turnover rates in order to best improve your muscle quality. A high protein diet does just this. By increasing both protein synthesis and protein breakdown, a high protein diet helps you get rid of the old muscle more quickly and build up new, more functional muscle to take its place.

**Increased Nitrogen Status** — Earlier I indicated that a positive nitrogen status means that more protein is entering the body than is leaving the body. High protein diets cause a strong positive protein status and when this increased protein availability is coupled with an exercise program that increases the body’s anabolic efficiency, the growth process may be accelerated.

**Increased Provision of Auxiliary Nutrients** — Although the benefits mentioned above have related specifically to protein and amino acids, it’s important to recognize that we don’t just eat protein and amino acids — we eat food. Therefore, high protein diets often provide auxiliary nutrients that could enhance performance and/or muscle growth. These nutrients include creatine, branched chain amino acids, conjugated linoleic acids, and/or additional nutrients that are important but remain to be discovered. And don’t forget the vitamins and minerals we get from protein rich foods. (And lest anyone think I’m a shill for...
the protein powder industry, this last point clearly illustrates the need to get most of your protein from food, rather than supplements.)

Looking over this list of benefits, it’s hard to ignore the fact that we don’t just eat protein for its muscle synthetic effect. We eat protein for a bunch of other reasons too. And since a higher protein diet can lead to a better health profile, an increased metabolism, improved body composition, and an improved training response, why would anyone ever try to limit their protein intake to the bare minimum?

**Take-Home Message**

It seems to me that whether someone’s on a hypoenergetic diet (low calorie) or a hyperenergetic diet (high calorie), the one macronutrient they would want to be sure to “overeat” (relatively speaking) would be protein.

But that’s not what people do, is it? Instead, their protein prejudice often leads them to look for what they consider the bare minimum of protein (whether it’s 20-30g/meal or 0.8g/kg/day), and then overeat carbohydrates and fats instead. That could prove to be a performance – and body composition – mistake.

To this end, my advice is the same as I’ve outlined in the Precision Nutrition System.

**Women** – 1 serving of lean, complete protein (20-30g) with each meal, every 3 hours or so

**Men** – 2 servings of lean, complete protein (40-60g) with each meal, every 3 hours or so

This pattern of intake will make sure you’re getting enough protein to reap all the benefits that this macronutrient has to offer. Not just the protein synthetic benefits.


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