

Macronutrient Ratios – Part 3

	Protein (% of calories)	Protein (g/d 2,600 kcal)	Protein (g/d 2,000 kcal)
Pregnancy	10-15	65-100	50-75
General health	10-20	65-130	50-100
Weight loss, blood sugar, muscle gain	20-35*	130-230	100-75

Once weight loss, blood sugar regulation, and muscle gain goals have been reached, decrease protein intake into the "general health" range listed above.

Okay, next we're going to talk about protein. As I mentioned earlier, this typically doesn't require as much adjustment as carbohydrates. One of the reasons for that is we have sophisticated mechanisms for regulating protein consumption in the brain, and if we need more, we'll generally crave, crave it pretty strongly, and if we need less we'll feel averse to eating it. But on the slide here, I've put just some general guidelines to be aware of.

Pregnancy, 10 to 15 percent, maybe 20 percent, we're going to talk about that more in a second. General health, if you look at studies of protein intake around the world, you'll find that the range almost invariably falls between 10 and 20 percent of calories. This is when people are not paying any attention, they're just eating what they naturally crave and have access to, and you'll see, whether you're talking about traditional cultures or industrialized populations, it's almost always between 10 and 20 percent, so I think that's a good range to aim for.

And then a higher-protein diet, maybe between 20 and 35 percent, is appropriate for people who are trying to lose weight, people who are trying to regulate their blood sugar and people who are trying to gain muscle. So in terms of weight loss, protein is the most satiating of all of the macronutrients. So if you eat a really high-protein diet, you're likelier to eat fewer calories overall, and there's some evidence to indicate that high protein intake up-regulates metabolic rate, so it leads to more energy expenditure, even at rest. Protein has a kind of regulatory effect on blood sugar, especially if you eat a really high-protein breakfast in the morning. Having the patient aim for 20 to 40 grams of protein in the morning can really help with blood sugar regulation

throughout the day, and of course protein is the most important macronutrient for muscle gain as well as carbohydrate.

So in terms of the actual grams per day, as you can see here on the slide, 10 to 15 percent of calories would be 65 to 100 grams per day on a 2,600-calorie diet, it'd be 50 to 75 grams per day on a 2,000-calorie diet. For the general health, 10 to 20 percent of calories, that's 65 to 130 grams per day on a 2,600-calorie diet and 50 to 100 grams per day on a 2,000-calorie diet, and then in the high protein intake category, 20 to 35 percent, that would be 130 to 200 grams of protein per day on a 2,600-calorie diet, and then 75 to 100 grams of protein per day on a 2,000-calorie diet.

So you saw before that 35 percent is the upper limit for protein, I don't recommend going above that because the body has a limited ability to metabolize protein and it seems to top out at about 35 percent of calories in most studies. Also, if you're putting a patient on a high-protein diet that's as high as 30 to 35 percent of calories for a particular goal like weight loss or blood sugar management, once the condition is resolved or stabilized, I'd recommend going back down to the general health range, 10 to 20 percent or maybe slightly higher, like 25 percent, rather than staying at the 30 to 35 percent level.

Pregnancy is a bit of a special case when it comes to protein, because that ability to metabolize protein, instead of being at 35 percent where it is usually in non-pregnant women or in men, seems to top out at about 25 percent in pregnant women. When we eat protein, it leads to ammonia production, and then ammonia is a toxic compound and needs to be converted into urea so that that toxicity doesn't build up, and the conversion of ammonia to urea is what's limited in us, we can do it and do quite a bit of it, but like I said, in non-pregnant women and men it tops out at about 35 percent and in pregnant women at about 25 percent, and so if a pregnant woman eats a really high-protein diet above that, it can lead to poor pregnancy outcomes, so I usually advise pregnant women to shoot for 15 to 20 percent of calories, regardless of if they have blood sugar problems or if they're overweight. Pregnancy's not really the time to go on a significant weight-loss diet, and blood sugar regulation is important, but that can also be done by limiting carbohydrate consumption. You'll probably find that this happens naturally with most of your pregnant patients, they become a little bit averse in some cases to protein during pregnancy, especially if they have any issues that limit their conversion of ammonia to urea, or they've got excess ammonia already because of SIBO or some other condition. So you can advise them to follow their gut, so to speak, on that, and even if you don't, in many cases they'll come to you and say oh, I just can't eat as much meat as I used to before I was pregnant, and you can just let them know generally that's fine, as long as they're getting above 10 or 15 percent of calories from protein.

Once carbohydrate and protein levels have been established, the rest is going to come from fat. There are only three macronutrients, so if you dial in protein and carbohydrates, then fat just kind of takes care of itself. That could be as low as 10 to 15 percent on a really high-carbohydrate, high-protein diet, typical low-fat kind of diet that people might use for weight loss or some bodybuilders might use, or as high as 80 to 85 percent of calories from fat on someone who's doing a ketogenic type of diet. Now this may be more or less fat than your patients are used to

consuming, depending on what you recommend for them, but you can reassure them that these ranges are healthy and safe, and humans have thrived on many different levels of fat intake. I mentioned the Inuit, traditional Inuit, as an example who consume about 90 percent of calories from fat, and then on the other end of the spectrum, we had the Tuki-senta in the Papua, New Guinea, highlands, who consume 97 percent of their calories from carbohydrate, mostly sweet potato, they pretty much just ate sweet potatoes, got a tiny bit of fat and protein, probably from the insects that were on the sweet potatoes that they ate, so those are extremes. I don't think extremes are necessarily that applicable to all of us, because there's some evidence already that those cultures have had genetic adaptations that helped them to adapt to those extreme situations, but it does illustrate the range and it does suggest that certainly we as humans can tolerate a pretty wide range of macronutrient ratios.

Remember that nothing is set in stone; remind your patients that you're assessing and monitoring their response to determine the most appropriate macronutrient ratio for them, and like I said, you should be paying attention to this. You should see how your patients respond to the initial guidelines or targets that you give them and then tweak the approach based on their response. So, for example, if a patient with low blood sugar, hypoglycemia, goes on a low-carb diet and they start to become really lethargic and tired, you might need to reassess their carbohydrate need and try increasing a little bit to see if they respond better.

Make sure to have patients track their calories and macronutrient breakdown for at least a few days to ensure that they're accurately implementing the diet recommendations that you've given them. Like I said before, a lot of patients are on a kind of accidental low-carb diet. They don't really have a good sense of what they're eating, and so though I don't necessarily recommend that someone track these things on an ongoing basis since that can be kind of crazy-making, it can be a useful exercise to do it for a week or so, and then once they do it, they can have a much better mental picture and idea without having to do the explicit tracking. You should also have their patients track their symptom improvement or worsening so you can make any necessary changes as they go.

Also, remember that once you've found an appropriate macronutrient breakdown for a patient, it may not stay that way forever. Macronutrient changes will be necessary in different phases of life. For example, someone goes through a really stressful period and they have a change in their health status, or they move from one climate to another, all the factors we've talked about which influence what an optimal diet is for an individual will affect these macronutrient ratios too.

Okay, thanks for watching and listening, and in the next video we're going to discuss meal frequency and timing. See you then.