



Episode 626: The One All About Protein and Amino Acids – Short Episode

Child: Welcome to my Mommy's podcast.

This episode is sponsored by Joovv Red Light. You know how seriously I take my health routine and red light has been a non-negotiable part of my routine for years. And you've probably heard me talk about Joovv before. That's J-O-O-V-V. I use it to support healthy cellular function, which is the foundation of our health. Having healthy cellular function gives me peace of mind that my body is working efficiently and has the energy it needs to get through the day. There are so many clinically proven benefits from red light therapy and I've personally experienced, especially changes in my skin and hair and supporting my thyroid.

I love that Joovv's modular design allows for a variety of set up options that gives you flexibility. Plus the treatments are super easy and can be done in as little as ten minutes. All I have to do is relax and let my body take in the light. Joovv offers several different size options including a wireless handheld device called the Joovv Go, that's great for targeting specific areas around your body like hurting joints or sore muscles. Go check out Joovv today and while you're there, Joovv is offering all my listeners an exclusive discount on their first order: Just go to Joovv.com/wellnessmama and apply my code WellnessMama to your order. Pick up a Joovv today!

Katie: Hello, and welcome to the Wellness Mama Podcast. I'm Katie from wellnessmama.com. And this one is all about protein and amino acids. This is a part of a series of short solo episodes that will air in addition to my two regular episodes each week. These episodes will be 30 minutes or less and will cover my understanding of the research and any key points mentioned by guests in the last 600 episodes or from my research and my experience. These are in response to requests of how to make these topics directly actionable without having to listen to dozens of episodes or delve into dozens of studies yourself. And I would like to emphasize that these short episodes share my own understanding and experience with each of these topics, along with my own key takeaways and summaries, so my Feynman summary, if you will.

These, like all episodes, are for educational purposes only, and they should not be considered medical or health advice. Like always, these are a starting point for your own research and experimentation. And I encourage you to always do your own research, to consult your doctor or practitioners, and to become your own primary health care provider by taking full responsibility for your own health. As I always say, question everything, including and especially me, and always stay curious and keep asking why.

Now, as I said, this episode is all about protein. And you've probably heard me talk about it, if you've listened to many of my other podcasts. And I've actually gotten an increasing number of questions about this through email and social media. So I wanted to do this episode to attempt to summarize my understanding in a clear and concise way here, along with some actionable and practical steps based on my own experience. Also note that experts have conflicting opinions on what the optimal numbers are. So I will share the agreed minimums based on RDA and an overview of the range of expert opinions as well as what I'm personally doing. Again, none of this is advice. This is, if anything, a starting point for your own research and experimentation.

I also want to note my own bias here, because I'm currently eating pretty high protein, as I will explain why in this episode, and my focus on building muscle and reducing body fat right now. So, anything health related, what I'm doing might not be exactly what another person needs to do. And I will attempt to provide the

foundational research to help you make an informed decision for your own protein needs, but it is your decision.

I will say that when I personally eat within a certain range of protein per day, I have noticeably more energy and focus, and I recover better from exercise. And at the end of the day, like I said, we are each our own primary health care provider. So I hope that you will use this and any information as purely a starting point for your own research and experimentation, and to dial in what works best for you.

So, to start broad, what is protein? That's a word that actually there's a lot of nuance to understanding. So at a high level, protein is one of three macronutrients, along with fat and carbs. And it is found throughout the body in everything from muscle, to bone, to skin, to hair, to virtually every other body part or tissue. And "Harvard Health" explains, protein makes up the enzymes that power many chemical reactions, and the hemoglobin that carries oxygen in your blood. At least 10,000 different proteins make you what you are and keep you that way. Protein is made from 20-plus basic building blocks called amino acids. Because we don't store amino acids, our bodies make them in two different ways, either from scratch, or by modifying others. It's also important to note that while there are no essential carbohydrates, though I am by no means against carbohydrates, there are essential amino acids and essential fatty acids that the body can't make and must obtain from diet. So there is a dietary need for a certain amount of high-quality protein. And we will delve into maybe some ideas of how to figure out what that need is for you.

There's also what are considered nine essential amino acids. These include histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. And these are known as the essential amino acids that must come from food. Now, this leads into a distinction between different types of protein, specifically complete versus incomplete protein. So a definition of terms here. A complete protein contains all nine of the essential amino acids I just named. An incomplete protein contains some but not all of them. So various sources of food may need to be combined to make a complete protein in a given meal.

In general, and there's some nuance here, but in general, animal sources of protein are considered complete proteins. And incomplete proteins include general categories like nuts, seeds, grains, and legumes. Whereas meat, poultry, fish, eggs, and dairy are considered complete protein sources. There are also a few plant sources that are considered complete protein, like quinoa, hempseed, buckwheat, soy, and certain algae's.

Though, it is important to note that even though these are complete sources of protein, there's a higher volume required of consumption to get the same amount of actual protein. So as an example, three ounces of chicken versus three ounces of quinoa, you would not get the same amount of protein. So, proteins that contain the 9 essential amino acids of the 20 total are complete. And incomplete proteins do not contain all nine. There is some nuance to how much we need of certain amino acids. And one in particular, leucine, has gotten more attention lately. And we'll talk more about that in a minute. There's also some research done on supplementing with certain amino acids in isolation for various specific conditions. But I'm not going to go into all of that nuance today. Now, like I said, there's been some fascinating recent research on leucine. And this one in particular, we might want to get a little bit more of to build and preserve muscle mass. And this is a focus for me currently. And as we get older, our regulation of muscle protein turnover becomes more sensitive to leucine. So it might help us preserve muscle as we age. And I'm actually trying to build muscle as I age. So this is something I'm paying attention to in my own diet.

General takeaway there is, as we get older, there's some research that indicates we might need a higher level of leucine to protect our muscle. And it seems that protein quality becomes even more important as we age.

And I'll explain what I do to hit these targets in a moment. And we will also talk more about how much overall protein, especially amino acids, we need in just a minute.

There's also a lot of opinions on if we should supplement amino acids, especially essential amino acids, and in particular leucine. And again, we are each our own primary health care provider. And I don't think it's necessary, but I personally often do because this lines up with my current goals and helps recovery. There are many options for this. I will share some additional reading and resources at the end of the episode. But purely anecdotally, I've noticed I feel better and recover better when I really optimize complete proteins and leucine.

Now, another thing that often gets lumped in with the protein conversation is creatine. Creatine is not an essential amino acid, but it is often mentioned as helpful for muscle. So I wanted to at least mention it in this conversation. Creatine is actually an amino acid derivative, and it is naturally produced in the body from the amino acids, glycine and arginine. With an additional requirement of S-Adenosyl methionine, which is a derivative of methionine, to catalyze the transformation of guano acetate, I hope I pronounced it right, into creatine.

Creatine is found in muscle cells, and it helps muscles produce energy, which is why many people take it to improve their workouts. It is also the source of some controversy itself. But I think if you actually look at the research, its benefits are pretty well supported. And a lot of people agree on this.

Creatine is the most recommended supplement I'm aware of for improving muscle performance. But it turns out, according to the research, it does more than just that. It is well studied for helping improve muscle size, strength, and performance, likely through helping increase the production of ATP. And studies also show that it may lower blood sugar and improve brain function. It's actually one of the most researched and tested supplements, and it's considered very safe when consumed in the correct amounts. Creatine is found naturally in food, like meat and seafood, and the rest which is about half is made in your liver and kidneys from those amino acids that I mentioned. So studies show, in general, that it's helpful for increasing muscle growth in long and short term.

There was a 12-week study in weightlifters, and creatine increased muscle fiber growth two to three times more than just training alone. So if muscle mass is a focus for you in your training, it may be something that may help your training become more effective. Since muscle mass does correlate to longevity, there's some evidence that this can be beneficial. And this is one of the reasons that I personally do take creatine.

Other studies look at how creatine affects the brain and point to a beneficial effect here as well. The brain stores phosphocreatine and requires plenty of ATP for optimal function. So having enough may help brain function and focus as well. Other studies show that creatine supplementation may be especially effective for older adults, vegetarians, and those at risk for certain neurological diseases.

Okay, so now let's talk about how protein affects the body. As I mentioned, protein is needed to build and maintain muscle, along with many other things in the body. But this is important because, statistically right now, 40% of men and 55% of women over the age 50 have something called sarcopenia. And Dr. Gabrielle Lyon, who has been on this podcast and who specializes in something she calls muscle-centric medicine, called muscle the origin of longevity. and Dr. Andy Galpin, also a past podcast guest, clarifies that muscle, not skin, is actually the largest organ in the body. So there is some good reason to want to preserve and grow this. And this is also a compounding effect, because the stronger and the healthier your muscle mass is, the more that you will burn fat even at rest. And as Dr. Lyon explained, the stronger and healthier your muscle is, the more carbohydrates and fat your body burns, which keeps your body in balance. So for example, if you have high

blood sugar or high cholesterol, the more muscle you have, the more capacity your body has to naturally lower blood sugar and cholesterol. Now, protein is needed for the structure, function, and regulation of all tissues and organs. So it's a big deal.

But a little bit more specifically, protein is used for immune function. Antibodies are made up of specific protein structures, which protect against potentially harmful substances, potentially even viruses and bacteria. Protein is also needed for enzyme production. And without enzymes, the body and its cells will be unable to carry out the thousands of crucial reactions involved in vital processes, like metabolism and DNA repair. Protein is also involved in proper hormone function, because hormones are made up of binding proteins. So an example of this will be thyroid hormone, which is vital for blood sugar regulation and growth hormone, all-involved protein. Protein helps in recovery, repair, and maintenance. Amino acids and protein structures work to repair damaged cells and to build new ones when the damage is irreversible. And proteins help support the body's natural detox system. The body uses protein to build and support detoxification pathways. And one of the key detoxifiers is glutathione, which is made from protein. We also use protein to make neurotransmitters. So our bodies use amino acids to make many of the mood-affecting neurotransmitters, such as tryptophan, which is also a precursor for serotonin.

Many experts believe that our obesity problem is actually not that we are over-fat, but actually that we are under-muscled. And I think that thinking about it this way shifts the way we think about solutions to this problem.

Which brings up the question of how much protein do we need. And this is, I will say, an area that is extremely individualized and personalized, as are many aspects of health. And it can vary a lot based on age, activity level, if we're in good health, we have a lot of stress. There's a lot of things that come into play here. I personally...and again, this is just my personal, not advice. I aim for a gram of protein per pound of bodyweight or more per day. In fact, some sources, if you're really focused on muscle, recommend up to 1.6 to 1.8 grams per pound, if you're trying to build muscle and lose fat without losing muscle. But again, that is what I'm doing. The minimum, based on the recommended daily allowance, the RDA, is 0.8 grams of protein per day per kilogram of bodyweight. So quite a difference in that calculation.

But I think it's really important to note here that this is based on the minimum needed to avoid negative effects, and not necessarily the optimal. So I look at that as a guideline of, I would never want to dip below that amount unless I was doing something like a very short term fast for a few days. But it doesn't tell us what optimal is. And I think that's where the variation comes in.

So Chris Kresser explains this really well. He explains that the RDA that has been established for the average healthy sedentary adult, is 0.8 grams per kilogram per day. But we now know that more accurate newer methods that are better than nitrogen balance studies that were used to determine that original RDA, that if you use better studies, like the indicator amino acid oxidation technique, you come up with 1.2 grams per kilogram of protein per day. But that is for an adult, younger, middle aged person. For the elderly, the range is more of 1.2 to 1.5 grams per kilogram per day, as an RDA, again, as the minimum. And I think that's a really important point to remember, is that's the minimum to avoid acute problems.

Now, I think there's some myths when it comes to protein consumption as well. One myth is that the body can only digest around 30 grams of protein per meal. Perhaps you've heard this. And I think there's a misconception here. The body can digest, and in fact, must digest whatever protein it consumes. But there can be variation in how that protein is used. And I think this is where the confusion comes from, and how much can go towards muscle, which is likely what people are talking about when they say that it can only use 30

grams of protein per meal. But in general, according to Dr. Andy Galpin, the stomach and the liver will extract about 50% of protein depending on the source. With about 10% going to muscle and about 40% going to other uses, like making neurotransmitters and producing energy, which are obviously also very important. And this is likely why some people will feel more energetic when increasing protein consumption within a certain range.

So, from Dr. Galpin, and I highly encourage you to check out his podcast that he did with me, there is no long-term storage site for amino acids, which are the building blocks of protein. Your stomach tissue will hold some amino acids temporarily, but that won't do much to build muscle later on. So after eating a meal packed with protein, some of that protein will go to build muscle, some of it will go to build other structures in the body, like proteins, neurotransmitters, etc. And the rest of the protein is used for energy or converted to body fat. And the nitrogen from amino acids is combined with other compounds to form urea, which is a harmless waste product, which is processed by the kidneys and excreted in the urine. We'll talk about kidneys a little bit more in a minute. But this is why some sources recommend eating meals with that minimum amount of protein, about 30 grams every few hours throughout the day, especially if your focus is building muscle.

Also, I want to make a quick note about something called the protein leverage hypothesis. And the protein leverage hypothesis is a concept that a human will continue to eat until we meet those protein requirements. So if you are restricting protein or not getting enough, your body may signal you to keep consuming excess food until you get enough to meet that minimum amino acid need. And it makes sense in this context that this may be one of the drivers of obesity. And there are some theories around this right now. Conversely, if you consume enough protein, you may feel more satisfied and not crave or desire to eat excess food. So, to avoid that craving and desire for excess food, the consensus seems to be that we need about 30 grams of protein per meal.

And Dr. Gabrielle Lyon said, we also need about 2.5 grams of leucine per meal. And this is another factor that brings protein source into question. So as I said, animal protein is a complete protein, and it's significantly higher in leucine. With just 3.5 ounces of beef being enough to hit that leucine number. Whereas we would need over five cups of quinoa, which is over 1100 calories, to get the same amount from a source like quinoa.

And this also brings us to the point of talking about muscle protein synthesis, which is essentially the building, and repair, and maintenance of skeletal muscle, which, as I mentioned, skeletal muscle is strongly correlated to longevity. And the ways we do this are with resistance training, and with consuming enough of the right kinds of amino acids. And I personally do think that some form of resistance or strength training is very, very important, especially as we get older. But there's fascinating research that shows that consuming enough protein alone can lead to more muscle, even if we aren't working out ideally. Now, ideally, we are regularly doing both of these things. And muscle loss or sarcopenia happens with age. And maintaining lean muscle mass is a predictor of longevity. So, in a perfect world, we are all optimizing resistance training and protein consumption.

And there's also the conversation of balancing this with overall food consumption. And, of course, we don't want to ignore the steep rise in body fat percentage in the U.S. over the last 50 years. And Dr. James DiNicolantonio sums up three factors that relate to protein consumption in a very simplified, I would say, oversimplified way, but it's a good way to just kind of simplify this and think of it in a general context.

He said, "If you eat less, you will lose weight. If you eat less and eat plenty of protein, you will lose body fat. If you eat less, eat plenty of protein, and strength train, you will lose body fat and gain muscle." Which is the goal if longevity is the focus, and this is my current focus as well. Now, protein consumption is also especially important during pregnancy and nursing because of the higher metabolic demand on the body. And I find that

my kids also sleep and focus much better when they get enough protein, natural fiber, and carbs from whole food sources. I will do separate episodes on carbs and fiber. But protein makes a big difference, especially for my really, really active kids. So this is one that as a mom, I recommend often just as a tip, if your kids are struggling with focus or sleep.

We might also need more protein in times of recovery from injury or illness, especially broken bones. There's some interesting research on needing quite a bit more volume of food, calories, and protein in recovery from bones in particular. Or if we were working out a lot, or if we're trying to build muscle. Now, anytime we talk about any factor of health, I always want to also look at the downsides or potential negative effects. And as with anything, the dose is of course important. And whilst statistically it seems like we are more likely to under-consume protein, versus over-consume it, at least in the U.S., it's always important to look at both sides, and to evaluate any potential negatives. So we're gonna do that with protein.

From looking through the research and talking to various experts, there are some cautions around protein consumption. But there's also some misconceptions around these cautions. So if you replace carbs in your diet, cut out carbs entirely, replace it with protein, but still over-consume dietary fat, you can still gain weight. So it is important to dial in your own needs for each macronutrient and make sure you're getting enough but not too much.

Consuming a lot of protein and fat without any carbs can also lead to ketosis, which can be a helpful tool at some times. But it seems to also sometimes go hand in hand with complaints of bad breath for some people. That is a potential downside to high protein, high fat, but no carb diet. Also, without enough dietary fiber, high protein consumption can lead to constipation. And I think most sources agree on the need for enough dietary fiber, preferably from whole food sources like vegetables and fruit. And again, I will do a whole episode at some point on fiber as well.

Also, increasing protein a lot and not also increasing water and electrolyte consumption can lead to mild dehydration, because of the metabolic demand of digesting protein. So, drinking enough water and electrolytes is important if you are consuming, especially a big amount of protein.

And then I also want to talk about the potential of kidney issues. Because this is one that is often brought up when people talk about eating a high protein diet. And I went through a lot of studies on this one, and I feel like there's a website called Healthline that actually sums this up pretty well. And they said that while no studies link high protein intake to kidney damage in healthy people, excess protein may cause damage in people with preexisting kidney disease. So if you're in that category, of course, consult with your doctor and make sure that you are following what is healthy for you.

But the data shows that in healthy people, a 2012 study found that in healthy obese adults, for instance, a low carbohydrate, high protein diet over two years was not associated with any harmful effects on renal filtration, albuminuria or fluid and electrolyte balance, compared with a low-fat diet. So the consensus seems to be if you have preexisting kidney issues, definitely, you might be a special case here and you want to consult with your doctor. But in healthy individuals, it does not seem to cause kidney problems.

There's also the conversation around cardiac risk, especially when protein comes from processed sources or is combined with a large amount of high fat dairy, especially. But when we look at the studies that control for those variables, including a study that looked at over 12,000 people, it found no association between animal or plant protein intake and increased heart disease risk when there wasn't also an increase in certain types of fat, especially dairy fat. Another 2020 study in people with excess weight found that a high protein diet did not

harm heart health or blood vessel function after a 34-month intervention. So that was a quite long study. Other studies have found that especially combined with whole food fiber intake, and when protein comes from whole food sources, that high protein diets may actually help reduce blood pressure, decrease belly fat, and increase HDL which is the good cholesterol, which may actually help improve risk factors for heart disease. And a 2020 meta-analysis found no association between higher total protein intake and the risk of death from heart disease.

So this brings us to the question of how much and how to get enough. So with all that said, what I do, and how do we get enough protein once we experiment, and how to know what works best for us? I think this is a very individual equation, but some notes that have been helpful for me. So the body may be able to utilize protein eaten earlier in the day a little better than protein eaten later in the day. And we should note that this is kind of the opposite of how many people in the U.S. consume protein, with breakfast and lunch being higher carb, and most of the protein being consumed in the evening. Andrew Huberman and Dr. Gabrielle Lyon, and Dr. Galpin, they all talk about this. And this is also the reason for the recommendation you may have heard to eat 30 grams of protein within 30 minutes of waking up. It's that protein earlier in the day may be handled better in the body and may be more beneficial. So I personally aim to consume protein before caffeine. And I have leaned toward getting my protein earlier in the day, rather than waiting and consuming most of the evening, as many people do. If I eat in a time restricted window, which I don't do every day, I try to skew this window toward the earlier time of the day, and stop eating around dark, which has been beneficial for me for sleep. So I usually eat three to four meals in a 9-to-12-hour window, with at least 35 grams of protein per meal, but often more.

But that breakfast meal and that early protein seems to be the most important for me personally. But this also means I tend to feel best and I tend to eat more carbs in the afternoon or early evening, usually from vegetable and fruit sources, which also seems to benefit my sleep. And different sleep researchers who have been on this podcast, including Dr. Alan Christianson, have explained the reason behind this with cortisol patterns and sleep. So one exception to me for not eating after sunset is that sometimes I will eat a small spoonful of honey with a sprinkle of salt before bed. And this is purely anecdotal, but it does seem to help my sleep. I also pay attention to the essential amino acids. And in particular, I aim for complete proteins at every meal. And I often also add essential aminos, usually in the form of aminos capsules or powder, to make sure I'm getting enough leucine and essential amino acids at every meal. I'll also sometimes take these on an empty stomach first thing in the morning. And the one I take most often is Kion Aminos, and that comes in a powdered form or a capsule form. And I'll link to that in the show notes. As I mentioned, I take those often on an empty stomach before breakfast, sometimes also right before bed, as well as after a hard workout, before I do...approaching meal or some of the after workout.

And another unrelated tip that has helped me personally is that electrolytes in the morning before food seems to also give me a lot of energy even without coffee. So, my normal routine in the morning is to have those aminos and then a packet of LMNT, which is an electrolyte powder, in water, first thing. Now, I know what the question of how to. This is when the application actually can get a little daunting and confusing if you're not used to consuming protein and you don't know how much is in various foods. I know that this was certainly a learning curve for me. So I wanted to give some sample ideas from my own meals for protein consumption, but with a focus on budget friendly whole food sources. So I, in the morning, often have a smoothie, which will have a grass-fed whey protein powder, and some kind of fruit, most often blueberries. And I will sometimes also add things like a greens powder, maca, sometimes also creatine or collagen. That's kind of my first little boost of energy in the morning. Throughout the day, I will have other protein meals that include things like a

salad with added canned salmon or sardines, or four to six ounces of cooked chicken on a salad or in a stir fry. And I bulk cook the chicken.

Also a note, there's a link in the show notes of this episode to my bulk cooking guide that's free, on how I pre-prepare a lot of protein. Saves me at least a few hours a week in cooking time. And so if you are interested, you can download that and try it for free. Sometimes I'll eat four to six ounces of cooked beef with vegetables and quinoa or rice, or five to six ounces of salmon or shrimp with veggies and rice, six to seven ounces of other fish or scallops. Or five to six ounces of turkey, either in a wrap, or a stir fry, or however I want to have it. Or four to six ounces bison.

So those are just some general guidelines that I would use for figuring out how much of those different types of foods to eat to get enough protein. Now, from a supplemental perspective, I personally take the amino acids that I mentioned, that will also be linked in the show notes. I do take creatine daily, and I will link to the one I take in the show notes as well. And I use ICONIC whey protein, and I will link to that one as well. I will also include in the show notes, links to some of the studies I've mentioned, two past podcasts I've done with more information on these different topics in a lot more depth, if you're interested in going into them. As well as I said links to all of the supplements and foods that I've mentioned, as well as to my bulk protein cooking guide.

But as a summary, and in general, I feel like this is an important topic. I'm glad that it's entering the mainstream conversation. I do think it's very nuanced and individualized. And I love that there is more and more focus in the health world on the personalization of diet, and helping everyone figure out what works best for them, rather than just working from templates. Because we are not statistics, we are people. And we are all each so different based on our lifestyle, based on genetics, based on everything that we eat, our sleep. There are so many factors that go into this. And so I love that we're moving more and more toward a focus on this individualization and personalization of health. And I know I sound like a broken record, but at the end of the day, I do very firmly believe that we are each our own primary health care provider. And I think that if more of us take responsibility and ownership for our health, and make decisions based on nourishing and loving ourselves, that that creates positive effects for all of society, and creates beneficial effects for societal health metrics as well.

So this has been a summary of some very basic understanding of protein, what I personally do. I would love to hear any questions that you have related to this. You can always leave those in the show notes, or reach out to me on social media. Also, if you are so inclined, I do have a Patreon, which is [patreon.com/wellnessmama](https://www.patreon.com/wellnessmama). And I answer questions directly in there, personally. So if you have any follow up questions and you would like to join, you are more than welcome. And I would love to have you there. I hope this episode has been helpful. If you have any particular topics you would love a short episode on, please let me know and I will do my best to accommodate. And as always, I'm so grateful to you for being here, for sharing your time, your energy, and your attention with me. I am so grateful for this community. And I hope that you will join me again on the next episode of the Wellness Mama Podcast.

If you're enjoying these interviews, would you please take two minutes to leave a rating or review on iTunes for me? Doing this helps more people to find the podcast, which means even more moms and families could benefit from the information. I really appreciate your time, and thanks as always for listening.