The Fundamentals of Nutrition, Hydration & Performance Fueling

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Dr. Andy Galpin
The science and practice of enhancing human performance for sport, play, and life. Welcome to Perform. I'm Andy Galpin. I'm a professor and human performance scientist. And today, we're going to be using a similar format as we used in the last episode, which is an audience Q&A. So several weeks ago, I asked you all for questions that you had, and we got way more than I anticipated. And so we tackled a lot of them in the previous episode and realized there was still a lot more I wanted to get to, and so we decided to do it again. And today, we're going to be focusing heavily on the nutrition and hydration and recovery type of questions. And so what this is going to look like, I've bucketed a lot of your most common questions into some central themes. I will try to answer them directly, but as I prefer to do, I would like to give you global themes so that you not only understand the answer, but you know why.

Dr. Andy Galpin
What's the concept behind it? And so maybe your question is a little bit different than the one I answer, but my hope is by learning the foundation and the principle behind it, you'll be able to then answer your own specific question or maybe new ones as they come up in your life. So with that said, we're going to tackle five broad categories today. The first one is what I'll call the 90%, and that is the questions that looked and sounded a lot like, "Man, there's so much nutrition information out there. Can you just give me the basics? Can you give me what I have to know? Can you just give me the starter guide?" And things like that. And I'll explain to you why I call it the 90%, but that's what I mean when I say the 90%. After that, there was a whole series of questions related to recovery nutrition, from the hydration, supplements, fueling, and what do I have pre and post and mid-workout and things like that.

Dr. Andy Galpin
So we'll get into that with our second question. The third major bucket is the application. It's not even necessarily the knowledge of nutrition, but it was really more of a coaching question. How do I help people through this process? What do I do first, then second, then third? And again, here I'm not necessarily talking about how many calories or macros, but the actual application of the knowledge and how we can help people be more effective in the implementation. So that came up a lot of times, and I thought it was really practical and something we haven't spent

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much time on. So we'll get into that at that point. Then from there, and a large theme, particularly amongst close friends, to call out Ian, my friend directly here, but this is related to what we'll call body recomposition. So this is, "I want to gain muscle, but I don't want to put on too much fat," or, "Is it possible to gain muscle while I'm in a caloric deficit?"

Dr. Andy Galpin
And a ton of questions in that category, so we'll go after that as our fourth stop. And the last one is a little bit of a potpourri, a different turn from nutrition, and it's there because it came up often and is one of the most common questions I've ever gotten and continue to get in my career, and that is, what's the difference between all these high-level performers, these pro athletes, these elite musicians and actors and executives, and the rest of us? And so I've got some unique ways to answer that question that you potentially have never heard before, and so we'll get into that as our fifth and final question. So that said, that's our journey. That's what we're signing up for today. If you would like, if you have a particular interest in any one of those questions, you can use the timestamps and hop directly to that. I want to make sure, first and foremost, that you get the answers to the question that you directly asked or are most interested in.

Dr. Andy Galpin
And so use that skill. I would, of course, prefer that you listen to all of it, but minimum, I want you to get the information you're here for as our top priority. So use that feature if you feel so inclined. That said, let's go ahead and jump into our first one, and that's the 90%. And I'll give you fair warning, friends, this one is not short. But we can keep it easily digestible. The 90% to me is a way of saying, look, if you were to examine every nutrition program, every theme, every diet, every eating style, you'll start to realize there's a bunch of common themes. There's eight billion of us, friends. We have tons of different goals and backgrounds and restrictions and limitations. So this is going to create thousands, if not hundreds of thousands of different individual options. So rather than trying to cover a bunch of them, what I like to do and what I have the most joy in is zooming out and saying, "Okay, what is consistent amongst all of them, or many of them, or most of them?"

Dr. Andy Galpin
And one of the things you'll start to realize in this field is many, most, if not even all of them, are hitting the same exact concepts, but they're using wildly different methods. So what I wanted to do in the 90% is to say, look, what are 90% of the good nutritional plans or diets, or however you like to phrase these things, what's consistent among them? And then what are examples of the infinite different methods you could go about achieving them? I typically will describe this in somewhere between 10 and 15 different things, and I'm not going to keep a particular count, though you can do that at home and perhaps tell me how many I landed on. But this is the type of stuff we start to think about. First on our list is food quality. Almost all evidence-based and

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effective programs are going to have a hedge towards that, and it is typically the top or close to the top of your priority list.

Dr. Andy Galpin
Now, what does food quality mean? It's a very lengthy discussion, but most of us would agree you're going to be spending most of your time, and by the way, you should be recognizing the specificity of my language here. I'm not using always. I probably will never use the word never here. This is why I call it the 90%. What are most diets doing for most people that's mostly effective? So that means in this scenario, most of the time you're choosing higher quality foods. Doesn't mean always. Higher quality foods, most of the time, are single ingredient foods. They're minimally processed. There's plenty of exceptions, of course, and there's a lot of discourse right now about what is actually defined as a quality processed food, because there can be some. Things like cheese and whey protein, these are processed, but they're generally regarded as reasonably high-quality foods. And where no one would argue things like spinach and kale and blueberries are not quality.

Dr. Andy Galpin
So there's some obvious ones, there's some less than obvious ones, and then there's some downright confusing ones that I don't even know how to score, frankly, like yogurt, sauerkraut. They're technically processed. And then, of course, you have chips and highly processed junk foods, and no one's going to argue those are super healthy foods. So we don't need to get lost in that detail right now. But just think of it as mostly whole food ingredients, kind of in their natural state most of the time. And if you do that, the amount of time you are splitting hairs, it's important, it is nuanced, but for right now, we're trying to do the opposite. What are the basics? Number one, eat mostly real whole foods. Number two, you have to account for caloric balance. This does not mean calorie counting is the most or only effective strategy for diet. Those are not the same thing. You need to be aware of caloric intake one way or the other.

Dr. Andy Galpin
Whether you find calorie counting is an effective or ineffective strategy, great. That's one method. Whether you use other things like time-restricted eating, or restricting or eliminating whole food groups, or a specific dietary plan, say Mediterranean, or some other form of a nutritional strategy, those are often just different methods to regulate caloric intake. And there's a lot of nuance that goes into this, but you have to account for it one way or the other. If you are insufficiently fueled, this can do everything from reduce exercise performance, certainly sport performance, reducing recovery, and eventually even leading to things like chronic low energy availability, hormone dysregulation, brittle bones. So being under-caloried is a problem, and being over-caloried is a problem as well, where obviously going to lead to metabolic dysfunction, disorders, obesity, and a whole host of chronic diseases associated with excessive intake of

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calories consistently over time.

Dr. Andy Galpin
So you've got to manage it one way or the other, and as I reiterated, and hopefully this has landed, there are a bunch of different tactics and methods to regulate calories, but when they're effective, it's because they are regulating caloric intake one way or the other. Well, I should say more accurately here, they're regulating caloric balance. A third thing you want to pay attention to that's pretty high on people's list is protein intake. Now, I will discuss protein in more detail a little bit later, but it's inarguable you need to pay attention to it. Depending on your goal, it may be higher on your priority list or lower, and you may have it higher or lower in terms of the amount. But the reason we like to distinguish protein as a pretty high goal is because it's the most difficult to get. And in my practical coaching experience, it's the one people under-consume the most. Rarely do people accidentally under-consume fat, and very rarely do people accidentally under-consume carbohydrates.

Dr. Andy Galpin
But pretty often they will under-consume protein. And so we'll talk about specific numbers and stuff later, but I'll reiterate, most diets that are effective in nutrition strategies are having a combination of sufficient amounts and high-quality protein. As I mentioned, the next one on our list here is you have to have some reasonable intake or balance between carbohydrates and fats. Now, this could be high fat, low carbohydrate, it could be the inverse, or it could be somewhere in between. Those are tactics. But as we described earlier, a second ago, overall energy balance has got to be regulated somehow. Your three options are protein, carbohydrates, and fat. If we're trying to keep protein in a certain spot, the way that you can manipulate calories is to tinker with carbohydrates and protein, or carbohydrates and fat, rather. So tons of options there, depending on your sport or goals or unique situation.

Dr. Andy Galpin
Again, you can opt for different percentages, and that's why I don't say things like you need to be at 30% fat or 10%. You can do it a lot of different ways, but you got to have some reasonable balance between carbohydrates and fat. Another really common theme that's actually more prevalent now, which puts a little bit of a smile on my face because my students for a while have been forced to learn this, and now they hear it talked about and they're like, "Oh, yeah, great. We already knew this," and that is fiber intake. One thing I haven't heard a lot of recently that I hope comes soon is a discussion between what's called soluble fiber and insoluble fiber. Easy way to think about this are if you were to put a food item in water, does it absorb the water or does it not? As an example, if you put a piece of bread in water, that water will absorb it, it'll become mushy. That's soluble. It solubilizes in water.

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Dr. Andy Galpin
If you were to put some broccoli in water, it doesn't necessarily soak up all the water and get soggy. That is insoluble. You want both. So not all fiber is created equal here, and they do different things. One, insoluble fiber can lead to diarrhea or can lead to constipation. So paying attention to the differences is important. Rough rule of thumb here, something in the neighborhood of 13 to 15 grams of fiber per 1,000 calories you ingest. It's a pretty good number to think about. So if you eat 2,000 calories a day, you should probably be targeting something like 25 to 30 grams of fiber in your diet. If you're at 3,000, 4,000, et cetera, you can kind of multiply that out.

Dr. Andy Galpin
We'll go on from fiber for now because it's kind of actually baked into the next one too, which is I am a big proponent of getting a large amount of vegetables. For me, that looks like 50% or so of my plate. So my physical food, about half of my physical food I eat in a day are vegetables. By here, I'm almost always referring to non-starchy vegetables as well. So your greens and colors and your non-potatoes, rices, and oats and things like that. Not against those, but I'm really trying to get a huge volume of those things. They're great for making you feel full, and they're great for some things we'll talk about a little bit later. That 50% is made up, but I literally will just make my plate and try to have kind of visually at least half of my physical plate being those things. That keeps calories down, it keeps me feeling full, and it gives me a whole bunch of vitamins, nutrients, minerals, and phytochemicals.

Dr. Andy Galpin
With that part and kind of parcel to that is you want a variety of colors. So this extends now past your vegetables and into your fruits and other foods. I know myself growing up, I was pretty much exclusively on a yellow and brown diet, which is you're eating eggs and bread and cheese and things that are pretty much all the same color. And it's pretty clear at this point, and having done I can't even tell you how many sets of blood analytics on people and nutrition tracking, you will see this in blood, you'll see this in urine analysis, you'll see this in stool samples. When you have a restricted color diet, you have restricted nutrient intake. And the typical way we go about solving that is food first, and that almost always means a wider variety of colors, and that just tends to solve a lot of problems, which is why I'm calling this the kind of 90%. It's like you can just skip the blood work and the stool sample part of the equation and just go, all right.

Dr. Andy Galpin
If you're looking at what you kind of eat most days and it's always the same kind of colors, expand the colors. And I know it's an old, old saying, it's been around for forever, kind of when I was a kid, we used to call it five a day, the color way, which is kind of a way of saying try to have five different colors every day. You get more colors in your diet, your blood work probably gets

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better. We've just seen it countless times. One thing I want to add to this, though, that people rarely talk about is the preparation of your vegetables and fruits. I'll actually ask a question. What's better, raw or cooked? What's a better way to eat your fruits and vegetables, raw or cooked? How about frozen? How about blended? See, the fallacy here is giving any answer to that question at all because it's not a better or worse scenario, it's a different scenario. My recommendation is to use a combination, and here's why.

Dr. Andy Galpin
There are certain nutrients that are absorbed much better when they are pre-cooked. Classic examples of this are things like the iron in spinach. It's very difficult to absorb, but when you cook it, it gets denatured, and you'll get much more out of it. That said, you typically tend to use or lose things like antioxidants when they're cooked, when they're blended, or when they're chopped. And it's really easy to understand. You start exposing these things to oxygen, antioxidants then get lost in the presence of oxygen. But what you gain a lot of times are minerals. And so by the inverse logic, you could say the exact opposite. So sometimes you want to hedge towards mineral intake, you might cook your food, you might blend it, you might chop it up. Or if you actually are willing to sacrifice some minerals, but you want to get more antioxidants, you would eat it in its more fresh version. So I'll go back to the basic point here.

Dr. Andy Galpin
It's not that cooked or microwaved or boiled are better or worse. They are different, and that's why I would recommend at the high level here using a combination of them. One exception I'll give you is that I think cooked greens should be banned and federally illegal, and my wife and I will probably eventually get divorced on this point one way or the other. I turn into a small child with tantrums every time she tries to serve me or even allude to me eating some sort of cooked greens, and she has since taught my children this, and they torture me with this endlessly, and I turn into quite the baby about it. But nonetheless, I digress on that point. I still eat them, but I just throw a tantrum. Point I'm making with all that stuff you're generally trying to see here is you're eating a lot of different things in a lot of different way, but you're still balancing caloric intake. You're eating them as single whole food ingredients, and you're kind of covering a lot of your bases.

Dr. Andy Galpin
This saves you the need to get precision testing or things like that in a lot of the cases. Some other big themes, and I know we're going really long on this one, but this was a really big one, and I'm tackling honestly dozens of different questions that we got in our inbox. But you want to pay attention to liquid calories. It doesn't mean you have to have them at zero, but just be conscious and aware of them. This could be the cream you're putting in your coffee. It could be the sugar-containing drink you're just sipping on or the Gatorade that you're having while at

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work. It could be the oil you're cooking with. It could be the oil you're putting on your salad. They're not bad, but the reason we're doing this is because they tend to not be accounted for with calories. So a lot of times when people are saying all the calorie counting thing doesn't work for me, large percentage of the time, it's because there's some liquid calories coming one way or the other that are not being accounted for, and they're super dense.

Dr. Andy Galpin
There's way more calories in them than you typically realize or recognize, and so it can create problems. That said, they can be a huge advantage when you're trying to add calories and you're full all the time. So we will use things like fresh-squeezed orange juice, extra oil, and things like that when we're trying to ramp up calories, but you don't want to have a full stomach when you train or you're full all the time already or Whatever the case is. So again, I'll reiterate, the point here is not to avoid, eliminate, or think of these as bad, but just be conscious and aware and use them intentionally. The presenting sponsor of this podcast is Momentous. Momentous makes the highest quality supplements on the market, period. Every single one of Momentous' products is third-party tested to ensure quality, and many are even NSF certified for sport. While I love all their products, I'm really loving their new creatine powder, which is called Signature Spec Creatine.

Dr. Andy Galpin
I've long talked about the benefits of creatine for everything from helping to increase strength gains to the benefits it has with brain health. It is one of the most researched supplements in the world and has demonstrated benefits, which is why I make sure to take at least seven to 10 grams a day. This new Signature Spec Creatine from Momentous is the highest quality creatine to date, with 10x fewer impurities and two to five times stricter heavy metal limits than any other premium creatine on the market. All of this is backed by the six stages of testing and certification. My favorite part is that the creatine is ultra-finely blended or micronized, which allows for it to dissolve rapidly and easily mix into water or whatever liquid I'm pouring it into. If you'd like to try this new creatine or any of Momentous' best-in-class supplements, just go to livemomentous.com/galpin and use the code GALPIN for up to 35% off your first order.

Dr. Andy Galpin
Again, that's livemomentous.com/galpin and use the code GALPIN for up to 35% off your first order. Last couple of points here that we want to get into with the 90% is your nutrition and your eating, your diet if you will, should be sustainable. So this includes things like how many meals should I have? If you like to eat more frequently like I do, then have three or four or five or six feedings a day. If you like to eat less frequently, I have friends that eat once a day. We will a lot of times do this with things like surgeons and judges and other people that we work with who can't be stopping every couple of hours to eat. They actually feel better when they eat once a

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day. The literature doesn't seem to suggest these are any worse for you. There is some context, but again, at the highest level, fundamentally, there doesn't seem to be a physiological difference between does one automatically make it healthier or less healthier with lots of frequent feedings versus infrequent.

Dr. Andy Galpin
The same could be true for timing. Do you eat first thing in the morning? Do you wait a couple of hours? Those things actually don't seem to be having that big of an impact outside of how they impact things like practical. Is it realistic for your lifestyle? Does it make you nauseous? Do you not like it? So those are not, again, first-order principle things. Those are second, third, and fourth, so important, but they're not consistent among all high-quality versus low-quality plans. Other things as we round out you want to pay attention to are things like allergies or sensitivities if you have them. Funny ones that people don't think about, but food safety is wild. I bring this up a lot because when we tend to work with athletes and they've got food preparation, and they've got things that are sitting out all day, we get a lot of upset tummies and problems that happen because of basic sanitary and food safety approaches, which is probably the most all-time ironic thing ever coming out of my mouth, because, again, if my wife was here, she'd be screaming about how horrible I am with these things.

Dr. Andy Galpin
But nonetheless, don't do as I do, do as I say. And then kind of on that last little point are the things like paying attention to environmental pollutants, having clean water, microplastics, and not heating food in plastics, and kind of like all those other things that are part of nutrition and that globally most of us would agree on that are pretty consistently true across landscapes. So all that, I think I probably got 13 or 14 different ones, depending on how you counted. But you slam all that together, and I would reiterate, going back to the original point of the broad set of questions here, and that is, that's my 90%. If you look at every program we've ever built for anyone, it's going to probably be all that stuff. It's going to be there, and then you might see someone who's on a ketogenic diet. You might see somebody on a high frequent diet. Someone might be on a guideline diet. Someone might be on a hyper-specific weigh and measure program, and they could be having more of this food or eliminating that food.

Dr. Andy Galpin
And you would see the programs we've written that do all these different things. But all of them have those 13 or 14 things consistently among them and within them, and I just can't see any scientific evidence or evidence from the field that would break those kind of 90%, at least not more than 10% of the time. So going on to the second one, and I know we went pretty deep on that one, but hopefully it was, and I don't pardon my pun here, digestible. What I want to go to now is more specific to what we'll call kind of refueling. So this is more like what do I have

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before, during, and after my workouts? It's specific to that. And what we can do is merge in hydration here. There's a really interesting paper that was published earlier this year that tackled the four S's. It's open access. We'll put it in the show notes. Previously in the past, this field would kind of talk about the three Rs of recovery.

Dr. Andy Galpin
The new one has added a fourth one to it, but my version of it looks a little bit something like this. If you want to maximize both performance in the workout as well as recovery, what we will kind of tell you is, hey, your post-exercise recovery started in your workout or started before the workout. But really, there are four unique elements to this. So sorry to be redundant, but to reiterate, this is whether you're trying to maximize performance in the session or you're just trying to kickstart recovery. The first element is glucose. It's carbohydrate. If you take this in during your training, depending on what type of training you're doing, you may or may not need carbohydrates. Most people don't If you're kind of doing a normal workout where you're just kind of going through your workout pretty hard, but it's 30 to 45 minutes, you're maybe moderate to maybe even early in your training career, you probably don't have to have carbohydrates, especially if you aren't super lean, you probably have enough floating in your system.

Dr. Andy Galpin
I generally don't consume carbohydrates during my training. I don't train enough. I'm not physically active enough, and I'm not that lean. I'm not sub 8% body fat or sub 5% where I just really need to be able to hold on and not training for hours on end. But if you're trying to maximize performance and/or recovery, then we would recommend doing that. Now, this is important because glucose or carbohydrates do several things. One, they can spare your liver, and as we've seen pretty clearly, blood glucose concentrations are one of the primary ways that you're going to get fatigued or feel fatigued. So whether or not you're actually lowering them in muscle or in liver is a little bit actually independent, because just getting low or hypoglycemic in exercise will exacerbate fatigue. So you might feel a little bit better on them. They also pull fluid into the cell, so they kickstart that hydration process.

Dr. Andy Galpin
They'll keep it hydrated, and they'll do lots of other things like that. They'll keep you functioning cognitively and so forth. So pretty good for that. One thing really underappreciated about carbohydrate is their role in muscle protein synthesis. Now, we've always talked about this, but a paper came out recently that we'll link in the show notes that described this so beautifully, I wanted to make sure I covered it here. Typically, when we talk about carbohydrates being important to growing muscle, we refer to it because we need the energy to perform the exercise. Which is true. But we also forget muscle is a donor of carbon, meaning you will store your glucose as muscle, and you may be like, "What?" 100%. When you hear people talk about

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things like skeletal muscle and strength training are really helpful for metabolic regulation, and they're helpful for things like type 2A diabetes, it's typically because of muscle's ability to draw in glucose, and that's true.

Dr. Andy Galpin
And why that matters, connecting dots here, if you're like, "What is he talking about?" Diabetes is a difficulty in regulating blood glucose. So it gets too high, it gets too low. That creates problems in the pancreas. This creates issues with insulin, and that's why you call it insulin resistance. And if you look at any health dilemma, insulin resistance or twinges of insulin resistance just cause catastrophe everywhere. It's a really bad thing. Muscle is great at helping that problem because it'll pull in that glucose and use it as fuel for exercise. Everyone knows that part. What we've glossed over, and I'm as guilty as everybody else, is that carbohydrate is not only used to power exercise. It is used as a building material for the muscle directly, meaning it is stored in tissue. So one of the reasons you regulate glucose better when you add more muscle is because that carbon gets stuck in the muscle as building material.

Dr. Andy Galpin
Now, we typically think of amino acids as the building material for muscle, and they are. But the carbon stays there as well. Carbon, of course, being the primary component of carbohydrates. Carbohydrates, for the record, are only carbon that's attached to water. It's a carbon that's been hydrated. Your chemical formula for glucose, as an example, is C6H12O6, meaning it is six carbons attached to six H2Os. Six, 12, six. That's all it is. So you bring that glucose in, you split the water off, you capture the carbon, and you integrate it into the muscle itself as part of its being. So it's a sink for glucose, meaning it keeps your blood glucose from getting too high over time. So I'm going on, maybe we'll do a whole other episode, or in some other episode, I'll find a time to explain that in more detail, but that's a critical component to it. That's also why it's playing a part in recovery from specifically things like strength training, because it's not just the fuel, it's the actual backbone you need.

Dr. Andy Galpin
Now, you can get it from lots of other places. You don't have to consume glucose. You don't have to consume it during your workout to get this. Again, as I stated at the beginning, most of you probably have enough of it floating around as it is, and you can break down fat through a particular process, but it's there. So the way that I think you should approach this in your brain is that there's a difference between trying to maximize performance and maximize recovery versus minimal amount, I don't need this, I just want to get through my workout, and I'm trying to restrict calories. Both appropriate, different goals, but in either case, we've laid out some case for having glucose available. So the second piece, which I've already alluded to now, are amino acids, and it's a similar story. You do not need to take essential amino acids before, during, or after your

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workout. Amino acid availability is important to recovery, though.

Dr. Andy Galpin
But most people will have enough of them around if their total protein intake is the same. And we've done research in my lab on this, and plenty of others have as well. Protein timing, meaning do you have to have it before your workout or after your workout, it doesn't actually matter. As long as you get enough within, say, a 24-hour window, you'll have the same amount of muscle growth if you're training for that. And so amino acid availability is important, but it's very similar to how I just answered. If you're trying to maximize growth and maximize recovery, then maybe make sure amino acids are available a lot. This doesn't mean you have to take a supplement. This doesn't even mean you have to eat before or immediately after your training. But just make sure you got plenty of amino acids available. If you've got a lot- Or you're not trying to optimize growth, then you're maybe a little bit less concerned about it.

Dr. Andy Galpin
So overall, they got to be around, but your method of getting there, one meal, supplements, whole food, plenty of meals, that's entirely up to you and your stomach and your digestion and what time you work out and a bunch of different factors. The third thing to pay attention to here is actually hydration. As I've stated before, if you have glucose available, whether it's exogenous because you ate it or drank it, or I guess theoretically got an IV, or you're just pulling it from your own endogenous stores, as long as it's around, it'll help pull fluid into the cell. If you'd like, you can actually go to performpodcast.com, and on that, we have built a free hydration calculator. This will tell you how much fluid you need to ingest to get really close on your hydration intake. You want to account for a number of different things. You don't need to be drinking so much water that you're having to go to the bathroom every hour, all day.

Dr. Andy Galpin
Certainly, if you're waking up multiple times a night to use the restroom because of fluid intake, that's not where we want you to be. But there are problems associated with being under-hydrated. We've spoken about this at length in previous episodes. You can see all those in the show notes, but the quick version of it is a little bit like this. You want to drink as a ballpark figure, kind of half your body weight in ounces of water per day. So okay, what's that mean? If you weigh 200 pounds, you want to drink about 100 ounces of water in a day. Just a rough guideline. However, for exercise, what you want to think about is something that I did not name, but my colleague here and dear friend, Dr. Andrew Huberman, years ago named this the Galpin equation, and that is simply the idea of saying, all right, how much fluid do you need to drink per 15 or 20 minutes during exercise? The rough number ends up being something like three to six ounces for most people.

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Dr. Andy Galpin
Again, you can go to the online calculator if you'd like and search that equation or use the tool we've built for you to figure out your number. But that's the end story. So what this ends up looking like is a few sips of water every 15 or 20 minutes. You do not need to be guzzling it down, and certainly, if you're leaving your workout, having to go to the restroom three or four times, then you're probably drinking way too much water. You don't need that much. You also do want to pay attention to electrolytes. So water alone is not sufficient. We want to be paying attention to everything from sodium, calcium to a lower extent, but chloride, which is just salt, right? Sodium chloride is salt. Potassium, and magnesium to a little bit of a lower extent. All these are covered in more detail in other episodes and in other places, but that's how you want to think about it. So getting a little bit of fluid in.

Dr. Andy Galpin
As soon as you're done with your training, the quick number to pay attention to is you drink about 125% in fluid that you lost in body weight. As an example, if you weighed yourself before your workout, and then you weighed yourself after your workout, please do this naked if you care, because your clothes will be super wet post-workout and it won't matter, but if you were to have a naked weight pre and post, and let's say you lost three pounds of water, then you would want to drink 125% of three pounds. Let's just call it three and a half pounds, maybe four pounds, something like that. The reason why you want to drink more water than you lost is because you're going to lose some of that in urine, and the research is clear here. If left to your own devices, people will generally drink only back about half of what they lost. So you'll kind of always be behind the eight ball. You don't have to be that specific.

Dr. Andy Galpin
Some papers have actually suggested 150%, so if you lost three pounds, you would drink four and a half pounds back. But honestly, that gets kind of daunting. It's like, geez, you're drinking a half a gallon of water. It gets pretty challenging, and especially if you're bigger and you lose four, five, six pounds or more, and you're like, "All right, I've got to drink back a gallon of water?" Also, while we're here, that assumes you drink or you drunk no water during the workout. So you would want to factor that in. If you already drank 8 or 10 or 16 ounces during your workout, well, then you already got a pound in, so you're good to go, and you don't have to drink as much after the workout. So those are our top three elements here, something to do with glucose, paying attention to amino acids or making sure they're available one way or the other, and then make sure we're accounting for hydration.

Dr. Andy Galpin
The fourth thing that actually umbrellas all that is what we call a gastrointestinal or GI distress. If you are trying to push the pace and you're out there on a hard bike ride and you're three or four

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hours in and you're trying to set a new record, you're going to want to push the pace with glucose, most likely. Which means the high-level endurance folks right now are getting into the 80 grams of carbohydrate per hour range, some of the 100. I've actually heard stories of people getting close to 120 grams per hour. The research is clear, though. You will go faster if you care to in events like that. Now, these are typically events that take several hours or more. Think elite marathoners or equivalent racers. The downside, though, of that is that much carbohydrate in your belly can be disruptive. If you're putting a lot of salt or sodium, that'll pull fluid in the GI. You might get some loose stool or upset stomach.

Dr. Andy Galpin
Because you're going to hit a limiter with transporters, you're going to have the same thing with carbohydrate. Amino acids are a little bit less relevant here, but those are the two big things. So what you want to think about here is saying, okay, here are the optimal numbers of water and carbohydrate according to science. But if you're out here going for a jog and your stomach is sloshing up and down because you're trying to hammer too much water in, it's not worth it. So you have to balance these theoretical numbers with what's realistic for your GI. Some people handle carbs, some people don't. Some people get really bloated with water, and some don't. So you never want to be put in a position where you're just like, "Oh my gosh, I can't wait to be done playing hockey here because my stomach is so full of water because I'm trying to..." Then we've lost the plot, right? Tone those things down.

Dr. Andy Galpin
Now, you can train your GI. You can get better at those things. It will, just like any other training, just dose it and slowly increase it, and it'll get much better. If you do lots of really high-endurance stuff, you'll do this at some point. But if you're just trying to work out a couple of days a week and get by, then we don't need to be dealing with things like that. So in that particular case, I would either make sure you're getting your carbohydrates and fluid in earlier, before your training, or just doing better post-exercise and trying to replenish faster, rather than causing a ton of discomfort in your session. So that's the big four that I pay attention to from a hydration and fueling perspective when trying to maximize performance and maximize recovery. Making sure glucose and carbohydrates are available, amino acids are around, we're hydrating, and then doing all that while we're minimizing GI distress.

Dr. Andy Galpin
Today's episode is sponsored by LMNT. LMNT is an electrolyte drink that has an ideal electrolyte ratio of sodium, potassium, and magnesium, but no sugar. Hydration is critical to performance, both physical and mental, and countless studies have shown that even a slight degree of dehydration, even as small as 1%, can lead to decreases in physical output and mental performance. We also know that electrolytes are critical to proper hydration, which I've been

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harping on for years. But you can't do that, proper hydration, by only drinking water, especially if you sweat a lot. You need to get the right amount of electrolytes in the right ratios, and that's why I'm a huge fan of LMNT. In fact, many of you might remember that I featured LMNT in my YouTube series on hydration nearly six years ago. I featured LMNT in these videos because their blend of 1,000 milligrams of sodium, 200 milligrams of potassium, and 60 milligrams of magnesium really is unique and different than any other electrolyte on the market, and it has great scientific support.

Dr. Andy Galpin
I use LMNT on nearly a daily basis, especially when I'm doing really hard training in the heat and I'm sweating a lot. If you'd like to try LMNT, you can go to drinkLMNT.com/perform to claim a free LMNT sample pack with the purchase of any LMNT drink mix. Again, that's drinkLMNT.com/perform to claim a free sample pack. In the previous two questions, I got into a lot of technical detail. Where I want to go next is the opposite. What I described at the beginning of the episode was really, this is about practical tools. So how do you lead people on a journey for their nutrition training programs? And I'll keep it simple here. I have categorically a three-step process. The very first step is counterintuitive, and what I mean by that is I like to target deficiencies, and I often start that off by giving before taking. And what I mean by that is I will very rarely start someone's nutrition program by eliminating foods or restricting calories.

Dr. Andy Galpin
Almost always, it's the opposite. So I like to look and see, is there a micronutrient that's low? Is there a macronutrient that's low? And we start by adding first. I've just found a lot more success. A similar thing here that I've talked about a lot in the past is I really hate the framing of, is this food bad for me? Is this timing bad for me? Is this amount bad for me? I'll often answer that question by not saying a word and staring blankly at their face, and then they tend to get very uncomfortable. If you're watching this on YouTube or X right now, you're like, "Oh my God, this is already uncomfortable. He's just staring at me." And what ends up happening is people start to pedal backwards pretty quickly because playing a game of bad or is this a little bit less crappy than that, is that a little... That's not the thing I'm interested in. It's probably not going to move the needle. Where I want to start is, how good is this for me?

Dr. Andy Galpin
Is this the highest quality thing I could be ingesting? And I will answer those questions all day, and I hate answering the questions of is this some low-calorie thing or some alternative not as bad as the other. I'm like, what are we doing here? We're worried about minimizing damage. I'm trying to maximize value at the starting place. So we will look at the nutrition profile, look at eating logs. What are you doing? What are you ingesting? If we have blood work or something like that, we can dial it in even more. But if not, we can just look at the food you're eating and

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say, "Okay, we can tell this micronutrient, this vitamin, this mineral, or this macronutrient are low." The first thing you're going to do is shore that up. Now, why I like that is twofold. One, just think of the experience you're having as a person dieting. Instead of me walking in and ripping foods out of your hand and telling you, "You don't get to do this," and there's this entire negative association and experience, it becomes positive.

Dr. Andy Galpin
I simply care about you adding A, B, and C in. So you're going to make sure you have two servings of this every day and three servings of that and one serving of that and so forth. Another reason I like it is you actually get to enhance health because you're shoring up deficiencies. If something is low or suboptimal and you bring that back in, you will see health improve. You will see performance improve, and that is rewarding and addicting. Get healthier first is our approach. And the third biggest reason I like that is because it sets the framework of how we're going to go about things. We're going to make you at your highest functioning capacity first, and we will peel down calories later. That can be pretty easy if we need to. Even if weight loss is our primary goal, we want to get healthy first before we worry about losing weight later. That can be a secondary thing. So we like to start with that, give fixed nutrients, fixed problems, fixed holes, and make sure it's a positive experience from there.

Dr. Andy Galpin
And then after that, we can come back and pull calories and pull food items and things like that. Obvious caveat there, if they are consuming something daily that is a clear and obvious problem, a low-nutrient, high-addicting, poor-performing food, then we will do that. If somebody's eating ice cream for breakfast every day, okay, stop doing that. And you fill in the blank here. This is the obvious, simple stuff here where I probably wouldn't take it away, but I would just be like, "Okay, fine. You're going to have so many servings of A, B, C, and D. There's not going to be any room left for you to have whipped cream for lunch." That's the approach we like to do. So we like it because you can crowd out other foods if you fill in the right ones enough. So very high satiety foods, very high nutrient-dense foods, which means a lot of volume with low calories. And what we've just found over many years is you just crowd so many of those things in, like I said, and the other stuff tends to get minimized.

Dr. Andy Galpin
And if it doesn't go down enough, then you can specifically go pull A, B, and C out. The other notable exception is if you have some obvious evidence of an allergy or they know if they eat something, it gives them hives or upsets their stomach, then pull those foods out immediately. There's no reason to mess around with that. So step number one, we add, we fix deficiencies. Step number two is then we start to tinker with amounts and types. This could be amount of calories, it could be amount of protein, it could be amount of carbohydrate, or let's experiment

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with maybe more resistant starches, or let's tinker with rice instead of potato, or we're getting some other issue with this much broccoli, so let's pull and exchange out some soluble fiber or insoluble fiber for-- Like all those things, those are secondary. And you can get to those, but let's establish a baseline of high-quality intake, and then we'll tinker with quantity as our second step.

Dr. Andy Galpin
Then the third and final step is fine-tuning. And now you can start playing with timing. So maybe you eat breakfast an hour before you work out. Maybe you could do it 30 minutes before. Maybe it's an hour and a half. Maybe you wait, and you guys can obviously fill in the blanks here, but you start to tinker with that. You start to tinker with tactics. You start to tinker with supplements and things like that. So that's it. I could go on, but that is the core of our approach. Fix deficiencies, number one, tinker with amounts and types and timing, number two, and then three, really get fine-tune polish with kind of the nitty-gritty details. Sometimes you have to get to step number three, sometimes you don't. Depends on the situation you're in. I hope that was helpful. Again, I know there wasn't a lot of detail there, but that's kind of an application tool that I found effective and is philosophically how we approach things, and I hope you can find some value out of that.

Dr. Andy Galpin
What we're going to go to next for our fourth question is going to be some more technical detail, and this question's kind of about what we'll call recomposition. So it's a category of things like, can I build muscle and lose fat? Can I build muscle when I'm in a hypocaloric state? I know if I'm trying to gain muscle, can I do that and not be so worried about building some fat? So I'm going to buckle these things all together, and there you go, Ian. I told you we'd get to your question. He's about 10 feet away or so right now, but he'll hear this when this comes out. Several things to consider. It totally depends on your spectrum of body composition and training experience, and it looks a little bit something like this. If you have a lot of body fat and if you have a lack of training and exercise experience, it becomes easier to add muscle while in a hypocaloric state. And we're defining hypocaloric as amount of calories you're ingesting relative to expending.

Dr. Andy Galpin
That's what we would call recomposition. So you're in a negative caloric state, but you're kind of switching some of your calories from stored fat to stored muscle. That's what most of us want. Gain more lean muscle, lose more fat. Totally possible. Then by extension, is it possible to gain muscle while in a hypocaloric state? And again, in that person, yes you can. You can do that if you have enough stored body fat because you can pull calories from there. If we go to the other end of the spectrum and you have somebody who's very experienced, many, many years of consistent training, they're very lean, those two things become challenging, if not functionally impossible. So you have to go into a hypercaloric state at that point. It's as simple as that. If

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you're somewhere in the middle, then we don't know, and you might have to tinker with things. You might be able to pull off a little bit of gain muscle while losing body fat.

Dr. Andy Galpin
You might not. It totally depends on the spectrum. Now, recomposition can happen if you're, for men, probably north of 10%, 12% body fat, for women, probably north of 15%. When you start getting below that, regardless of training state, it just gets very difficult. I won't say impossible, but especially absent exogenous hormones, it becomes quite challenging. So for most people, most women are going to be more than 15% body fat. That's pretty lean for a woman. Most men are going to be more than 10% or 12% body fat. So most of the time, these things are entirely possible. Where we like to keep people is something like 5% to 10%. This would be caloric surplus or caloric deficit. I generally am not a fan of going above that. I don't really often see a need to get 25% or 30% or 50% caloric surplus, and I rarely see the need to do that for fat loss either.

Dr. Andy Galpin
If you have a lot of body fat, you're talking maybe north of 40% body fat, something really high, then I could be talked into an argument about being at a larger deficit than 5% or 10%, because you've got plenty to spare there. But in fairness, that represents a lot of people. There's a great number of people in that category. But for the most part, for the average person, the numbers we will tend to sit to is that 5% to 10% surplus and deficit range. Now, some interesting things within that. If I asked you right now and I said, "Don't use your phone or the internet or something," and I said, "Okay, how many calories does it take to burn a pound of fat?" Most people actually know that number. It's not perfectly accurate, but in the ballpark, people are going to say something like, "It's about 3,500 calories." Meaning, if you were, say, in a 500-calorie-a-day deficit, after a week, seven times five would be 35.

Dr. Andy Galpin
After a week, you'd then be at one pound of fat burned. Okay, so just on a surface right there, that's four pounds a month. That's 50 pounds a year. That's as little as it takes. That's a 500-calorie deficit. 500 calories is a lot to some people. If you're only eating 1,500 calories a day and you got to cut that to 1,000, that's going to be extraordinarily challenging. You probably can't pull that off. But if you're at that low calories, you don't have 50 pounds to lose anyways. But if you're at 4,000 calories and you cut to 3,500, that's a couple of bites less per meal, and frankly, that's how I do it. I typically just go literally a couple of bites less per meal. That ends up being, for me, 200 to 300 calories in the day. I barely notice it, and there is a couple of pounds in a month. Two or three months later, you're down 10 pounds, and it's pretty easy like that. You can be more aggressive, but you get the point.

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Dr. Andy Galpin
Now, what people don't often recognize is the inverse, though. So I ask, how many calories does it take to build a pound of muscle? What do you think it is? We know it gives about 3,500 to lose a pound of fat. How much does it take to build a pound of muscle? We don't know this, but a colleague of mine, Dr. Eric Helms, and actually was pointed out to me by another colleague of mine, Dr. Ben House, so I'll give them their due credit for this. It looks like something in the neighborhood of around 1,800 calories. So if you start to think about that, you can run some quick math here, and I'm going to get technical here and run some numbers on you, and again, these are just averages to highlight a concept, so bear with me on the numbers. If you were to take a pound of body fat from your body and you liberated it all, you would actually get probably closer to 4,000 calories of energy, which is why fat, a pound of fat on your body, is such a wildly valuable fuel source.

Dr. Andy Galpin
About 4,000 calories. If you liberated a pound of muscle, you'd get about 800. That's about a fivefold difference. So muscle is not a storage depot for calories, but fat truly is. What this tells you is the reason you're making muscle is because it is a high investment. It takes a lot of calories to make it. It turns over a ton of protein and a ton of calories and a ton of ATP every day. It is a factory that is burning and burning and burning and burning material to just keep it around. And then if you were to scrap the whole thing, you get almost nothing out of it. So in this sense, it's a very high investment, very low return, where from an energy perspective, fat is literally the opposite. It's very easy to make, it's very efficient ATP-wise to make, and it can be liberated into an enormous number of calories. So structure equals function typically in physiology, which tells you it's not meant to be your fuel source, which also then the inverse of what we're saying here is it's easy to lose fat, but it's hard to gain muscle energetically.

Dr. Andy Galpin
So that's what we're looking at. From a nutrition perspective, it then leads to scenarios like this. If you want to gain muscle, the rough number we will give you in terms of protein intake is something like 1.6 grams per kilogram of body weight. 2.2 grams per kilogram of body weight would be the same as one gram per pound. I'll use SI units from here on out, but I'll throw in the gram per pound for those of you American folks, pretty much.

Dr. Andy Galpin
Now, 1.6 is the number we go at, but there's a lot of discussion on this particular point, and I'll frankly say misunderstanding. I did not say you have to have 1.6 grams per kilogram of body weight in protein intake to grow muscle. That is not what I just said, and I'm also not even saying that is optimal. What I'm saying is energetically, in order to gain muscle at close to the rate that we think has a lack of diminishing returns, it seems to be that number. Another way to say this, if

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you are below 1.6 and you're training hard and you're actively trying to gain muscle, eating protein below that might limit your ability to grow muscle. I won't go too far on a tangent here, but the critical difference in what I just described is a logical fallacy called is versus ought. So when we think about things like protein intake, the data is an is. The data suggests A, B, and C. What you ought to do is a different scenario.

Dr. Andy Galpin
So I think you should do more than that. I like to put people at closer to 2.2 grams, not because the data say you'll grow more muscle, because it's clear. Again, after about 1.6, most people will taper out in terms of muscle growth. But I like going higher because of the other reasons Because it helps you feel full more often. It helps people recover faster sometimes, or they think that it does. It helps you keep calories from carbohydrates and protein. So there's other reasons I like it, not because it maximizes muscle growth more. That's an ought. I ought to do it as a coaching practice, but I'm not saying the data suggests you'll grow more if you go from 1.6 to 1.8. I don't think it actually says that, and I think it's pretty clear that it does not in most cases. That said, if you are less than one and you increase that to 1.5 or 1.6, then the data is, there's an is there, will probably suggest you will grow more muscle in response to that.

Dr. Andy Galpin
So I hope that gradient makes sense. What's also important to note here is this is assuming you're in caloric surplus. I believe the evidence at this stage indicates if you're in a caloric deficit, if you're trying to grow as much muscle as possible, you need to have more protein. Honestly, probably closer to not only 2.2 grams per kilogram, but probably closer to three grams per kilogram. So when we hear people talk about this in general public and in podcasts, oftentimes either it's not their fault because a clip has been cut out from a podcast or because they're failing to or not given the opportunity to add this level of context and saying, "Whoa, whoa, whoa, who are we talking about? Are we talking about minimal effective dose? Are we talking about maximal output? Are we talking about secondary benefits of high protein? Are we talking about exclusively muscle protein synthesis? Are we talking about minimal amount needed for basic health?

Dr. Andy Galpin
Are we talking about enough to grow as much muscle as I can? Are we talking about somebody who's very lean? Are we talking about somebody who's in a caloric deficit?" So you see, as we unfold the picture, the answer legitimately does change.

Dr. Andy Galpin
If I lost you with all that, and I don't think I did, you all are very smart. Hopefully, you're able to hang on to that. That's why I will typically default in a short answer to saying something like, "Ah, yeah, give me something like a gram per pound, 2.2 grams per kilogram." Because to me, it

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covers most of the bases. If you're lean, covers the bases. If you're trying to just keep calories low and you want to be generally healthy, covers your bases with no limited problems. If you're in a deficit and still trying to grow muscle, you're good. So it just checks a lot of boxes as a very quick answer. If we have time to do a full discussion, we can pull back and go, "Okay, yeah, there's plenty of times where we'll go lower." And if somebody doesn't like that much protein or doesn't fit their culture or doesn't fit their digestive system, okay, yeah, there's plenty of reasons to go lower. But to me, answering that question is a combination of is and ought, and most of the time on podcasts and in interviews, you're not being asked is.

Dr. Andy Galpin
So people rarely ask you something like, "What do the data say about ABC?" What they typically say is, "What do you like to do? What do you recommend?" And that's an ought. That's what I think you should do. I hope I didn't lose you too much on the is and ought thing. Again, but important distinction in my opinion. So last thing I want to say about that is I kind of hammered on protein quite a bit there for body recomposition. I do want to make sure we're clear, though. Protein is not the biggest signal for muscle growth, whether you're in a deficit or a surplus. Strength training is.

Dr. Andy Galpin
Dr. Stu Phillips has made this point countless times, and he's done a tremendous job educating the world on this, but your strength training is by far and away the biggest stimulus for growth. The second is probably total caloric load. So as long as you're doing that and you're hitting a minimum, in fact, the minimum would probably be something closer to maybe even 1.2 grams per kilogram of body weight of protein, you're fine. It's when things get lower than that, calories start to come down. You start to become leaner. That's when protein has to get higher, and it becomes a limiting factor. And you hear things like you can only absorb or utilize, say, a maximum of 30 grams of protein per meal. It's not true at all. In fact, recent papers have shown up to 100 grams at a time. And what you're looking at is the difference between something like acute muscle protein synthesis, so what's the most amount I can take in right now, and it'll activate this process of muscle growth that we call protein synthesis versus what can be used across the entire system, and that number is clearly very, very high.

Dr. Andy Galpin
Such to say you're not going to max out. You're not going to waste those amino acids because it is a very difficult process to build muscle, and it's not going to waste those resources. It can get energy lots of ways, from carbs, from fat, from your own stored sources of them, but amino acids are difficult to come by, and so your body doesn't just waste those very often, especially if they come in the process of whole food. You'll keep them, you will use them, you'll digest them, you'll absorb them, and you'll keep them around. So protein's important. Training's most important.

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Calories are probably second most important. And then you can play the game of, depending on what scenario you're in, you may be at different levels of protein. Today's episode is sponsored by David. David makes protein bars unlike any I have ever encountered. They have an amazing 28 grams of protein, only 150 calories, and zero grams of sugar.

Dr. Andy Galpin
That's right, 28 grams of protein and 75% of its calories come from that protein. This is 50% higher than the next closest protein bar. Honestly, it's the best-tasting bar I've ever had in my life by a mile. And their newest bar, the David Bronze bar, tastes incredible as well. While I often talk about the importance of getting one gram of protein per pound of body weight for things like muscle health and recovery and the promotion of lean body mass and satiety, the reality of that is, for most people, getting that one gram of protein per pound of body weight is really challenging. However, David makes that easy. Their bars taste incredible. The Gold Bar is packed with 28 grams of protein with just 150 calories, and the Bronze Bar has 20 grams of protein, also with just 150 calories. I eat one almost every single day and always have two or three with me in my backpack when I'm traveling, and I literally mean always.

Dr. Andy Galpin
It probably sounds funny, but I eat them as dessert all the time. When you try them, you'll know exactly what I mean. If you're interested in trying these bars for yourself, you can go to davidprotein.com/perform. Again, that's davidprotein.com/perform. I would like to end on something entirely different, and that is one of the most common questions I've gotten in my career and will probably continue to get, and that is what separates the world's best performers from the rest of us? And I'll answer that question right now. The way I like to frame this question, because I've worked with such a variety of people, is it's not exclusive to athletes. It's not exclusive to people who make a ton of money. To me, that doesn't necessarily mean they're high performers or more successful. All I really care about to answer this question in how I define a high performer is someone who's better at getting the things they want and avoiding the things that they don't want.

Dr. Andy Galpin
So this could come in all kinds of different scenarios. Someone who wanted to be a professional writer and they are. Great, that's a high performer. Somebody who wanted a particular lifestyle or some sort of physiological attribute. All I care about is that first thing. What is consistent among the people who are really good at getting what they want and good at staying away from the things that they don't want? The way I can summarize this up in one central word is energy. The people who are the highest performers are the best at energy management, and energy has a lot of different forms. This could mean something like what we've been talking about today as in calories. People are really good at managing calories. They avoid being overfat and

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overweight. They avoid metabolic disease. They have control of nutrition. They're able to eat in a way that still they can enjoy life, but they also have some discipline associated with it.

Dr. Andy Galpin
I could go on and on, but we've spent a good hour or so probably talking about nutrition. Energy also has to do with things like they're better at recovering. I don't mean that necessarily as a physical attribute, but they have a better sense of what works for them, and so their energy balance is higher. They know that when they play video games for an hour, that brings them a lot of recovery. Or they realize social interactions give them energy, or social interactions take their energy. They are just really good at identifying the things that give them energy and the things that take energy from them. And so this looks so different to so many people because this may mean that they're on stage performing, or this may mean that they need personal time. It could be that they need to go read. It could be that they need to go solve a problem. This looks every way you could ever imagine, but the core theme is they're just better at figuring that equation out for themself.

Dr. Andy Galpin
They know when they do A, B, and C, they can be more consistent, they can try harder, they can give better effort, and when they do X, Y, and Z, it does the opposite for them. Energy can be emotional. They know what makes them happy. They know what doesn't. And this sounds ridiculous, but I'm telling you, a great number of people have never really formalized that process. They don't really understand what makes them happy. They don't really understand what they dread. And just taking a little bit of an inventory of what part of your life do you really like and what part do you say you like maybe because you're supposed to say that, or you think you're supposed to say that, and really figuring out what brings them joy. That's energy to me. In terms of athletic performance, it is understanding where to be in the play, where to slow down, when to take breaks, when to accelerate, when to press the gas, when to go after somebody.

Dr. Andy Galpin
That's all energy management. And you'll see veterans in sports be as successful later in their careers as they were early in their careers, despite the fact that they might travel 30% less in a game. Physically, if you track them on GPS, which we always do, oftentimes veterans travel far less in sports, but they score more and play better defense because they're using strategy and technique and understanding and cognitive capacity. The same thing can be done for any combat sport. It's energy management. It's understanding where to press on gas and when to pull back and when to save fuel. I don't need to extend it past that, though I certainly could. My piece of advice on that then would be run that inventory on yourself. Run your calories. Run your emotional energy. What's your recharge? What is not recharging you that's supposed to recharge you? What is taking things away, right? Alcohol is a good example of this.

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Dr. Andy Galpin
Sometimes a little bit of alcohol is relieving and provides social lubricant, enjoyment, all that stuff, and then obviously much past that, it can be horrifically bad for your health. So these are impossible questions for me to answer directly, but the ones who are consistently performing the best are the ones that have the closer understanding of their own self and their own energy management. It allows you to dump all your resources, or a lot of them, into one particular stressor, which leads to more specific outcomes. You can be more focused at work because you're not wasting energy on little tasks that aren't important to you or shouldn't be as important. You can be more present at home as a parent or sibling or spouse because you're not wasting energy on things that aren't actually that important to you or shouldn't be. And you get it. I could go on and on. But that is the reality. The people that, in my experience, are the highest performers, the most successful financially, physically, and otherwise are the ones who are just better at understanding and managing energy based on their unique physiology, lifestyle, and goals, so they get more of what they want and less of what they don't want.

Dr. Andy Galpin
So if you've never done an exercise like that, I would encourage you to try it, and I think that's a great way for us to end this second edition of our Q&A. And if you enjoyed this format and want to see more, please let us know. The only way for me to understand this is comments and for you to reach out. So if you've got some thoughts on this, we would love to hear them. Thank you for joining for today's episode. My goal, as always, is to share exciting scientific insights that help you perform at your best. If the show resonates with you and you want to help ensure this information remains free and accessible to anyone in the world, there are a few ways that you can support. First, you can subscribe to the show on YouTube, Spotify, and Apple. And on Apple and Spotify, you can leave us up to a five-star review. Subscribing and leaving a review really does help us a lot. Also, please check out our sponsors.

Dr. Andy Galpin
The show would not exist without them and their exceptional products and services. Finally, you can share today's episode with a friend who you think would enjoy it. If you have any content questions or suggestions, please put those in the comments section on YouTube. I really do try my best to read them all and to see what you have to say. I use my Instagram and X profiles also exclusively for scientific communication, so those are great places to follow along for more learning. My handle is @drandygalpin on both platforms. We also have an email newsletter that distills all of our episodes in the most actionable takeaways. We have newsletters on how to improve fitness and VO2 max, how to build muscle and strength, and much more. To subscribe to the newsletter, just go to performpodcast.com and click Newsletter. It's completely free, and we do not share your email with anybody. Thank you for listening, and never forget, in the famous words of Bill Bowerman, "If you have a body, you are an athlete."

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