Dr. Andy Galpin Shares the Full Nutrition & Supplement Protocol He Gives Pro Athletes

Speakers: Rhonda (Interviewer), Andy (Guest)
Total Transcript Duration: 228:26 (3 hours, 48 minutes, 26 seconds)
Chunk: 1 of 5 (00:00–45:00)
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Rhonda: I'd love to get your take on training while fasted.

Andy: You should be able to not eat any calories for 24 hours and still exercise. You don't have to have protein powder ever. The term metabolic flexibility has been hijacked. It's great because it is not a stimulant, so you can take it in the evenings and it doesn't compromise sleep at all. CO2 levels rise above 900 parts per million, significantly and dramatically affecting everything from sleep onset, sleep quality, next day perceived fatigue, next day arithmetic ability.

[05:00]
Rhonda: How mad do you want the internet to get at these following statements? Hey everyone, I'm super excited to be sitting across the table from Dr. Andy Galpin, who is the director of the human performance center at Parker University. Andy and I have been corresponding for at least the last 10 years. I'm pretty pumped to have this conversation. He is an expert in muscle physiology but also has published a wide range of exercise physiology related topics from muscle health to nutrition to recovery. He also coaches athletes, Olympians, MMA fighters, just all around got a lot of experience and the science behind it. So I'm really excited to have this conversation with you today, Andy. I mean, you and I have talked about a lot of things via X and Twitter at the time, I think email as well. So, thank you so much for coming on the show. It's just, I can't even explain how much of an honor and a pleasure this is.

Andy: I've been telling you for a long time now how stoked I am about this and my wife is tired of hearing of it, so I'm finally excited to get here and do it.

Rhonda: Well, today it's kind of interesting because you've got this vast publication history in muscle biology and exercise physiology, but I'm kind of taking you in a direction where you've also published and you have a lot of knowledge regarding nutrition, supplements, recovery. I'm super interested in the role of those in helping people sort of meet their fitness goals. When it

comes to nutrition, this is obviously a field that's constantly, there's no agreement ever whether we're talking about performance or longevity. But there's a growing number of athletes and people that are like myself, which are, I would say, committed exercisers that I'm very interested in health, not as much in performance, although I'm becoming a lot more interested in performance these days, but I'm interested in longevity for sure. I mean, that's my primary interest. So, there's people kind of trying to figure out what kind of diet they could eat to sort of meet their performance and longevity goals, if that's even possible. Is that something that you've thought about?

[10:00]
Andy: I get the question of performance versus longevity or health with nutrition a lot. I think, as you've done so well over your career, there are tenets that are going to agree and then there's going to be dissension. So, I think it's easiest maybe to frame this as what are the flags we can put on both sides of this equation, known obvious yeses and obvious nos, right? If you want to live your longest, healthiest life, number one, we're all going to agree on probably five, seven, maybe eight different things. If I threw their diets in front of you, I'd be stunned if you could tell me which one was for which person. I don't think you'd have any chance, right? You'd say, what's that going to look like? We're going to center around protein, right? You've talked about that endlessly. It's going to be high and high quality. We're going to have a lot of variety of foods, a lot of variety of colors. Turns out micronutrients, vitamins, and minerals are pretty important, right? Like your entire career. We're going to have some attention paid to fiber. Caloric intake will be managed. We're going to distribute carbohydrates and fat in some way that helps them hit their needs and goals and personal preferences. We could go down the list, but the easiest way to think about it is how much overlap is there? Almost all. What are the small differences between these performance and longevity goals? Well, it depends on what type of performance. So, we're talking about a lot of caloric expenditure, a power event? Yeah, we're going to find some differences, and we can chop that up all day if you want to know exact numbers and hours. But the reality of it is both of those people, performance, longevity, you have to manage calories one way or the other. You have to do all the other things. It's not that different. You can make some arguments that maybe you can get away with certain things if you're not interested in performance. You can do some different things with food timing, food frequency, you can play with some different stuff where you wouldn't want to do that with a high-performance athlete. So, there's a lot of fun differences with those things. But at the highest level for the average person, if you're eating like a high-performance athlete for the most part, you're also eating for longevity. Only big fundamental difference there might be caloric balance. That's the top layer, but other than that, it's pretty similar.

Rhonda: I was kind of thinking that was going to be your answer. I'm very interested in intermittent fasting, time-restricted eating, training while fasted, depending on the type of training, because it's something that I do for certain types of training. So, you like to train fasted?

Andy: Well, if you are going for an event like you're talking about and you feel better when you do it, that matters to me in that particular context more than the physiological benefit because

the physiological benefit is not fake, it's just not huge. So, is it more beneficial for your mitochondria? Yes, potentially. But if you look at the amount, it's not that much. Now, if you liked it or didn't care, fine. But if you hate it, your performance is worse, you don't feel good, then we actually don't do it. My first layer answer to all that is, number one, what are you actually performing best in? What are your personal preferences? Are you training in the morning, in the evening? All these other factors that are now again contextualized are my true answer. I hate to be wishy-washy on that, but that's the most honest answer because I deal with a lot of people with different goals and different scenarios. So, the science can lead us in one direction, but the actual layering on top of what would I really recommend a human do in this scenario matters more.

[15:00]
Rhonda: I like to train fasted if I'm going for a 30-minute run, Zone 2 kind of run. The reason I do that is because years ago, I read a meta-analysis, and maybe I would love to hear your updates on the literature because I know you've been keeping up with it. There was a meta-analysis looking at people that were training fasted, and if they were doing endurance type of aerobic exercise training, and they were training, it was less than 60 minutes, right? And this is a Zone 2 kind of below the lactate threshold type of training, then they had better adaptations in mitochondrial enzymes, obviously fatty acids being oxidized. Whereas if they trained when they were fed, again it was less than an hour, some of those adaptations were blunted somewhat. For me, it was, oh well, I want those adaptations, so I do train a bit fasted. I don't do hour-long runs anymore. That was a thing of my past for me. I do my strength training, I do not like to do fasted at all. I have to have something like a banana, I have to have some glucose or something. So, I'd love to get your take on training while fasted.

Andy: There are a lot of things to think about here. I sent you right before we started here our preprint of one of our fasting studies we just got published. We can go into that if you want. But in general, the biggest way to think about this is, is the magnitude of benefit with the intervention exceeding the magnitude of preference? When I coach people this morning, I'm dealing with putting together a program for the number one quarterback in college football. Right after that, I have to deal with one of our executives who's a 60-year-old female. Right after that, I'm also dealing with a guy preparing for a 900-mile hike. That context is important because as I'm answering questions, all of these avatars are in my head, and I'm thinking what is true for person one, two, and three, and what is true for the other person who doesn't exercise at all. If something's not consistent across those four, then I have to modify and contextualize the answer. So, when it comes to training fasted, great. If you look at the research very specifically on fasting exercise, it always depends on the type of exercise. You were really careful about saying, I'm under 60 minutes, right? I know you're aware that that answer will change. What am I optimizing for? Am I optimizing for performance, for feeling better that day, more focused that day, for happiness, the personal? There are so many different reasons why one would exercise that you have to answer all those questions and figure out, well, what lever am I trying to pull here? What am I trying to get out of it? Do we ever take somebody and say, hey, you need to start doing your endurance work in the morning fasted? I can't think of very many times when

we've ever done that. But if somebody shows up with that, we don't have any strong reason we're not going to pull them off of it either.

[20:00]
Rhonda: What if someone says, I'm interested in fat adaptation, I'm interested in mitochondrial health, and I'm not an endurance athlete, I'm just, these are my recovery days, I do strength training on other days, these are my recovery days, so to speak, right? In a way, then would you still, what are your thoughts on that? You mentioned mitochondrial adaptations aren't, it's a subtle difference, but what about lipolysis?

Andy: The way that we would frame this is we need more information on them to determine whether or not that's going to actually matter for them. If they're saying, okay, I want to enhance fat burning, I want to enhance oxidative capacity, great. Well, we actually need to look at their capacity for metabolic flexibility. We need to test that. I need to see that number, right? If you're just saying you want more, I'm going to say more from where? Where are you currently at? I don't know. Well, then we don't know if we have anything to actually gain here. We could do that intervention, and I don't know if it would do anything for you. If you're already pegged on that, if your mitochondria are already functioning very high, if your ability to utilize fuel independent of food is strong, then we're not going to get anything from that. If you're really weak in that area, then we would get something from it. Our first answer is data, right? We have to run some objective test. If you don't want to do that or can't do that, you want to give that a try, sure. Fine, it's probably not going to hurt much in the short term. So, go ahead and do that. My answer to somebody who asked that question, I want to optimize mitochondria, okay, great. Starting off with fasted cardio is not the place we would go, but we might use it eventually. If you can do a bunch of stuff, and we could do this objectively. Okay, when you go out and train, how do you feel if you don't eat before? Oh, I feel terrible. Okay, well, that's an easy litmus test to say maybe we have some stuff we can do there. There are way more we could get into in detail. I wouldn't only ask that question, but that's how we would actually think about that answer. So, it could be everything from yes to, I'm not super worried about it. If they're really stoked to do it, I'm probably going to say yes just for that fact alone, yeah, let's give it a go. But I don't necessarily think you would have to do that to have healthy mitochondria, if that's another way to answer the question.

[25:00]
Rhonda: What about people that are doing strength training, resistance training first thing in the morning, and they don't have a lot of time? They're getting their kids ready for school, and they want to fuel with something, what's the best option?

Andy: Personal preference in terms of feeding or not feeding. The literature would be fairly clear here. I would say our personal experience would match that. Some people are fine, some people are not. If you want practical recommendations, a banana and a protein shake, super easy. A little bit of yogurt maybe in granola. We have a lot of our athletes that will train in the morning. That's a common thing. Some granola, yogurt, maybe honey, maybe some berries.

Small, 6 to 8 ounces, right? Small servings. You're talking probably 300 calories, maybe 50 grams of carbohydrate in these rough neighborhoods of things. Some protein, 10 to 30 grams depending on their physical size. Remember, some of our athletes are 115 pounds, some of them are 350 pounds. So, the numbers vary, a small size is different for those people. So, personal preference, but yeah, the recommendations would be things like that. We don't have too many athletes or clients that will intentionally ask them to not eat before they train, as we talked about. But the easy, quick, just get out the door stuff, that's what we're going to lean on. Very simple, easy digesting, small amounts of food, probably not as much as your full breakfast. Those things will tend to work pretty well.

Rhonda: I think athletes are less interested in that. People that are more interested in body recomposition, wanting to lose fat, gain muscle, are more interested in, okay, well, perhaps they're that kind of person that their liver glycogen takes more hours before it depletes. And then, well, if I eat before my run, then I didn't fully deplete the liver glycogen, and so they're not going to be perhaps undergoing lipolysis and oxidizing fatty acids for energy. So, what about people that are interested in that, that are fit, they're not really athletes, but they're exercisers, and they're interested in fat loss, body recomposition?

Andy: The acute time frame pre-, mid-, post-exercise for those people probably doesn't matter that much. It really isn't going to have a huge impact. What will matter is the days and weeks, the total caloric expenditure throughout the day. This person, if you're training in the morning, you probably have at least 24 hours to recover, right? Even if you're training hard every single day, most of the time when we get specific about nutrient timing, it's because a lot of our clientele are training twice or more a day. That's when timing really is critical, whether you're talking about timing of fat, protein, and carbohydrates. So, when we hear people say, oh, timing doesn't matter, for the average person, it's not a huge deal. But for some of our people, it significantly matters. But what you described is not. It's that other person who's exercising, let's say, seven days a week. Probably most people are doing five. So, even in between that, you've got a lot of recovery time. So, what you have before the workout doesn't matter a huge amount, whether you have it immediately post doesn't matter a huge amount. The total throughout the day, the only caveat is what you asked before, it's personal preference. I don't feel as well, okay, great, my stomach. Awesome, then that's the context. It's not the physiology or biology that's mattering there, it's personal preference or objective data that says we're getting less performance out of this. Is your recovery slowing down? Whatever the case is. Overall, I would say do what feels best for you there, and there's not a significant thing you should be worried about of productivity you're leaving on the table, progress you're leaving on the table, or compromised results from no matter what choice you make there, whether it is fats, protein, or carbohydrates.

[30:00]
Rhonda: What about people that are doing time-restricted eating? The worry of time-restricted eating would be losing muscle, perhaps if you're not getting in your protein intake or resistance

training, what are your thoughts there? You have a new publication now, you've published in this area. How do you feel about people that are doing, let's say, a 16:8 time-restricted eating?

Andy: We actually ran this study, we started in 2019, and we just published it this week. If that tells you how that goes. COVID killed us. We had a big cohort study going, our last two groups, I was days away from doing the final biopsies, and we got pulled out of the lab, and I was begging our people, just let me one day go in and biopsy 10 people. No, they wouldn't. Nonetheless, we ran this study, and one of the things we're interested in is with time-restricted eating 16:8, all the research on that area for the most part is caloric restriction. So, how does this thing work for fat loss? That's fine. Grant Tinsley, he's done a ton of work at Texas Tech, and lots of other groups have done it. You've talked a lot about TR 16:8. Okay, great. What I was more interested in is what's the opposite? What about the person who's trying to gain muscle? If I do 16:8, what's actually happening here? Because of the way that I operate, I don't care about just a molecular mechanism. I don't care just about body composition. I wanted to ask questions about sleep, about personal preference, about digestion, about how hard the diet was, how likely are you to do it, physical performance, because when you go into the real world, that's how you make decisions, right? I want to be able to tell people, hey, this 16:8, maybe it is better for body composition, but it's harder to follow, or it makes your sleep worse, or it's better for everything. Whatever combination the answer is going to be, I don't really care. But that's the full context people have when they make dietary decisions. That's what we did. We took people that were very well trained, and we did eight weeks of strength training with them in the lab, supervised all that already. Again, previously well-trained men and women, college age as normal. We did biopsies, we did muscle imaging, we did questionnaires, we did sleep stuff, we did blood, we did a bunch of different things. Ultimately, what we wanted to see was, okay, we're going to put them all at the same protein load, and we're going to put them in caloric excess. So, hypercaloric, not hypocaloric. We know the answer, what happens with TR if you're trying to lose weight. What happens in somebody actively trying to gain muscle? That's the very unique twist of it, and it was super interesting. The take-home message was it didn't matter a ton. As long as you hit your numbers, the results were basically the same across both groups, right? So, standard four, five, six feedings a day versus TR. Now, we actually doubled down on the question because we actually made the people train in the TR group in the morning, and then they had to wait at least an hour before they fueled afterwards. So, they trained fasted, they didn't recover with protein or anything immediately afterwards, and they stayed in that state until the afternoon. So, even despite that, it didn't significantly compromise muscle growth or performance or really anything else. We saw some subtle differences. The TR group actually looked like it didn't gain as much body fat because you're going to do that when you go hypercaloric, right? You're going to, especially if you're well trained, you want to add muscle, you're going to bring some fat along for the ride. I don't know if it was enough of a difference, and I spent a lot of time in that data set. I don't know if that's a real finding, to be honest, or if that was just a little bit of an artifact. The counter to it was, as time went on, fatigue got higher in the TR group. Legs got heavier, performance in the legs started to decline again. So much so, would I suggest TR is going to be bad? No. But it was, okay, I think there's something happening here. I think potentially if we were to change the study design a little bit and give

them fuel closer, that would have made it, not exactly sure, we would have to run a separate study design for that. If you torture the data a bit, you might find some subtle differences between the two groups, and they were statistically significant and effect size and all those things there. But looking at it from a real practitioner perspective, my general take-home was it didn't matter a ton. If you're trying to maximize leg strength and maximize leg growth, I probably wouldn't go to 16:8 TR. But if you have other reasons to do it, you're still going to get gains. They still got stronger, they didn't get as strong. There are some other issues that happen, but either one of them works.

[35:00]
Rhonda: But do you think again, if they were allowed, I mean, most people after they're done strength training, they eat within an hour, I immediately get protein in me because my body wants it. So, do you think that maybe would negate some of the performance deficits that you found?

Andy: I think it would, honestly, it was more of a carbohydrate issue. I think that was the bigger issue because they were going so long without carbohydrates, and they were training so hard. They were doing the same workout multiple times per week. I just think over time, we were also progressing them. So, they were being tested every time they came in the lab, and the training got harder, right? Traditional progressive overload. I wish we had actually biopsy data for their muscle glycogen levels, but if I had to suspect, I think that was starting to leak down. I just think the legs were getting, we would say, just getting heavier over time. It just wasn't handling the volume because that's actually what happened too. The volume that the TR group did started to come down at the end. They just couldn't do as much volume as the other group could do. At the end of the eight weeks. So, because we tested them pre-, mid-, and post. When were they working out? Morning or evening? Morning. So, they're all working out fasted. Fasted. They're doing strength training fasted. So, the bottom line is from your study, which is going to be published soon. Depending on when this comes out, it may already be there. Any day, I'm stunned. It actually has, congratulations. This is great. This is a great study. I can't wait to read it. You can gain muscle on a 16:8 time-restricted eating schedule. It sounds like if you're doing the training fasted, I mean, there are ways to do 16:8, you can stop eating earlier and not have to be fasted in the morning, right?

Andy: Well, so, that's super interesting because when I looked at this, I was, man, I think that's just the better approach. Maybe if they would have done their fasting in the evening, afternoon, there are a bunch of other arguments we could make that that's better. That would be a really cool follow-up. I'd be willing to bet they wouldn't have had such indirect markers of fatigue over time. They just didn't have fuel for a really long time. I could also tell you these things behind, and this is the veil of people that when you run actual studies, you can make comments about things that aren't in the paper. The people had a really hard time with the carbohydrates. That was the complaint. So, when you had a bunch, remember, because you're getting some of these people are at six, 700 grams of carbohydrate a day, and you got to get that in an 8-hour window. It was, GI was just destroyed. It was a lot of people were, man, stomach is just blowing

up from 600 grams of carbohydrates because you imagine eating 200 grams of carbohydrates. Couple hours later, you got another 200, another 200. It was just a lot.

[40:00]
Rhonda: Was it so high because you were doing this hypercaloric because most people aren't doing that many carbohydrates unless they're endurance athletes?

Andy: We had big people, right? So, if you're around 110 kilos and you got to be at a hypo and you're at six grams per kilogram of body weight, those numbers get high fast. So, in order to get there, that stuff got there. Even the protein got a little tough as well. So, we didn't see, I wish we would have had more subjective questions in those areas, but that I would say, it was just hard for those people to hit their numbers. Most of them got there, but they're just, woo, I just wish I had another hour. Give me another two hours. Could I get 50 of this grams of this protein a little bit earlier? That'd make my life so much easier. So, I just think from a practical perspective, it was harder for them to follow. It was harder for them to hit their numbers waiting the whole day than to start and hit it in a caloric surplus. So, if you're not in a caloric surplus, different equation here. If you're in a caloric deficit, different equation here. But for people that are pre-trained, pretty well trained, and they're actively trying to get bigger and stronger, it wouldn't be the first approach I would take. But it's still plausible. Clearly, it worked. They still got benefits from it. But switching the order, I think, would be cool.

Rhonda: Would you say that if they were, let's say, in a slight caloric deficit, still getting their protein, meeting their protein needs, would they be still gaining muscle, you think?

Andy: I don't think they would have gained as much, they would have gained some, right? If you look at Grant's work and a lot of that hypocaloric state stuff, they gain muscle, it can happen, but can they gain at the same rate as when you add more calories? I don't think so, and I don't think so because in our particular program, the training program was really aggressive, they were training hard for really well-trained people. I don't think the recovery would be there. I just don't think it would be there. When did they stop eating, and how was their sleep affected?

Andy: So, we let them choose their window. So, some of them came in and trained at 7:00 in the morning because they want to start their eating window at 10:00, right? But they're college kids, so most of them trained at 10, 11, 12:00 in the morning. Then they would start their eating windows between 1 and 2 o'clock in the afternoon, depending on if they work or whatever there. So, we let them shift a little bit. The time domains had to be the same, but we didn't make them start at noon, depending on their life schedule. Sleep didn't really change that much. I wish we would have had some of our newer sleep technology. We could have really objectively looked at it at the time. We just had basic questionnaires, right? So, we'll see there. What we did notice is the perceived fatigue and naps increased over time in the TR group. So, again, a little inclination there of saying, I think fatigue was setting in more, didn't some of that didn't land statistically significant, but you start to see sort of multiple things in the same pattern. You go, all right, if we ran a follow-up study there, that might be interesting to focus on.

[45:00]
Rhonda: Why is it important for people to have carbohydrates before they're doing strength training?

Andy: You don't have to. If you can get away with it, you're fine. It's not the thing we're super concerned about depending on where you're at. If you can get through it, if your total caloric intake throughout the day is fine, if your carbohydrate intake throughout the day is fine, and depending on how often you're strength training, if you're the kind of typical person who's training the same body part on non-consecutive days, then carbohydrate pre-exercise is not a big deal. It's totally fine. You can get away with your strength training. It'd be a personal preference. Again, if you're training the same muscle group in multiple days or multiple times per day, that's when the carbohydrate timing will matter most. So, you can have it before. Generally, people feel better with it. Performance is usually better, but it's not always. Or if you're someone that is on a hypocaloric diet, if you're trying to lose fat or perhaps maintain your weight, you're kind of really watching your calories, then perhaps you're not having a huge total caloric intake per day that you might want to have carbohydrates in that. We will generally, as just a high-level rule, try to get more of our calories around training just period, regardless of what we're doing, regardless of what type of training, regardless of the person, as a first-level thing, that's our preference. We want to either do it pre-, mid-, post-. In your example there, if we're trying to bring calories down, we're going to go somewhere else if we can. Doesn't always work that way, people don't always like it, but that is our default position, yeah, we're going to do more calories in and around the training to support it. I want better performance, you perform better, you get better adaptations. That's generally how we look at it.

Rhonda: What about people that are more endurance type of athletes? They're out running 10, 15, or more miles, or biking, cycling. What about those individuals?

Andy: Different equation now, right? So, whether you talk about strength training or even endurance training, but as you said earlier, you're talking sub-60 minutes at kind of a moderate to low intensity, carbohydrate before training for most people is not going to matter that much. Now you're talking about something different. Really high-intensity exercise for a prolonged amount, or moderate exercise for a longer amount, right? So, we'll define longer by plus-60 minutes. Now you will very often see performance improvements with carbohydrates. That said, we have some of our people, some of our friends, a good friend of mine that I will never stop giving him the business on this one, Cam Haynes. Cam's great. The worst performance nutrition you could just possibly dream of, right? He will intentionally not eat and drink water and then go run 18 miles, right? And you're just, what? What are we doing here? I've made the argument, I will PR him at every race he's ever done if he would just let me tell him, he would just follow what I tell him to do, but he refuses. So, you can do these things. This is not a matter of it's impossible physiologically, but are you going to get your best out of it? Probably not. Carbohydrates before exercise, probably three or four hours before exercise, if possible. If you're trying to maximize performance, generally looking at something in the neighborhood of

50 to 100 grams of carbohydrates, that's a huge plus or minus range there. Three or four hours before, we were generally looking at starches, slower digesting, give it time, not a big spike. Some people we will tinker with 30 minutes before, something in the neighborhood of 50, 60 grams of carbohydrates, maybe a little bit more. Some people, though, kind of deal with a glucose double whammy if you do that. So, you got to be careful. What I mean is if you take a bunch of fast-responding glucose, right? Things that get into your bloodstream really quickly right before you start exercising, insulin starts pulling glucose down, muscle starts pulling it as well. So, blood glucose actually dips. This is, I had a banana and honey right before I started my race, and then I got two miles in, and I felt like death. Okay, you had two mechanisms at the same time that are independent that are bringing it down, and blood glucose actually dips quite a bit until the liver has a chance to kick in and bring it back to normalize. So, you'll feel that response pretty often. So, you got to be really careful with easy-digesting carbohydrates right before the event and depending on how long it's going to last. But those are rough numbers to start with. In the exercise itself, the numbers you're going to see here, somewhere in the neighborhood of 60 grams up to 100 grams of carbohydrate per hour, which is, if you want to maximize performance, you'll see the data will show you 80 plus, 80 to 100 grams carbohydrates. We're talking, you don't want that easy stuff, right? No. Now you want the fast as possible. You're in a race. You're moving, right? This is when the goos and the packs and things kick in. So, you're trying to smash it in there as much as you can. I actually just had a guy named Jordi Sullivan, a dietitian in Australia. He was just on my podcast, and he actually coached a guy named Ned Brockman, and Ned did a thousand-mile race on a track. So, he ran on a track for a thousand miles. I think it took him 11 or 12 days, something like that, to finish.

[50:00]
Rhonda: Did he, I mean, how was, where was the sleeping, what was the sleeping situation?

Andy: Sleep on the track right there. Yeah. He would just lay down and crash for a little bit, and then he'd get up and just run again, and he just kept going. Jordi went through the exact details, exactly what he fed him, the amounts, the type, the concentration. When you get into things like that, when Michael's getting ready for this 900-mile hike thing, 60 to 80 to 100 grams of carbohydrate per hour is awesome in the lab. I put you on a bike, and you're in my research facility, those are the numbers that work. But when you cross over into humans, you start getting really tired of goo. You don't want to taste sugary drinks anymore. So, when you get past a couple of hours of exercise, then you actually start really paying attention to texture and flavor profile and mouth feel because that stuff starts to matter, and you can't hit those numbers. They're just not realistic. So, if you're going to try to do something like this, pick your poison in terms of the carbohydrate source. This is the, fast sugars. But if you're going to go for more than a couple of hours, you got to really think carefully about, are you sure you're going to like that taste of that for six hours? Because you probably won't.

Rhonda: It's just incredible. I can't believe people do things like that. What about carbohydrate replenishment after a long endurance type of workout?

Andy: Depends on what you had starting with. So, did you feed before, or did you not? That is automatically our context. If you fed before, then we don't have to worry about as much directly after. If you're fasted, we've got to worry about more. The other context we have to pay attention to again, what's our total caloric intake, what's our carbohydrate intake throughout the day, and when are we going to train again? Some of our folks, again, training multiple times per day, we are going to go absolutely out of our way to get 100 grams of carbohydrate post-exercise if it's a hard training session, it's a rough number like that, again, that number scales up and down with physical size and caloric expenditure, things like that. If you're going to get on a plane and drive, and you're going to do something else for the next two, carbohydrate post-exercise, the amount doesn't matter. It's not a big deal. You're up against a race of replenishment time. If that matters, you want to again look for 100-ish grams of carbohydrate pretty close to finishing. Unlike protein, as you've covered many times, timing, anabolic window, not a big deal at all. But carbohydrates are different. You got to repeat that performance again soon.

Rhonda: You mentioned something about protein, and you said that you've talked about protein endlessly, and I have. I think it's super important for so many reasons, especially for exercisers. What do you think is, I mean, there's so many different types of protein out there. There's whey, there's casein, there's plant-based, there's all sorts of different stuff. What do you think is sort of like the best bang for your buck when it comes to protein for muscle protein synthesis, for recovery?

Andy: If you just want to go practical, whey protein is probably going to be your best bet for a couple of reasons. Number one, it's got a really high leucine content, which is kind of the key trigger for muscle protein synthesis. It's also very easy to digest for most people. It's relatively inexpensive. It's widely available. You can mix it with a bunch of different things. It's got a good amino acid profile overall. So, if you're just going to go, hey, what's the one I should probably grab? That's probably going to be the one. Now, if you're vegan or you have some sort of lactose issue or whatever, then you're going to have to go to a plant-based one. Those are fine. They work. You just got to be a little bit more careful about the total amount because the leucine content is lower, the digestibility is a little bit lower. So, you might have to bump up the dose a little bit to get the same effect. But honestly, as long as you're hitting your total protein needs throughout the day, the source is not going to be a massive deal. Whey is just kind of the gold standard because of those reasons I mentioned. Casein is great, too. It's a little bit slower digesting, which some people like, especially if you're doing it at night or something like that. But again, the differences between these things are not massive. If you're eating whole foods, you're getting a lot of protein from meat or fish or eggs or whatever, that's awesome. You don't need to worry about it. The supplement side of it is just for convenience, right? So, if you're in a pinch, you need something quick, whey is probably going to be your best bet.

[55:00]
Rhonda: Yeah, I think the convenience factor is huge, especially for people that are busy, like you mentioned, the moms getting kids ready for school. Sometimes you just need something quick. I also think the leucine content, like you mentioned, is really important. I've seen studies

where they've compared whey to other proteins, and the leucine seems to be the key driver. Do you have a sense of, like, how much leucine you need to really trigger that muscle protein synthesis? Is it like a certain amount per meal, or is it more about the total daily intake?

Andy: It's a great question. The data's pretty clear on this. You want to be in the neighborhood of about 2 to 3 grams of leucine per meal to really maximize muscle protein synthesis. That's kind of the sweet spot. Now, that translates to, depending on the protein source, about 20 to 40 grams of protein per meal. So, if you're eating a high-quality protein like whey, you're probably hitting that with 25 grams of protein, because it's about 10% leucine. If you're doing a plant-based protein, you might need closer to 30 or 35 grams to get that same 2 to 3 grams of leucine. The total daily intake matters, too, but it's more about distributing it across meals. So, if you're hitting that 2 to 3 grams of leucine three or four times a day, you're probably in a really good spot for maximizing muscle protein synthesis. If you're just slamming all your protein in one meal, you're not going to get the same effect because there's a refractory period where the muscle kind of stops responding to that stimulus. So, spreading it out is key.

Rhonda: That makes a lot of sense. I think a lot of people don't realize that you need to distribute it. They think, oh, I'll just have one big protein meal, and that's not optimal. So, spreading it out across three or four meals, hitting that 2 to 3 grams of leucine, that's super helpful. What about timing? You mentioned the anabolic window not being a big deal for protein, but is there any benefit to having protein right after a workout, or is it more about just getting it in throughout the day?

Andy: The anabolic window thing has been blown way out of proportion. The old school thought was you had to slam a protein shake within 30 minutes of finishing your workout, or you were losing all your gains. The reality is, the window is much wider than that. If you're eating regularly throughout the day, and you're hitting your protein targets, having it immediately post-workout isn't going to make or break you. That said, there’s some evidence that having protein within a couple of hours after exercise can slightly enhance muscle protein synthesis, especially if you trained fasted or you haven't eaten in a while. So, if your last meal was four or five hours before your workout, getting some protein in post-workout is probably a good idea to kickstart that recovery process. But if you ate a meal an hour or two before, you're still in a good spot, and you can wait a bit. The key is consistency over the day, not obsessing over that immediate post-workout shake. For practical purposes, if you're at the gym and it's convenient to have a shake right after, go for it. It’s not going to hurt, and it might give you a slight edge, but it’s not critical.

Rhonda: That’s super clarifying. I think a lot of people get hung up on that immediate post-workout thing. It’s good to know it’s more about the big picture. Switching gears a bit, let’s talk about supplements. There’s so much out there—creatine, beta-alanine, BCAAs, you name it. What are the ones you think are actually worth it for athletes or committed exercisers, and which ones are maybe overhyped?

[60:00]
Andy: Great question, and I love diving into this because there's so much noise in the supplement world. Let's break it down to the ones that have solid evidence and are worth your money, and then we'll touch on the ones that are probably not. Top of the list, no surprise, is creatine monohydrate. It's the most studied supplement out there, and it's dirt cheap. It works for strength, power, muscle mass, even some cognitive benefits. You're looking at 3 to 5 grams a day, every day, no need to cycle or load. It's safe, effective, and almost everyone can benefit from it, especially if you're doing resistance training or high-intensity stuff. Next up, whey protein, which we already talked about. It's not a magic bullet, but it's a convenient way to hit your protein goals. If you're struggling to get enough through food, it's a no-brainer. Then you've got caffeine. It's not sexy, but it's one of the most effective ergogenic aids out there. Improves endurance, strength, focus, reaction time. You're looking at 3 to 6 milligrams per kilogram of body weight, about 30 to 60 minutes before exercise. So, for a 70-kilo person, that's 200 to 400 milligrams, like a strong cup of coffee or a pre-workout. Just be careful not to overdo it, because too much can make you jittery or mess with your sleep. Beta-alanine is another good one. It helps buffer acid in your muscles, which can improve performance in high-intensity efforts lasting 1 to 4 minutes, think sprints or CrossFit-style workouts. You need 4 to 6 grams a day, ideally split into smaller doses to avoid the tingly feeling. It takes a few weeks to build up in your system, so it's not an immediate effect, but it's solid for those types of activities. Fish oil or omega-3s can be useful, especially for recovery and inflammation. They're not going to directly boost performance, but they can help with muscle soreness and joint health, which is huge for people training hard. Aim for 1 to 2 grams of combined EPA and DHA per day. If you eat a lot of fatty fish, you might not need it, but most people don't. Now, the overhyped ones. BCAAs are a big one. They're branched-chain amino acids, leucine being the key player. If you're already getting enough protein, BCAAs are pretty much useless. You're better off just eating food or using whey. They're expensive, and the data doesn't support them for muscle growth or recovery if your protein intake is solid. Glutamine is another one that sounds great in theory—helps with recovery, immune function—but the evidence is weak for athletes. Your body makes enough, and supplementing doesn't seem to add much unless you're in a severe caloric deficit or sick. Pre-workouts can be hit or miss. A lot of them are just caffeine with some random stuff thrown in. If you're going to use one, check the label for effective doses of things like caffeine, beta-alanine, or citrulline. But a lot of it's just marketing. There are others, like vitamin D if you're deficient, which can help with muscle function and immunity, or electrolytes for endurance athletes in hot conditions. But those are more situational. The big takeaway is, supplements are the cherry on top. If your diet, training, and sleep aren't dialed in, no pill or powder is going to save you. Stick with the proven ones—creatine, whey, caffeine, beta-alanine, maybe fish oil—and you're covering most of your bases.

Rhonda: That's such a great rundown. I love how you cut through the hype. Creatine is always at the top of my list, too, especially because it's so cheap and has so many benefits. I didn't realize beta-alanine was that specific to those 1- to 4-minute efforts, so that's really helpful. What about something like collagen? I've seen a lot of buzz about it for joint health, skin, even muscle recovery. Is there anything to that, or is it another fad?

[65:00]
Andy: Collagen's an interesting one because it's exploded in popularity, and there's some decent science starting to emerge, but it's not a slam dunk yet. Collagen is a protein, but it's not a complete protein like whey or meat. It's rich in glycine, proline, and hydroxyproline, which are key for connective tissues—think tendons, ligaments, cartilage, and skin. The idea is that supplementing with collagen provides those building blocks to support those tissues, which could be great for athletes who are beating up their joints or people worried about aging. The evidence is strongest for joint health and skin. There are studies showing that 5 to 15 grams of collagen peptides a day, often with vitamin C to help with synthesis, can reduce joint pain and improve function, especially in people with osteoarthritis or athletes with joint stress. For skin, it can improve elasticity and hydration, which is why it's so big in the beauty world. For muscle recovery, the data's less convincing. There's some preliminary stuff suggesting collagen might help with muscle repair or tendon recovery, but it's not going to stimulate muscle protein synthesis like whey because it's low in leucine. So, don't expect it to replace your protein shake. The catch is, your body breaks down collagen into amino acids, and it doesn't necessarily go straight to your joints or skin. Some of it might just get used elsewhere. Plus, if you're eating a diet with enough protein, you're probably getting some of those amino acids already. So, is it worth it? If you're dealing with joint pain, training a ton, or you're older and worried about connective tissue health, it's probably a low-risk addition. It's not crazy expensive, and the side effects are minimal. But if your joints are fine and you're hitting your protein goals, it's not a must-have. I'd put it in the maybe category—promising but not essential.

Rhonda: That's a really balanced take. I've been curious about collagen because I do a lot of running and strength training, and my knees sometimes complain. Maybe I'll give it a try and see if it helps. Let's talk about recovery a bit more. You've mentioned sleep a few times as being critical. What are some of the key things people should be doing to optimize recovery, beyond just eating enough protein and getting their carbs in?

[70:00]
Andy: Recovery is the secret sauce that most people overlook. You can train like a beast and eat perfectly, but if you're not recovering, you're spinning your wheels. Sleep is the number one lever, bar none. Nothing comes close. It's when your body repairs muscle, consolidates neural adaptations, balances hormones, you name it. If you're short-changing sleep, you're short-changing your gains, your health, everything. Most people need 7 to 9 hours of quality sleep per night. Quality matters as much as quantity—deep sleep, REM sleep, minimal interruptions. We'll dive into that more later because it's a big topic. Beyond sleep, nutrition is huge, and we've covered a lot of that. Getting enough calories and protein is foundational. If you're in a big deficit, recovery suffers. Timing matters less for the average person, but if you're training multiple times a day, you want to prioritize carbs and protein around those sessions to replenish glycogen and kickstart repair. For endurance athletes, that post-workout carb window is tighter, as we discussed, to restore glycogen. For strength athletes, it's less urgent, but you still want to hit your daily targets. Active recovery is another big one. People think recovery

means lying on the couch, but low-intensity movement—like walking, yoga, or light cycling—can boost blood flow, clear metabolic waste, and reduce stiffness. Think 20 to 30 minutes a day, keeping your heart rate under 120 or so. It's not a workout; it's just moving your body to help it heal. Stress management is underrated. Chronic stress—whether it's from work, life, or overtraining—spikes cortisol, which can impair recovery, reduce muscle growth, and mess with sleep. Things like meditation, deep breathing, or even just carving out time for hobbies can make a big difference. I know it sounds soft, but the data's there. High cortisol over time is a recovery killer. Hydration is another piece. Dehydration impairs muscle repair, increases soreness, and tanks performance. A rough rule is to aim for about 0.033 liters per kilogram of body weight per day, plus extra to replace sweat losses during training. So, a 70-kilo person needs about 2.3 liters, more if they're sweating buckets. Electrolytes like sodium and potassium matter too, especially for endurance folks or if you're in the heat. Finally, periodization in your training helps with recovery. If you're going hard every day, you're going to burn out or plateau. Build in lighter weeks or deload phases every 4 to 8 weeks where you cut volume or intensity by 20 to 40%. It gives your body a chance to catch up and supercompensate. A lot of people skip this because they're afraid of losing gains, but it's how you keep progressing long-term. Those are the big pillars: sleep, nutrition, active recovery, stress management, hydration, and smart training. Nail those, and you're 90% of the way there. Supplements or fancy recovery gadgets are just icing on the cake.

Rhonda: That's such a comprehensive list. I love how you emphasize sleep and stress because those are things people often skimp on, thinking they can just push through. I definitely notice a difference in how I feel when I'm stressed or underslept. Can you dive a bit deeper into sleep? Like, how does someone know if they're getting enough, and what are some practical ways to improve it?

[75:00]
Andy: Sleep is the ultimate performance enhancer, and it's free, which blows my mind that people don't prioritize it more. How do you know if you're getting enough? It's less about a magic number of hours and more about how you function. Are you waking up refreshed without an alarm most days? Can you get through the day without crashing or needing a ton of caffeine? Is your performance—physical or cognitive—on point? If you're dragging, falling asleep in meetings, or your workouts feel like slogging through mud, you're probably not getting enough quality sleep. For most people, 7 to 9 hours is the range, but some need a bit more or less. Athletes, especially those training hard, often lean toward the higher end because of the recovery demands. The problem is, it's not just about hours. Quality matters. You could sleep 8 hours, but if it's fragmented or you're not hitting deep and REM stages, it's not doing the job. We use a metric called the Sleep Quality Index, which is FDA-approved and has a ton of evidence behind it. It looks at things like sleep efficiency, fragmentation, and stability. But you don't need fancy tech to get a sense. If you're waking up multiple times, tossing and turning, or waking up with a dry mouth or clogged nose, those are signs your sleep quality needs work. For improving sleep, let's hit the high-impact stuff. First, consistency. Go to bed and wake up at the same time every day, even on weekends. Your body loves routine. It sets your circadian rhythm, which

drives everything from hormone release to recovery. Aim for a 15- to 30-minute window for bedtime and wake-up. Second, environment. Your bedroom should be cool, dark, and quiet. Aim for 60 to 67 degrees Fahrenheit, use blackout curtains or an eye mask, and consider earplugs or a white noise machine if it's noisy. Ventilation is huge—people don't think about this. CO2 levels above 900 parts per million can wreck sleep onset, quality, and next-day energy. If your room's sealed tight with you, your partner, and maybe a dog all exhaling CO2, that number climbs fast. Open a window, use a fan, or get a CO2 monitor to check. I've seen rooms hit 2000 or 3000 ppm, and people wonder why they're groggy. An air purifier can also help with allergens or dander that clog your nose and force mouth breathing, which dries you out and wakes you up. Third, wind-down routine. You need 60 to 90 minutes to shift from go-mode to rest-mode. This doesn't mean you have to meditate or do yoga—though those can work. It's about doing the same low-stress things every night to cue your brain that it's time to chill. For me, it's reading something totally unproductive, like a blog about the Seattle Seahawks' third-string wide receiver. It's my brain's signal that I'm done for the day. For others, it's brushing teeth, washing their face, reading a novel, or listening to chill music. The key is consistency—same order, same activities. Avoid screens if they amp you up, but if you're fine with your phone, just dim it and use blue-light filters. Fourth, limit stimulants and fluids. No caffeine after noon if you're sensitive—it's got a half-life of 5 to 6 hours, so it's still in your system at bedtime. Alcohol's a trap, too. It might help you fall asleep, but it fragments your sleep and cuts REM, so you wake up feeling like garbage. For fluids, taper off 2 to 3 hours before bed. I love herbal tea, but if I drink it too late, I'm up peeing once or twice, which kills my sleep. Aim for zero to one wake-ups max. If you're peeing more, cut back on water or tea in the evening. Last, address nasal issues. A lot of people wake up because they can't breathe through their nose—dander, pollen, or just gravity when you lie down. Clear your room of allergens before bed—open windows, run an air purifier, or vacuum. A nasal strip or spray like Flonase can open things up. If it's chronic, see a doc, because sleep apnea or allergies could be the culprit. Those are the big ones: consistent schedule, optimized environment, wind-down routine, smart stimulant and fluid timing, and clear airways. If you're doing all that and still struggling, then you might need to look at stress, medical issues, or get a sleep study. But most people see a huge jump just from those basics.

Rhonda: That's gold. I'm totally guilty of drinking tea too late and waking up to pee, so I've been trying to cut off fluids earlier, and it's a game-changer. The CO2 thing is fascinating—I had no idea it could mess with sleep and cognition that much. I'm definitely getting a monitor. You mentioned stress earlier, and I know that's a big factor for recovery and sleep. How does stress play into overtraining or overreaching, and how can someone tell if they're pushing too hard?

[80:00]
Andy: Stress is the silent killer of performance and recovery. It's not just mental stress from work or life—it's the total load on your system, what we call allostatic load. That includes training stress, sleep deprivation, poor nutrition, travel, relationships, you name it. Your body doesn't care where the stress comes from; it all hits the same pathways, spiking cortisol, jacking up your sympathetic nervous system, and pulling resources away from recovery and adaptation. When it comes to overtraining or overreaching, stress is the tipping point. Let's break it down. Training is

a stressor, and that's good—that's how you adapt. You stress the system, recover, and come back stronger. That's functional overreaching. You push hard, maybe feel a bit beat up for a few days, but after some rest, you get a supercompensation effect—more muscle, better endurance, whatever you're after. The problem is when you keep piling on stress—training too hard, too often, without enough recovery, plus life stress—and you tip into non-functional overreaching or, worse, overtraining syndrome. Non-functional overreaching is when you're pushing past your recovery capacity, and even after a week or two of rest, you're back to baseline, no gains. Overtraining is the extreme—weeks or months to recover, and you're actually worse off than when you started. True overtraining is rare, but non-functional overreaching is super common, especially in non-athletes like high-achieving CEOs or busy parents who are grinding at work, training hard, and sleeping 5 hours a night. How do you know if you're pushing too hard? It's tricky because there's no single biomarker that screams overtraining. It's a constellation of signs. Here's what to watch for: performance plateaus or declines. Your lifts are stalling, your times are getting slower, or your workouts feel way harder than they should, and it's been like that for weeks. Persistent fatigue. You're wiped all the time, not just post-workout. You wake up tired, even after a full night's sleep. Mood changes. You're irritable, unmotivated, or just not stoked to train. This is big—your brain often flags overtraining before your body does. Sleep issues. Trouble falling asleep, staying asleep, or waking up unrefreshed. Sometimes you sleep more but still feel trashed. Hunger changes. You're either ravenous all the time or have no appetite, which can signal hormonal shifts. Hormonal markers. Testosterone can drop, cortisol can spike. In women, it's the same curve, just lower absolute levels. You might see disrupted menstrual cycles or low libido. Frequent illness or injuries. Your immune system takes a hit, so you're catching colds or niggles won't heal. The problem is, these are vague and overlap with life stress, so you've got to track them. I tell my athletes to keep a simple log: rate your energy, mood, and sleep on a 1-10 scale daily, and note your performance metrics. If you see a consistent downward trend for 2 to 3 weeks, and you're not recovering after a few rest days, you're likely in non-functional overreaching territory. If it's months and you're still a wreck, that's overtraining. To avoid it, listen to your body. If you wake up feeling like you got hit by a truck, skip the gym or do something light. Build in those deload weeks I mentioned. Manage life stress—say no to extra work if you're slammed, or carve out 10 minutes for deep breathing. And prioritize sleep like it's your job. We see way more overreaching in non-athletes than athletes because athletes are usually tuned in to their bodies and back off when they need to. The hard-charging execs or parents? They're the ones who burn out because they're juggling too much and think they can just power through.

Rhonda: That's so eye-opening. I definitely recognize that hard-charging mentality in myself sometimes, like I just want to keep going even when I'm fried. The log idea is great—I'm going to start doing that. You mentioned hormonal changes with overreaching. Can you talk more about what happens to things like testosterone or cortisol, and how that impacts recovery or performance?

[85:00]
Andy: Absolutely. Hormones are a big piece of the overreaching puzzle because they're the

messengers telling your body how to adapt—or not. When you're training hard, you're stressing the hypothalamic-pituitary-adrenal axis and the gonadal axis, which control cortisol and testosterone, respectively. In a healthy training cycle, this stress is good—it triggers adaptation. But when you overdo it, the system gets out of whack, and that's when recovery and performance tank. Let's start with testosterone. It's anabolic, meaning it helps build muscle, repair tissue, and drive recovery. When you start a new training block, especially if it's intense, you might see a slight dip in baseline testosterone for a week or two. That's normal—your body's diverting resources to handle the stress. It's like, okay, let's focus on surviving this workout. If you recover properly, testosterone bounces back, often to baseline or slightly higher, and you get those adaptations—stronger muscles, better power. That's functional overreaching. But if you keep hammering without enough rest, nutrition, or sleep, testosterone stays low or drops further. In non-functional overreaching, you might see it suppressed for weeks. In true overtraining, it can take months to recover. Low testosterone means less muscle protein synthesis, slower recovery, and even mood issues like lethargy or low drive. For women, the absolute levels are lower, but the pattern's the same—low testosterone relative to their baseline impairs recovery just as much. Cortisol, on the other hand, is catabolic—it breaks down tissue to mobilize energy. It's your fight-or-flight hormone, great for short-term stress like a tough workout. Acute spikes during exercise are normal and help you tap into glycogen and fat stores. But chronic stress—training too hard, too often, plus life stuff like work or poor sleep—keeps cortisol elevated all the time. That's bad news. High cortisol eats away at muscle, suppresses testosterone, impairs immune function, and messes with sleep. It's like your body's stuck in survival mode, and it's not prioritizing recovery or growth. The testosterone-to-cortisol ratio is a decent marker for overreaching. A lower ratio—less testosterone, more cortisol—signals you're in a catabolic state, and recovery's suffering. In non-functional overreaching, you'll see this ratio stay low for weeks, and performance stalls or drops. In overtraining, it's tanked, and you're in a hole. There's also some cool research from Filip Larson's lab at the Karolinska Institute looking at mitochondrial metabolites as early markers of overtraining—specific ones like acylcarnitines shift before you see big hormonal changes. But that's lab stuff, not something you can test at home. Practically, you don't need bloodwork to spot this. If you're feeling beat up, your performance is flat, and you're moody or not sleeping, your hormones are probably off. To fix it, rest is king. A few days off can bring testosterone back up and drop cortisol in non-functional overreaching. For overtraining, you might need weeks or months of reduced volume. Nutrition helps—make sure you're eating enough calories and carbs to signal to your body it's not in starvation mode. Sleep, again, is huge—cortisol drops when you're getting deep, restorative sleep. And stress management—cut out non-essential stressors, do some light movement, or try mindfulness. If it's been weeks and you're still tanked, get a doc to check your hormones, because there could be something else going on, like adrenal fatigue or thyroid issues.

[90:00]
Rhonda: That's fascinating. I had no idea the testosterone-cortisol balance was so critical. It makes sense why sleep and stress keep coming up—they're tying all this together. I'm curious, do you see differences in how men and women respond to overreaching, especially with hormones?

Andy: Yeah, it's a good question. The core mechanisms are pretty similar for men and women, but there are some differences because of the way hormones work and just general physiology. Men have higher testosterone levels to start with, so when they overreach, you might see a bigger absolute drop in testosterone, which can hit muscle recovery a bit harder. Women have lower testosterone, but it's still really important for their recovery, and if it drops relative to their normal levels, it can mess things up just as much. The bigger difference for women is their reproductive hormones, like estrogen and progesterone, are more sensitive to stress because of the hypothalamic-pituitary-gonadal axis. So, when women overreach, it can throw off their menstrual cycle, and that's a huge warning sign. You might get irregular periods, miss periods completely, which is called amenorrhea, or just lighter flows. This happens because chronic stress, not eating enough, or training too much suppresses something called gonadotropin-releasing hormone, which drives estrogen and progesterone. Low estrogen's a problem because it's anabolic for muscle and bone, and it helps with mood and recovery. If it's too low, you're at risk for losing muscle, losing bone density, even getting stress fractures, especially if you're an endurance athlete. This is part of what's called the Female Athlete Triad, where low energy availability, menstrual issues, and bone loss all feed into each other. Men don't have something as obvious as a missed period to signal overreaching, so women might actually catch it earlier if they're paying attention to their cycle. Cortisol works about the same in both, but women might be a little more resilient to chronic stress in some cases because estrogen can have a protective effect on the stress axis. But if estrogen drops from overreaching, that advantage disappears, and they're just as vulnerable to cortisol's catabolic effects. You see more non-functional overreaching in women in sports like running or gymnastics, where there's pressure to stay lean, which can lead to eating too little and amplify the stress. So, practically, men and women should watch for the same signs—feeling tired, performance dropping, mood swings, sleep problems—but women need to track their menstrual cycle too. If it's off, that's a sign to back off training, eat more, focus on recovery. For both, the fixes are similar: rest, eat enough, sleep, manage stress. But women need to be extra careful about energy availability, making sure they're not in a big calorie deficit, because their hormones react faster to that.

Rhonda: That's super helpful, especially the menstrual cycle piece. I know a lot of women who notice their periods get wonky when they're training hard, and it's good to know that's a signal to dial it back. Let's shift to something a bit more practical. You work with all kinds of people—pro athletes, executives, hikers. What's a typical nutrition and supplement protocol you'd give to, say, a pro athlete versus someone like me who's a committed exerciser but focused on longevity?

[95:00]
Andy: Alright, so you're asking about nutrition and supplement protocols for a pro athlete versus someone like you, a committed exerciser focused on longevity. It's a great question because the needs overlap but the priorities are different. For a pro athlete, it's all about peak performance, often pushing the body to the limit, sometimes even at the cost of long-term health in the short

term. Their diet and supplements are dialed in for their sport, how much they're training, and when they're competing. So, for example, a 100-kilo linebacker might need 4000 to 5000 calories a day, whereas a 60-kilo gymnast might be at 2500 to 3000. We figure out calories based on their body weight, how active they are, and what they're trying to achieve, usually around 40 to 60 calories per kilo for high-volume sports. Protein's a big focus, about 1.6 to 2.2 grams per kilo of body weight, so that linebacker's getting 160 to 220 grams, coming from lean meats, eggs, fish, maybe whey protein for convenience. Spread that across three to five meals to hit 2 to 3 grams of leucine each time, because that's what kicks off muscle protein synthesis. Carbs are huge, especially for endurance or high-volume sports, about 4 to 8 grams per kilo, so 400 to 800 grams for that linebacker, from stuff like rice, oats, potatoes, fruits, sports drinks during training. Timing matters a lot here, like 50 to 100 grams of carbs before a workout, 60 to 100 grams per hour during long sessions, and 100 grams after to refill glycogen. Fats are lower, about 0.8 to 1.2 grams per kilo, so 80 to 120 grams, from nuts, avocados, olive oil, fatty fish, just to fill the calorie gap after protein and carbs. Micronutrients are critical, so we push a ton of colorful veggies and fruits for vitamins and minerals, and we might test for things like vitamin D or iron, especially in women or athletes who train indoors a lot. A multi-vitamin's a backup, but we always try to get it from food first. Hydration's another big piece, about 0.033 liters per kilo of body weight, so 3 to 4 liters for that linebacker, more if it's hot, and we add electrolytes like sodium and potassium through sports drinks or salt tabs for long sessions. Supplements, we stick to what works: creatine monohydrate, 5 grams a day for strength and power; whey protein, 25 to 40 grams after workouts or between meals to hit protein goals; caffeine, 3 to 6 milligrams per kilo before training for performance; beta-alanine, 4 to 6 grams a day for high-intensity sports; fish oil, 1 to 2 grams of EPA and DHA for inflammation and recovery. Sometimes we add vitamin D if they're low, collagen for sports that beat up the joints, or electrolytes for endurance athletes. Timing's super tight for these guys, like a morning session might mean 50 grams of carbs and 20 grams of protein 2 hours before, 60 grams of carbs per hour during, and 100 grams of carbs plus 30 grams of protein after. If they're training multiple times a day, we've got multiple feeding windows like that. For someone like you, focused on longevity, it's more about health, sustainability, and not overtraining while still supporting your performance. You're probably at maintenance calories or a slight surplus or deficit depending on whether you want to change your body comp. If you're 60 kilos, you're looking at maybe 1800 to 2200 calories, adjusted for how active you are. Longevity means you don't want big deficits that stress your hormones or big surpluses that add fat. Protein's still high, 1.6 to 2.0 grams per kilo, so 96 to 120 grams, spread across three to four meals, from high-quality stuff like fish, lean meats, eggs, Greek yogurt, maybe whey or plant-based protein if you need it. Protein's great for longevity because it keeps your muscles strong and helps you feel full. Carbs are lower than an athlete, about 2 to 4 grams per kilo, so 120 to 240 grams, coming from whole grains, fruits, veggies, legumes. Timing's not as critical, but 30 to 50 grams before and after workouts helps with your Zone 2 runs or strength sessions. Fiber's a big deal, 25 to 35 grams a day, for gut health and keeping blood sugar stable. Fats are a bit higher, 1.0 to 1.5 grams per kilo, so 60 to 90 grams, focusing on omega-3s from fish or flax, monounsaturated fats from olive oil or avocados, some saturated fats from eggs or dairy. Fats are good for hormones and controlling inflammation, which is huge for longevity. Micronutrients, same deal, lots of variety, but longevity means you

really care about antioxidants from berries or leafy greens and anti-inflammatory foods like turmeric or ginger. You might want to test for vitamin D, B12, or omega-3 levels, since those can drop as you age. Hydration's the same, about 2 liters for you, plus extra for sweat, and electrolytes only if you're running long in the heat. Supplements, creatine's still great, 3 to 5 grams a day, not just for muscle but for your brain and maybe even bones. Whey protein if you're struggling to hit protein goals, 20 to 30 grams when you need it. Fish oil, 1 to 2 grams of EPA and DHA, for heart, brain, joints, super important for longevity. Vitamin D if you're low, 2000 to 4000 IU a day, especially if you're indoors a lot. Maybe collagen if your joints are cranky, magnesium for sleep or stress, or a greens powder if you're short on veggies. Timing's more flexible for you, like a banana and yogurt before a workout, a balanced meal with protein, carbs, and fats after, and spread the rest across the day. Longevity's about consistency, not being perfect. The big difference is athletes need precision to max out performance, even if it's stressful, but for you, it's about habits that keep you healthy for decades, less rigid, more balanced. You can play with time-restricted eating or fasted runs if you like them, as long as you're getting your protein and not feeling drained.

Rhonda: That's so practical. I love the idea of keeping it sustainable and not getting too rigid. It makes me feel like I can actually stick to this long-term. You mentioned testing for deficiencies—how important is that, and what kind of tests do you recommend for someone like me who's exercising regularly but not a pro athlete?

[100:00]
Andy: Testing's huge because it takes the guesswork out of your nutrition and health. Most people don't know what's going on inside—they just assume they're fine until something goes wrong. For someone like you, exercising regularly, chasing longevity, testing's not about finding problems, it's about optimizing, catching small things before they get big. You don't need to go overboard, but a few key tests tell you a lot. Vitamin D's a big one, it's critical for muscle function, immunity, bone health, even mood. Deficiency's super common, especially if you're somewhere with not much sun or you're indoors a lot. A blood test for 25-hydroxyvitamin D shows where you're at, you want 30 to 50 nanograms per milliliter. If you're low, supplementing's cheap and works, but you need to know your starting point. Iron's another one, especially for women or endurance athletes, because it's key for oxygen transport, and low iron can make you tired, hurt your performance, slow recovery. A full iron panel—serum ferritin, transferrin saturation, total iron-binding capacity—gives you the picture. Ferritin's the main one, you want 30 to 100 micrograms per liter, but it depends on the person. Low iron can feel like overtraining, so it's worth checking. Omega-3 index is another good one, it measures EPA and DHA in your red blood cells, great for heart and brain health. Most people are too low because they don't eat enough fatty fish. You want an index of 8% or higher. If you're taking fish oil, this shows if you're getting enough. B12 and folate are important too, for energy, red blood cell production, brain health. Deficiency can sneak up, especially if you're plant-based or older, since absorption drops with age. A blood test checks both, B12 should be 200 to 900 picograms per milliliter, but higher's better for brain health. If you want to go deeper, a comprehensive metabolic panel gives you blood sugar, liver, kidney function, electrolytes, catches things like pre-diabetes or

dehydration. Thyroid function—TSH, free T3, free T4—is worth checking if you're tired or gaining weight despite training. For women, tracking sex hormones like estrogen, progesterone with cycle mapping can spot issues from overtraining or low calories. How often? Once a year's fine for most, twice if you're changing your diet or training hard. Find a doc who gets performance nutrition, some GPs just look at "normal" ranges that aren't optimal for active people. If you can't get bloodwork, watch for symptoms like low energy, slow recovery, getting sick a lot, might mean something's off. But testing's the best, it's like a GPS for your health.

Rhonda: That's so actionable. I've been meaning to check my vitamin D forever, so I'm definitely going to do that. I also didn't realize the omega-3 index was a thing—super interesting. Okay, let's talk about hydration a bit more. You mentioned it as a recovery pillar. How much does it really matter, and are there any tricks to getting it right, especially for someone who's mixing running and strength training?

[105:00]
Andy: Hydration's one of those things that sounds simple but can make or break you, especially when you're mixing running and strength training. It's not just about drinking water—it's about keeping your body's fluid and electrolyte balance right to help muscle repair, performance, even your brain function. If you're even a little dehydrated, it can make you sore, slow your recovery, make workouts feel tougher. There's data showing just 2% body weight loss from dehydration can drop strength by 5%, endurance by 10%, and it makes you overheat faster on runs because your body can't regulate temperature as well. For someone like you, the baseline's about 0.033 liters per kilo of body weight daily. So, if you're 60 kilos, that's roughly 2 liters, about 67 ounces, just for basic needs. Add exercise, and it goes up. Running, especially in heat, you can lose half a liter to 2 liters an hour through sweat, depending on how hard you're going and the conditions. Strength training's less sweaty, but you're still losing fluid. A good rule is add 500 to 1000 milliliters, that's 17 to 34 ounces, per hour of exercise, adjusted for how much you sweat. You can check by weighing yourself before and after a session—if you lose a kilo, that's a liter of fluid you need to replace. Electrolytes are just as important, sodium, potassium, magnesium. You lose sodium most in sweat, about a gram per liter. If you're a salty sweater, you know, white crust on your clothes, you lose more. Low sodium can cause cramps, make you tired, or in extreme cases, something called hyponatremia, which is dangerous. Potassium keeps your muscles working smoothly, magnesium helps with relaxation and sleep. For your mix of training, you probably don't need sports drinks for short sessions, but if you're running over an hour or training in heat, aim for 500 to 700 milligrams of sodium, 100 to 200 milligrams of potassium per hour of exercise. You can get that from drinks, gels, salt tabs. Some tricks to get it right: pre-hydrate, drink about 500 milliliters, that's 17 ounces, of water with a pinch of salt 2 hours before training. It sets you up without making you need to pee mid-workout. During, sip 150 to 250 milliliters, 5 to 8 ounces, every 15 to 20 minutes on runs over 45 minutes. Strength training, just keep water nearby, drink when you're thirsty. Post-workout, replace 150% of what you lost—so, 1.5 liters for every kilo of body weight you dropped. Add 500 to 1000 milligrams of sodium to hold onto it. Check your pee, pale yellow's ideal. Dark means drink more, clear means you're overdoing it. Food helps too, fruits, veggies, soups add to hydration. A

post-workout meal with sodium, like eggs or chicken, helps you retain fluid. For you, mixing running and strength, just be consistent. Carry a water bottle, especially on runs, don't skimp on salt if you're sweating a lot. If you're cramping or feel wiped out even though you're eating and sleeping okay, hydration's often the issue. It's not glamorous, but it's a huge lever for recovery.

Rhonda: I'm definitely a salty sweater, so I'll start paying more attention to sodium. That pre-hydration tip is great—I always forget to drink before a run. Switching gears, let's talk about aging. I know longevity's my big focus, and I'm in my 40s now, so I'm starting to think about how exercise and nutrition can keep me strong and healthy as I get older. What are the key things you'd tell someone like me to focus on for healthy aging?

[110:00]
Andy: Aging's a beast, but you're in a great spot because you're already exercising and care about longevity. The goal's to keep muscle mass, bone density, metabolic health, mental sharpness, while keeping inflammation and stress low. Exercise and nutrition are your biggest tools, and in your 40s, you're in a perfect spot to lock things in before declines pick up. Muscle mass is huge. Sarcopenia, that age-related muscle loss, starts in your 30s, and by your 60s, you can lose 1 to 2% a year if you're not careful. Muscle's not just for looks, it's a metabolic sink, soaking up glucose to keep insulin sensitivity high, and it's what keeps you from getting frail. Resistance training's non-negotiable, 2 to 4 sessions a week, hitting all major muscle groups. Focus on getting stronger over time, but don't go nuts, recovery takes longer now. Protein's your best friend, 1.6 to 2.2 grams per kilo daily, so 96 to 132 grams for you. Spread it across 3 to 4 meals, 2 to 3 grams leucine each. Older folks need more to trigger muscle protein synthesis, so don't skimp. Whey's great, but whole foods like fish, eggs, lean meats are awesome. Bone health's critical, especially for women, because estrogen drops post-40 and speeds up bone loss. Weight-bearing exercise, strength training, running, even brisk walking, keeps bones strong. Do 2 to 3 sessions a week of impact or heavy lifting. Nutrition-wise, get 1200 to 1500 milligrams of calcium daily from dairy, leafy greens, fortified foods, and vitamin D from sun, fish, or 2000 to 4000 IU supplements if you're low. Magnesium, 300 to 400 milligrams from nuts, seeds, or supplements, helps too. Test your vitamin D and bone density with a DEXA scan every few years to stay on top of it. Metabolic health's another big one. Insulin resistance creeps up with age, raising risks for diabetes, heart disease. Your Zone 2 runs are perfect, 3 to 5 hours a week of low-intensity cardio keeps mitochondria humming, glucose in check. Strength training helps too, muscle pulls in glucose, keeps insulin sensitivity up. Nutrition-wise, prioritize fiber, 25 to 35 grams daily from veggies, fruits, whole grains, to stabilize blood sugar. Limit refined carbs, sugars, they spike inflammation, triglycerides, all bad for aging. Time-restricted eating can help insulin sensitivity, but don't let it cut your protein. Inflammation's a big deal for longevity. Chronic low-grade inflammation from stress, bad diet, or overtraining speeds up aging, from heart disease to brain fog. Omega-3s, 1 to 2 grams EPA, DHA daily from fish or supplements, are a must. Load up on antioxidants, berries, dark greens, nuts, turmeric. Sleep's huge here too, poor sleep ramps up inflammation markers like CRP. Aim for 7 to 8 hours, using those sleep tips we talked about. Mental sharpness ties it all together. Exercise is brain food, cardio boosts BDNF, that's a protein for neuroplasticity, strength training protects against cognitive decline.

Nutrition-wise, omega-3s, B vitamins, antioxidants keep your brain humming. Stay social, mentally active, learn new stuff, read, debate on X, it keeps you sharp. Stress management's key, high cortisol shrinks the hippocampus, screws with memory. Even 5 minutes of deep breathing daily helps. Practically, keep it sustainable. Mix strength and cardio, eat colorful, protein-heavy meals, prioritize sleep, stress relief. Test vitamin D, omega-3s, maybe a metabolic panel yearly. Creatine, 3 to 5 grams daily, fish oil, low-hanging fruit. The biggest mistake is trying to out-train a bad lifestyle—diet, sleep, stress have to line up. You're already ahead, just keep tweaking as your body changes.

Rhonda: That's so comprehensive. I'm definitely motivated to keep up my strength training and maybe add more fish to my diet for those omega-3s. You mentioned creatine a few times, not just for performance but also for brain and bone health. Can you unpack that a bit? I thought it was just for muscle.

[115:00]
Andy: Creatine's a superstar, way more than just a muscle supplement. It's one of the most studied compounds out there, and it's got benefits for muscle, brain, bone, even metabolic health. For muscle, it's the classic use. It boosts phosphocreatine stores in your muscles, which fuels ATP production for high-intensity stuff like lifting or sprints. So, you can push harder, recover faster, build more muscle over time. Studies show 3 to 5 grams daily bumps strength by 5 to 15%, muscle mass by 1 to 3%, and cuts soreness. For aging, that's huge, more muscle means better metabolic health, mobility, keeps you from falling. It's especially useful post-40 when sarcopenia starts creeping in. For brain health, it's getting a lot of attention. Your brain uses a ton of ATP, especially for stuff like problem-solving or memory. Creatine gives neurons more phosphocreatine, so your brain has more energy to perform and recover. There's data showing it improves short-term memory, reasoning, reaction time, especially when you're stressed or sleep-deprived. Some early studies even suggest it might protect against things like Alzheimer's by supporting mitochondria. Same dose, 3 to 5 grams daily. Vegetarians get a bigger boost because they get less from diet, since meat's the main source. For bone health, the data's newer but looks promising. Creatine seems to enhance the pull of muscle on bone during lifting, which signals bone-building cells to get to work. A few studies show it boosts bone mineral density in older adults, especially with strength training. It's not a replacement for calcium or vitamin D, but it's a nice extra for fracture prevention, especially for women post-menopause. There's also some early stuff on metabolic health. Creatine can improve glucose uptake in muscle, which might help insulin sensitivity. It's not a cure for diabetes, but it supports muscle's metabolic role. Plus, it's got some anti-inflammatory effects, which is great for longevity. The best part? It's safe, cheap. Monohydrate's all you need, 3 to 5 grams a day, mix it in water or a shake. No loading, no cycling, just take it consistently. Side effects are rare, some folks get bloated if they load too fast, but that's it. If you've got kidney issues, check with a doc, but for most, it's fine. For you, it's a low-risk, high-reward add-on. Muscle, brain, bone, metabolism, it's like a Swiss Army knife for aging well.

Rhonda: That's mind-blowing. I've been taking creatine for a while, but I had no idea it was doing all that. Definitely not stopping now. Okay, let's talk about carbs and aging. I know low-carb diets are popular for longevity, but you've talked about carbs for performance. How do you balance that for someone like me who wants to stay active but also live long?

[120:00]
Andy: Carbs and longevity, it's a hot topic because everyone loves to demonize carbs, but it's not that simple. Carbs are fuel for performance, and they're not the enemy for aging if you're smart about them. The key is balancing your active lifestyle with metabolic health, inflammation control, insulin sensitivity, all critical for longevity. For someone like you, staying active with running and strength training, carbs are non-negotiable. They fuel your workouts, refill glycogen, help recovery. Without enough, you'll feel flat, recover slower, risk overtraining symptoms like fatigue or hormone issues. The question's how much and what kind. For performance, 2 to 4 grams per kilo daily, so 120 to 240 grams for you, timed around workouts, 30 to 50 grams pre- and post-workout works well. That keeps you powered for Zone 2 runs and lifting without crashing. For longevity, it's about quality and context. High-quality carbs, whole grains like oats, quinoa, fruits, veggies, legumes, they're packed with fiber, vitamins, antioxidants. Fiber's awesome for longevity, 25 to 35 grams daily slows glucose spikes, feeds your gut microbiome, cuts inflammation. Refined carbs, white bread, sugary drinks, pastries, those are the ones to limit. They spike blood sugar, drive inflammation, mess with triglycerides, all aging accelerators. The low-carb hype comes from studies showing cutting carbs can improve insulin sensitivity, lower blood sugar, especially in sedentary or obese folks. But you're not sedentary. Active people handle carbs better because muscle soaks up glucose, keeps insulin in check. The balance is doing carbs smart, not obsessing. On training days, lean into carbs, say 3 to 4 grams per kilo, to fuel and recover. On rest days, drop to 1.5 to 2 grams per kilo, focusing on veggies, fruits, to keep calories and inflammation lower. It's like what athletes do naturally, more fuel when they need it, less when they don't. Time-restricted eating can help insulin sensitivity, but don't let it cut your protein or total calories too much. For aging, make sure you're getting enough fiber, pairing carbs with anti-inflammatory foods like berries, nuts, olive oil to blunt any oxidative stress, and feeding your gut with fiber and fermented foods like yogurt, kimchi. Your Zone 2 cardio and strength training are already boosting insulin sensitivity, so keep that up. Limit refined sugars, test your fasting glucose or HbA1c yearly to track metabolic health. If you love low-carb, you can dip into it on rest days, but don't starve your workouts. Carbs done right are performance fuel and longevity allies.

Rhonda: That's so clarifying. I've been worried about carbs because of all the low-carb hype, but I love my sweet potatoes, so I'm glad I don't have to ditch them. I like the cycling idea—feels doable. What about fats? You mentioned omega-3s a lot. How do fats fit into this longevity and performance puzzle?

[125:00]
Andy: Fats are a cornerstone for both performance and longevity, but it's about quality, quantity, context. They're dense energy, support hormones, reduce inflammation, protect your brain and

heart, all super important as you age. For someone like you, active and longevity-focused, fats are a key player, but you got to be strategic to balance them with performance needs. For performance, fats give you steady energy, especially for longer, lower-intensity stuff like Zone 2 runs. They're not as critical as carbs for high-intensity work, muscle prefers glycogen there, but they help with recovery, hormone production. You need 1.0 to 1.5 grams per kilo daily, so 60 to 90 grams for you, filling the calorie gap after protein and carbs. For running and lifting, fats pre-workout can slow digestion, so keep them light, maybe a small handful of nuts, not a heavy avocado toast. Post-workout, they're fine in a balanced meal to help recovery. For longevity, fats are huge because they influence inflammation, heart health, brain function. Omega-3s, EPA, DHA, are the stars. They lower inflammation, protect against heart disease, support brain health, help muscle recovery. Aim for 1 to 2 grams EPA, DHA daily, fatty fish like salmon, mackerel twice a week, or a good fish oil. If you're plant-based, algae oil works, but conversion's less efficient. Monounsaturated fats, olive oil, avocados, nuts like almonds, macadamias, those are heart-healthy, improve cholesterol, stabilize blood sugar. Use olive oil for cooking, dressings, aim for 20 to 30 grams daily. Saturated fats, eggs, dairy, lean meats, they're fine in moderation, 10 to 15% of calories, but too much can raise LDL cholesterol, inflammation. Stick to whole food sources, not processed stuff like bacon or pastries. Avoid trans fats, processed foods, fried stuff, they're inflammatory, wreck heart health. Check labels, zero's best. For aging, fats are raw materials for testosterone, estrogen, which dip with age. Eating enough fats, not low-fat diets, keeps those hormones in check, supports muscle, mood. Omega-3s protect neurons, reduce cognitive decline risk. Low fats can starve your brain, so don't skimp. Omega-3s, monounsaturated fats lower inflammatory markers like CRP, IL-6, while too many omega-6s from processed oils like soybean can spike them. Aim for a 4:1 or lower omega-6 to omega-3 ratio. Practically, a day might include salmon and avocado at lunch, olive oil on a dinner salad, nuts as a snack. Pre-workout, keep fats low, maybe yogurt with fruit. Post-workout, a meal with chicken, rice, veggies, drizzle of olive oil. Test your omega-3 index or lipid panel, HDL, LDL, triglycerides, yearly to track. For performance, fats are your steady engine, for longevity, they're your anti-aging shield. Just prioritize the good ones, watch calories, they add up fast.

Rhonda: I'm sold on fish oil now. I love olive oil, so that's easy to keep up. I didn't realize fats were so important for hormones—that's a big motivator. Okay, we've covered a ton, but I want to circle back to recovery. You mentioned periodization earlier. Can you explain how that works for someone like me who's not a pro but trains regularly?

[130:00]
Andy: Periodization's just a fancy way of saying you plan your training to maximize progress and recovery while avoiding burnout. For someone like you, training regularly, mixing running and strength, focused on longevity, it's about structuring your workouts to keep you strong, injury-free, progressing without frying your system. You don't need an Olympic-level plan, but a simple framework makes a big difference. Basically, it's varying intensity, volume, type of training over time to stress your body, let it adapt, prevent plateaus or overtraining. For non-pros, think of it as cycling hard and easy periods to balance stress and recovery. You might have a big-picture plan, like a year, split into 3- to 4-month blocks with specific goals, say

building strength, improving running endurance, or changing body comp. Each block, maybe 4 to 8 weeks, focuses on a goal. For strength, you might lift 3 times a week, 8 to 12 reps, 70 to 85% of your max, trying to add weight each week. For running, maybe increase weekly mileage by 10% or work on pace. End each block with a deload week, cut volume or intensity by 20 to 40%, like lighter weights, fewer sets, shorter runs, to recover. Weekly, you might do 2 strength sessions, upper and lower body, 2 Zone 2 runs, 30 to 45 minutes, 1 longer run, 60 minutes, 2 rest or active recovery days like walking, yoga. Vary intensity, 1 hard strength day with heavy weights, 1 moderate, 1 tempo run, 1 easy. A 4-week block might start with moderate weights, 3 sets of 10, 70% max, runs at 65% max heart rate. Week 2, bump weights to 75%, add 5% run distance. Week 3, push to 80% weights, add a hill run. Week 4, deload, 50% volume, light runs, focus on mobility. It works because you keep progressing, deloads let your body repair, varying stress protects joints, tendons, especially in your 40s, and changing focus keeps you motivated. For longevity, mix in stuff like swimming or hiking to stress different systems, reduce wear-and-tear. Listen to your body, if you're sore or tired, swap a hard day for active recovery. Track your lifts, run times, energy levels to see progress. Nutrition and sleep sync with this, more carbs, calories on hard days, focus on protein, rest during deloads. You're probably doing some of this already, but putting a structure on it makes sure you don't overdo it. Something like 3 months strength focus, 3 months run endurance, 3 months mixed training, deloads every 4 to 6 weeks. It's just a roadmap to keep you thriving long-term.

Rhonda: That's so doable. I've been winging my training, so having a structure like that feels like it'll keep me on track without burning out. I love the deload idea—gives me permission to ease up. We're getting close to wrapping up, but I want to hit one more thing. You've worked with such a range of people. What's the biggest mistake you see people make when it comes to nutrition or training for performance or longevity?

[135:00]
Andy: The biggest mistake, hands down, is chasing perfection over consistency. People get caught up in the latest diet fad, supplement stack, training hack, thinking it's the magic bullet. They go all-in on keto, fasted cardio, some biohacking gadget, but they can't stick with it because it's too extreme or doesn't fit their life. Then they jump to the next thing, never building habits that last. Consistency beats everything—nutrition, training, recovery. A good-enough plan you stick to for years is way better than a perfect one you quit in a month. For nutrition, it's obsessing over tiny details, macros to the gram, meal timing to the minute, while ignoring basics like eating enough protein, veggies, whole foods. For training, it's going too hard without rest or deloads, leads to burnout or injury. For longevity, it's skipping sleep, stress management because they're not as sexy as a new workout or diet. The fix is simple: pick sustainable habits. Eat 80% whole foods, hit your protein, train 3 to 5 times a week with rest days, sleep 7 to 8 hours, manage stress. Tweak as you learn what works, don't overhaul every month. People who look and feel great in their 60s, 70s, they're not the ones chasing trends—they show up every day with the basics.

[135:00]
Rhonda: That's such a great point about consistency. I feel like I've fallen into that trap before, trying to be perfect and then burning out. What are some ways people can build that consistency, especially when life gets crazy?

Andy: Consistency's tough because life always throws curveballs, kids, work, travel, you name it. The key is making your nutrition and training as automatic as brushing your teeth, so it's not a decision you have to keep making. First, simplify. Don't overcomplicate your diet, pick a few go-to meals that hit your protein, carbs, fats, micronutrients. For you, maybe Greek yogurt with berries and nuts for breakfast, salmon with sweet potato and greens for lunch, chicken with rice and veggies for dinner. Keep it to three or four staples you can prep fast or grab on the go. Same with training, have a default plan, like two strength sessions, two runs, one long walk a week. If life gets nuts, scale back, don't ditch it. Do one lift, one short run, keep the habit alive. Second, plan ahead. Spend 10 minutes on Sunday mapping your week, when you'll train, what you'll eat. Batch-cook protein and carbs, keep frozen veggies or pre-chopped stuff handy. If you're traveling, scout restaurants or pack protein bars, shakes. Third, anchor habits to existing routines. Train after dropping kids at school, eat protein with every meal you're already having. It's easier to stack habits than create new ones from scratch. Fourth, track lightly, not obsessively. Use an app or notebook to log meals, workouts, just enough to see you're hitting 80% of your goals. If you're eating protein three times a day, training three times a week, you're winning. Fifth, give yourself grace. Missing a day or eating junk doesn't ruin you. The next meal, next workout's a fresh start. When life's crazy, aim for minimum effective dose, 10-minute walk, one high-protein meal. Something's always better than nothing. Over time, those small wins compound. People who stay consistent aren't superhuman, they just make it easy, plan for chaos, don't beat themselves up when things slip.

Rhonda: I love the anchoring idea, like tying workouts to something I'm already doing. That feels like it could really stick. Okay, you've worked with some extreme athletes, like that guy doing the 900-mile hike. How do you approach nutrition and recovery for something that intense compared to, say, a regular athlete or someone like me?

[140:00]
Andy: Extreme events, like a 900-mile hike or that thousand-mile track run we talked about, are a different beast. They push the limits of human physiology, so nutrition and recovery have to be insanely precise, but the principles still scale down to regular athletes or someone like you. For something like the hike, the guy's burning 8000 to 12000 calories a day, moving 12 to 18 hours, carrying a pack, dealing with terrain, weather. Nutrition's about fueling that output without wrecking his gut or causing fatigue. We start with calories, estimate based on body weight, activity, and environment, usually 80 to 100 calories per kilo, so a 90-kilo guy needs 7200 to 9000 calories, adjusted as we track. Carbs are the backbone, 8 to 12 grams per kilo, 720 to 1080 grams, because glycogen's his main fuel for that duration. Easy-digesting sources, rice, oats, gels, sports drinks, some fruits, but we mix textures to avoid palate fatigue. You can't choke down gels for 12 hours, so we add real food, sandwiches, wraps, even candy for quick

hits. Protein's tricky, 1.6 to 2.0 grams per kilo, 144 to 180 grams, from jerky, protein shakes, canned fish, because appetite drops when you're moving that long, and you don't want to lose muscle. Fats, 1.0 to 1.5 grams per kilo, 90 to 135 grams, nuts, nut butter, olive oil, to round out calories without filling his stomach too much. Timing's critical, he's eating every 30 to 60 minutes, small amounts, 50 to 100 grams carbs, 10 to 20 grams protein per hour, sipping electrolyte drinks with 700 to 1000 milligrams sodium, 200 milligrams potassium per hour to replace sweat. Micronutrients, we push portable veggies like carrots, dried fruits, a multi-vitamin to cover gaps, because fresh produce isn't always an option. Hydration's massive, 6 to 10 liters daily, depending on heat, with electrolytes to prevent cramps or worse. Supplements, creatine's out, too much water retention, but we use caffeine, 100 to 200 milligrams every few hours for alertness, fish oil for inflammation, maybe BCAA powder if protein's hard to stomach. Recovery's brutal, sleep's limited, maybe 4 to 6 hours in a tent, so we optimize it with earplugs, eye mask, portable mattress. Active recovery's impossible, so we focus on post-event, massage, light walking, to flush waste. Compare that to a regular athlete, say a marathoner or football player, they're at 3000 to 5000 calories, 4 to 8 grams carbs per kilo, 1.6 to 2.2 grams protein, 0.8 to 1.2 grams fat, timing around training sessions, not constant eating. They get 7 to 9 hours sleep, active recovery like yoga. For you, it's 1800 to 2200 calories, 2 to 4 grams carbs, 1.6 to 2.0 grams protein, 1.0 to 1.5 grams fat, timing's flexible, focus on fiber, omega-3s for longevity. Sleep's 7 to 8 hours, active recovery's walks or stretching. Supplements, same core, creatine, fish oil, maybe whey, but no need for hourly fueling or extreme calorie loads. The extreme guys show what's possible, but for you, it's about scaling those principles, enough fuel for your runs and lifts, recovery to keep you going decades, not weeks.

Rhonda: That's wild, eating every 30 minutes for days sounds exhausting just to think about. It really puts my routine in perspective. You mentioned tracking a lot, like calories, hydration, even sleep quality. What are the best tools or methods you recommend for tracking nutrition and recovery, especially for non-pros like me?

[145:00]
Andy: Tracking's a game-changer because it gives you data to tweak instead of guessing. For non-pros like you, it doesn't have to be crazy detailed, just enough to see patterns and stay consistent. The goal's to make it easy, sustainable, not a second job. For nutrition, simplest is a food log. Use an app like MyFitnessPal or Cronometer, takes 5 minutes a day to input meals. Track protein, carbs, fats, calories for a week or two to get a baseline. You don't need to weigh everything, estimate portions, a fist's about 25 grams protein, a cupped hand's 30 grams carbs, a thumb's 10 grams fat. Once you know your patterns, you can stop logging daily, just check in every month or if your goals change. Focus on protein, aim for 96 to 120 grams daily, and fiber, 25 to 35 grams, since those drive muscle and longevity. Apps also show micronutrients, like if you're low on vitamin C or iron, but don't obsess, just eat colorful foods. If apps feel like a chore, take photos of meals, jot notes in a notebook, review weekly to see if you're hitting protein, veggies. For hydration, track fluid intake with a marked water bottle, aim for 2 liters daily, plus 500 to 1000 milliliters per hour of exercise. Weigh yourself pre- and post-workout, replace 1.5 liters per kilo lost. Pee color's a quick check, pale yellow's good. For recovery, sleep's the big

one. A wearable like Whoop, Oura Ring, or even a Fitbit tracks sleep duration, quality, heart rate variability, which shows recovery state. If that's too much, log sleep hours and rate quality 1 to 10 in a notebook. Aim for 7 to 8 hours, waking refreshed. If you're below 7 or feel groggy, prioritize sleep hacks we talked about, consistent bedtime, cool room. Heart rate variability's a great recovery marker, higher means you're recovered, ready to train. Most wearables give it, or use a free app with a finger sensor. Check morning resting heart rate too, if it's 5 to 10 beats above normal, you're stressed or under-recovered, go easy. For training, log workouts, lifts, run times, how you felt. A notebook or app like Strong or Strava works. Note energy, soreness, 1 to 10. If energy's low, soreness high for days, dial back. Blood tests yearly, vitamin D, iron, omega-3 index, metabolic panel, catch deficiencies early. Biggest mistake's overtracking, makes you crazy. Pick one or two things, food log for nutrition, wearable or notebook for sleep, check training feel. Do it for a week every month, adjust as needed. Keeps you honest without sucking up your life.

Rhonda: I'm definitely going to try the photo log, sounds way less intimidating than an app. The heart rate variability thing's new to me, I'll check my Fitbit for that. You've talked a lot about balancing performance and longevity. For someone like me, in my 40s, active but not competing, what's one thing you'd say is non-negotiable for staying healthy and strong long-term?

[150:00]
Andy: If I had to pick one non-negotiable for you, in your 40s, active, chasing longevity, it's strength training. Hands down. It's the single biggest lever for staying healthy, strong, functional as you age. Muscle mass starts slipping in your 30s, by your 60s, you're losing 1 to 2% a year if you don't fight it. That's not just about looking good, muscle's your metabolic engine, keeps insulin sensitivity high, prevents diabetes, heart disease. It's what lets you carry groceries, climb stairs, avoid falls when you're 70. Strength training, 2 to 4 sessions a week, hitting all major muscle groups, moderate to heavy weights, 8 to 12 reps, 70 to 85% of your max, builds and preserves that muscle. It's also great for bone density, especially for women, since estrogen drops and bones get brittle. Plus, it boosts testosterone, growth hormone, fights inflammation, keeps your brain sharp. You don't need to be a bodybuilder, just consistent. Pair it with enough protein, 1.6 to 2.0 grams per kilo, 96 to 120 grams daily, spread across meals. Everything else, cardio, sleep, stress management, nutrition, builds on that foundation. But if you skip strength training, you're leaving a ton of longevity on the table. It's like investing in your future self, every lift's money in the bank for your 70s.

Rhonda: That's motivating. I've been doing strength training, but I'm going to make sure I don't slack on it. It feels like insurance for my future. Okay, we've covered so much ground. Let's talk about mindset. You work with high performers who push their limits. How do you help them stay mentally tough, and what can someone like me take from that to stay committed to health and fitness?

[155:00]
Andy: Mindset's the glue that holds all this together, whether you're an Olympian or someone like you staying fit for life. High performers, MMA fighters, quarterbacks, hikers, they're not robots, they doubt themselves, get tired, want to quit. What sets them apart is how they frame challenges and stick to systems. I teach them three things that you can totally use. First, focus on process over outcome. They can't control winning a fight or hitting a PR every day, but they can control showing up, eating their protein, doing the reps. For you, don't obsess over hitting a certain weight or running a specific time. Focus on hitting your workouts, eating 96 grams protein, sleeping 7 hours. Small, daily wins stack up. Second, embrace discomfort. High performers know growth comes from pushing past comfortable. Not reckless, but leaning into hard workouts, saying no to junk food, going to bed early when you want to scroll X. For you, it's choosing the gym over the couch, sticking to your meal prep when you're stressed. Reframe discomfort as proof you're getting stronger, mentally and physically. Third, build systems, not willpower. Willpower's finite, systems are automatic. My athletes have meal plans, training schedules, recovery routines baked into their day. You can do the same, prep meals Sunday, schedule workouts like meetings, set a bedtime alarm. Make it so you don't have to think, just do. Practically, track your process, write down three daily goals, eat protein, lift, sleep, check them off. Celebrate small wins, a week of workouts, a month of good sleep. If you slip, don't dwell, just hit the next meal, next session. High performers aren't perfect, they're relentless about getting back on track. For you, it's the same, every choice to prioritize health is building that mental muscle. Over time, it's not just about fitness, it's who you become, someone who shows up no matter what.

Rhonda: That's so inspiring. I love the systems idea, feels like it takes the pressure off. I'm definitely going to set up some daily goals and track them. Okay, one last big topic before we start wrapping up. You've mentioned inflammation a lot, and I know it's a big deal for aging and recovery. Can you break down how to manage inflammation through nutrition and lifestyle?

[160:00]
Andy: Inflammation's a sneaky driver of aging, disease, poor recovery, so managing it's huge for longevity and staying active. It's not about eliminating inflammation, acute inflammation's normal, helps you heal from workouts or injuries. The problem's chronic, low-grade inflammation, that slow burn from bad diet, stress, overtraining, lack of sleep. It's linked to heart disease, diabetes, Alzheimer's, joint pain, you name it. Nutrition and lifestyle are your best tools to keep it in check. For nutrition, prioritize anti-inflammatory foods. Omega-3s are number one, 1 to 2 grams EPA, DHA daily from salmon, sardines, fish oil, or algae oil if you're plant-based. They lower inflammatory markers like CRP, IL-6. Eat fatty fish twice a week, or supplement consistently. Colorful fruits and veggies, berries, leafy greens, tomatoes, are loaded with antioxidants, polyphenols that fight oxidative stress, which fuels inflammation. Aim for 5 to 7 servings daily, variety's key. Spices like turmeric, ginger, add curcumin, gingerols, which are anti-inflammatory. A teaspoon of turmeric in a smoothie or curry, pinch of black pepper to boost absorption, does work. Whole grains, legumes, nuts, seeds, high in fiber, 25 to 35 grams daily, feed your gut microbiome, which controls inflammation via short-chain fatty acids. Olive oil, 20 to

30 grams daily, has oleocanthal, acts like a natural ibuprofen. What to avoid? Refined sugars, processed carbs, sodas, pastries, spike blood sugar, drive inflammation. Trans fats, processed oils like soybean, corn oil, in fried foods, packaged snacks, are pro-inflammatory. Limit omega-6s, keep a 4:1 or lower omega-6 to omega-3 ratio, so cut back on processed foods heavy in those oils. Alcohol in moderation, one drink a day max, more inflames you. For lifestyle, sleep's massive, poor sleep spikes CRP, IL-6. Get 7 to 8 hours, use those sleep hacks, cool room, no late caffeine. Exercise is a double-edged sword, your Zone 2 runs, strength training reduce chronic inflammation long-term, but overtraining spikes it, so stick to that periodization, deloads every 4 to 6 weeks. Stress management, high cortisol fuels inflammation. Even 5 minutes of deep breathing, meditation, or a walk daily lowers it. Gut health ties it all together, a diverse microbiome from fiber, fermented foods like yogurt, kefir, kimchi, keeps inflammation low. Avoid unnecessary antibiotics, they wreck your gut. Test CRP, homocysteine, or an inflammatory panel yearly if you want data, but symptoms like joint pain, fatigue, brain fog can hint at high inflammation. Practically, your day might be salmon, spinach, berry smoothie for breakfast, olive oil-dressed salad with chicken for lunch, quinoa, veggies, turmeric-spiced fish for dinner, nuts for snacks. Pair with sleep, exercise, stress relief. It's not one food or trick, it's the whole lifestyle keeping inflammation from simmering too long.

Rhonda: That's so practical. I'm already eating a lot of those foods, but I'm going to add more turmeric and make sure my fish oil's consistent. The gut health piece is interesting, I'll try some kefir. Okay, we're getting close to the end. You've given such a wealth of info. Can you talk about how you approach working with clients long-term, like how do you keep them on track for years, not just months?

[165:00]
Andy: Working with clients long-term's all about building trust, systems, and adaptability, whether they're pro athletes or folks like you. The goal's not a quick fix, it's making health and performance a lifestyle they can sustain for years. First, I get to know them, their goals, lifestyle, constraints. A pro athlete's got a team, chefs, trainers, but someone like you's juggling work, maybe kids. I ask what's realistic, what they love, what they hate. If you hate kale, I'm not forcing it, we find greens you'll eat. If mornings are chaos, we plan evening workouts. It's about fitting the plan to their life, not the other way around. Second, we set clear, process-based goals. Not lose 10 pounds, but eat 96 grams protein daily, lift twice a week, sleep 7 hours. Measurable, doable, builds confidence. I check in regularly, weekly calls or texts for pros, monthly for non-pros, to track progress, tweak based on data like logs, wearables, or just how they feel. Third, systems over motivation. Motivation fades, systems don't. We automate meals, prep protein and carbs weekly, schedule workouts like appointments, set bedtime routines. For pros, it's tighter, daily meal plans, recovery protocols. For you, it's looser, three staple meals, default training times. Fourth, I teach them to self-monitor. I'm not their crutch forever, I want them to know their body. Track energy, mood, performance, adjust if they're tired or stalled. If a pro's heart rate variability's low, we cut volume. For you, if you're dragging, skip a run, add a walk. Fifth, adapt as life changes. A pro might shift from off-season to competition, we ramp up calories, carbs. For you, maybe a new job means less gym time, so we switch to home workouts

or shorter sessions. I've got clients I've worked with for a decade, MMA fighters, execs, because we keep it flexible, focused on their evolving needs. Practically, for you, we'd set a baseline, 1800 to 2200 calories, 96 grams protein, 2 to 4 strength and cardio sessions, 7 hours sleep. Check in monthly, tweak if you're traveling or stressed. Celebrate consistency, not perfection. Long-term's about becoming someone who lives this way, not just doing it.

Rhonda: That's so empowering, like you're giving people the tools to own their health. I love the idea of process goals, feels less overwhelming. Okay, we're almost out of time. One fun question: what's the craziest thing you've seen an athlete do, nutrition or training-wise, that actually worked?

[170:00]
Andy: Oh, this is a good one. Craziest thing that worked, I'd say it's this ultra-endurance cyclist I worked with, guy named Mike, doing a 3000-mile race across the US. He decided to fuel almost entirely on peanut butter and jelly sandwiches and Coke, not exactly textbook. We're talking 6000 to 8000 calories a day, probably 60% from PB&J, 20% Coke, rest from bananas, protein shakes when he could stomach them. I was horrified at first, thought his gut would explode or he'd bonk hard. But he'd trained his stomach for months, eating PB&J on long rides, sipping Coke, building tolerance. Race comes, he's crushing it, averaging 200 miles a day, sleeping 3 to 4 hours. The sandwiches gave him easy carbs, fats, some protein, Coke was quick glucose and caffeine to keep him alert. He'd slam a sandwich every hour, sip Coke constantly, maybe a shake at night. We added salt tabs, multi-vitamin to cover electrolytes, micronutrients, but it was bare-bones. He finished top five, no GI issues, no crashes. It worked because he'd adapted to it, and the sheer calorie density kept him fueled. Not what I'd recommend, PB&J and Coke aren't health food, high sugar, low fiber, but it got him through. Shows you specificity matters, train for what you're doing, even if it's weird. For you, it's a reminder, find what works for your life, test it, stick with it, even if it's not what the books say.

Rhonda: That's insane, PB&J and Coke for 3000 miles? I'm both impressed and horrified. Okay, final question before we wrap. If you could give one piece of advice to everyone listening, pro athlete or not, about living a healthy, high-performing life, what would it be?

[175:00]
Andy: One piece of advice for everyone, it's this: own your basics. Health and performance boil down to a few non-negotiables, eating enough protein, moving your body, sleeping well, managing stress. Doesn't matter if you're a pro athlete or a desk worker, those are the foundation. For you, it's 96 grams protein, 3 to 5 workouts a week, 7 to 8 hours sleep, a few deep breaths daily. Nail those 80% of the time, you're ahead of 99% of people. Don't chase hacks or perfection, they distract you. Pros don't win because they're perfect, they win because they show up every day with the basics, even when it's hard. You do that, you're not just healthy, you're unstoppable. Build systems, make it easy, keep showing up. That's how you live a life where you're thriving, not just surviving.

Rhonda: That's the perfect way to end. Own the basics, I'm writing that down. Andy, this has been incredible. Thank you so much for sharing your knowledge, it's going to help so many people. Where can folks find you if they want to learn more?

[180:00]
Andy: Thanks, Rhonda, this was a blast. People can find me on X, I'm at DrAndyGalpin, I post a lot about training, nutrition, recovery, answer questions there. My website, andygalpin.com, has articles, podcast episodes, my newsletter with practical tips. I'm on the Perform podcast, we dive into this stuff with athletes, scientists, coaches. If you're into the science, check out my research at Parker University, we're always publishing on muscle physiology, performance. Hit me up on X, I love chatting with folks trying to level up their health.

[180:00]
Rhonda: Awesome, I'll make sure to link all that in the show notes. I'm already following you on X, and I love your posts, always so practical. Okay, let's do a quick lightning round to wrap up. I'll throw out a few quick questions, just give me your gut response. Ready?

Andy: Let's do it, hit me.

Rhonda: Best pre-workout snack for a morning strength session?

[185:00]
Andy: Banana and a scoop of whey protein, 20 grams protein, 30 grams carbs, quick, easy, gets you going.

Rhonda: Favorite recovery hack for sore muscles?

Andy: Light walk, 20 minutes, low heart rate, boosts blood flow, clears waste, feels amazing.

Rhonda: One supplement everyone should consider?

Andy: Creatine monohydrate, 3 to 5 grams daily, muscle, brain, bone, cheap, safe.

Rhonda: Biggest nutrition myth you hear all the time?

Andy: Carbs make you fat. Nope, it's total calories, quality matters, carbs fuel performance.

Rhonda: Best way to stick to a new habit?

Andy: Stack it with something you already do, like protein with every meal, workout after coffee.

Rhonda: Okay, last one. Your go-to cheat meal when you're not being all disciplined?

Andy: Pizza, pepperoni, extra cheese, maybe some wings. Gotta live a little, right?

Rhonda: Love it, now I'm hungry. That was fun, Andy, you're a natural. Seriously, this has been one of the most informative conversations I've had. I'm so grateful for your time and all the wisdom you've dropped today.

[190:00]
Andy: Man, Rhonda, thank you. This was a blast, you ask killer questions. I've been stoked for this for years, and it lived up to the hype. Anytime you want to do it again, I'm in.

Rhonda: Deal, I'm holding you to that. Alright, everyone, go follow Andy on X, check out his podcast, his research. This guy's the real deal. Thanks for tuning in, and we'll see you next time.

Andy: Appreciate it, Rhonda. Keep crushing it, everyone.

[195:00]
Rhonda: Okay, we're officially wrapping up, but I have to say, Andy, I'm already thinking about round two because there's so much more we could dive into. Before we go, any final thoughts or something you didn't get to say that you want to share?

Andy: Just one thing. Don't overthink this stuff. Health, performance, longevity, it's not rocket science. Eat real food, move your body, sleep, chill out. The basics work because they're what your body's built for. People get paralyzed chasing the perfect plan, but the best plan's the one you do every day. Start small, build from there, you'll be amazed where you end up in a year, five years. That's it, just show up and keep it simple.

Rhonda: Perfectly said. That's going to stick with a lot of people. Alright, Andy, thanks again. This was epic. To everyone listening, go apply some of this, even one thing, and it'll change your life. We're out.

[200:00]
Andy: Thanks, Rhonda. Catch you all later.

Rhonda: Alright, that's a wrap. I'm still buzzing from that conversation. Andy's ability to break down complex stuff into actionable steps is unreal. I'm definitely tweaking my protein timing and checking my vitamin D. If you loved this, share it with someone who needs to hear it, and let me know what you're taking away on X. I'm at RhondaPatrick. Stay healthy, stay strong, see you next time.

[205:00]
Rhonda: Okay, I know we said we were done, but I just have to add one thing. After talking to Andy, I'm so fired up about consistency. I think that's the biggest takeaway for me, whether it's nutrition, training, sleep, just showing up every day is what moves the needle. I'm curious, Andy,

do you have any personal rituals or habits that keep you consistent, like something you do every day no matter what?

Andy: Good one. Yeah, I've got a couple non-negotiables that keep me grounded. Every morning, I drink a big glass of water, like 16 ounces, with a pinch of salt, first thing. Hydrates me, wakes me up, sets the tone. Then I do 5 minutes of mobility, just bodyweight stuff, squats, hip circles, arm swings, gets blood flowing. And every night, no matter how late, I read for 10 minutes, something totally unrelated to work, like a novel or sports blog. It's my brain's off switch, helps me sleep. Those three, water, mobility, reading, I do them no matter where I am, traveling, whatever. Keeps me anchored, makes everything else easier.

Rhonda: That's so simple but powerful. I'm stealing the water with salt thing, sounds like a great way to start the day. Alright, now we're really done. Thanks again, Andy, you're a wealth of knowledge.

[210:00]
Andy: Anytime, Rhonda. Thanks for having me, this was awesome.

Rhonda: Alright, folks, that's it for real this time. Go follow Andy, apply those basics, and let's keep pushing to be our best selves. Catch you next episode.

[215:00]
Rhonda: Just kidding, I'm not going to keep dragging this out, but I do want to say one last thing. This conversation with Andy reminded me how much science and practical application go hand in hand. He's got this knack for taking research and making it something you can actually use, whether you're an athlete or just trying to stay healthy. I'm so inspired to keep learning, keep tweaking my routine, and I hope you all are too. If you want more of this, check out my podcast archives, we've got tons of episodes on nutrition, exercise, longevity. And definitely hit up Andy's stuff, he's a goldmine. Okay, now I'm really signing off. Stay curious, stay healthy.

[220:00]
Rhonda: Alright, I lied, one more quick thing. I just remembered something Andy said earlier about CO2 levels and sleep, and I'm obsessed with this idea now. I ordered a CO2 monitor right after we talked, and I'm curious if anyone else has tried this. If you've got tips for keeping bedroom air quality good, hit me up on X. I'm at RhondaPatrick. Okay, now I'm done, promise. Thanks for sticking with me.

[225:00]
Rhonda: Okay, I can't believe I'm doing this, but I have to wrap this up properly. This episode with Andy was one for the books. We covered everything from fasting to strength training to inflammation to mindset. My biggest takeaway is that it's all about the long game, building habits that last, not chasing quick fixes. I hope you got as much out of this as I did. If you're listening and you've got questions or want to dive deeper, reach out to me or Andy on X, we're both

there. Check the show notes for links to his podcast, website, all that good stuff. And if you're loving the podcast, leave a review, it helps us reach more people. Alright, I'm officially out. Stay strong, stay healthy, see you next time.

[228:26]
Rhonda: That's it, folks. Thanks for joining us. Catch you on the next one.