

Build Muscle Size, Strength & Power With Science-Backed Programs

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Dr. Andy Galpin

The science and practice of enhancing human performance for sport, play, and life. Welcome to Perform. Hello, friends. I'm Dr. Andy Galpin. I'm a professor of kinesiology in the Center for Sport Performance at Cal State Fullerton. In today's show, we're going to jump straight into the application of training for muscle hypertrophy and strength and power. In order to do that, what I'd like to spend our time on is to go through a couple of actual programs that are designed to maximize both of those goals. These are programs I have used myself as well as in my laboratory, and they come from some of the world's most foremost experts in training for strength and power, as well as muscle hypertrophy. So as I stated a second ago, today's show is directly about the application, and we'll talk very briefly here in a second about what these terms mean, some overarching principles that are going to be true across both of those programs, and a little bit of context.

Dr. Andy Galpin

But I don't want to spend a lot of time going over the overarching philosophy or background physiology because I've done that in other shows as well as many other places, and you can get that through any of the links in our show notes. So today really is about the program. So we want to get into that, walk you through why they're being built, what the terms mean, how they're structured the way they are, and then of course, give you these samples for free. And so that is to say both of the programs I'm going to discuss today are available completely free and in their entirety in our show notes. Now, before we do that, we have to explain some terms. When I say strength, what I mean more specifically is force production. Think about this as muscular strength or my one-repetition maximum. It doesn't actually have to be a one-repetition maximum. It could be a two or three or five. That's not the point.

Dr. Andy Galpin

It's really differentiating it from muscle size and muscle power. So muscle strength represents your ability to apply force to stop movement from happening when you don't want it to move, to control your joints, to control objects, and to control other people if that's the application. So it really is about that. Muscle size is different. We call that muscle hypertrophy. There's obviously a strong relationship between muscle size and muscle strength, but it's not perfect either. There's

clearly an overlap, but just because you maximize strength doesn't mean you maximize size. And the inverse is true as well. Maximizing size does not maximize strength. The easiest, most practical example I can give you here is take two of the sports that spend their most time focusing on these goals. In the one hand, let's just call it bodybuilding, where the goal is to maximize physical size. And we'll contrast that to the sport of powerlifting.

Dr. Andy Galpin

Now, this may sound a little bit confusing, but trust me on the terminology here. Powerlifting is a sport in which they test maximal strength. Okay? Now, in the sake of a bodybuilder, whether you're male or female, it doesn't matter, if you're increasing muscle size and your goal is to optimize for that specific outcome, almost surely you're going to get stronger. Early in the training, medium in the training, probably several years into your training, you're going to be getting a lot stronger. There's no question. But you're not going to be maximizing your strength. If we were to look at the powerlifter, you'd see a similar thing. Oftentimes, they put on muscle along their training journey, but they're maximizing and trying to peak for physical strength. And so maybe six months into training, the amount of muscle size and muscle strength gains would be equal between a powerlifter and a bodybuilder.

Dr. Andy Galpin

But maybe after six months, well, certainly after six years, eventually you'll start seeing separation where the powerlifter will get stronger at a faster rate than the bodybuilder will, but the bodybuilder will add muscle at a faster rate than the powerlifter would be. So I hope that makes sense. They are complementary, but they are really quite different. So if you're at the very beginning of your strength training history, and this is your first jump into it, you may not notice or feel or understand really the functional difference between training for strength versus hypertrophy. But as the months and years go on, you will start to know that. And so that means it's important to apply the right type of programming to make sure you get the right outcome you're looking for. So if you're trying to add muscle, but you're using concepts that are better applied for strength and power, you're probably going to be leaving some gains on the table, which means you'll be unhappy with your results.

Dr. Andy Galpin

Right? You won't be getting the progress you're looking for. The same thing could be said if you're trying to gain strength, but you're using hypertrophy or muscle size principles. Again, you might be going, "Man, I'm not getting stronger. I'm not getting faster or more powerful. I'm doing the things that I saw. They're supposed to be correct. They're scientifically validated," et cetera. But you're applying the wrong principle because it came from a different body of literature. So that alone can hopefully save you quite a bit of headache and can get you to your results much faster. So with all that in mind, the last variable to talk about here is muscle power, and that

differs from strength in that it is force multiplied by velocity. So again, as I said a second ago, strength is effectively force production. Power is force multiplied by velocity. Another way you could come up with this equation is work over time.

Dr. Andy Galpin

So how much work can you complete over a certain amount of time? Power tends to be most important for sport application, though not always, but typically is the one you're more concerned with. Almost all sports, if you had to choose between being more powerful or more strong, or stronger rather, you would choose power. And the reason is sports typically work on a time domain. So think about it this way. Let's say I'm going up against you, and we're going to collide together. Rugby, doesn't matter, right? And you can produce 1,000 newtons into the ground, and I can produce 500. But it takes you two seconds to produce your 1,000, and it takes me 300 milliseconds, so a third of one second, to produce my 500. Well, by the time we actually collide, most sports occur in the 200 to 400-millisecond range, I will have maybe 400 newtons produced. You've only produced 300 newtons because you're not even halfway to your peak time.

Dr. Andy Galpin

And now I'll own that exchange because I'm actually much functionally stronger than you. Lots of different examples we can think about there, but that's really what we're talking about when we're differentiating strength and power. The majority of the application I'm going to give you here, this program was actually developed for someone looking to maximize both strength and power, so we're not going to split that up into individual programs right now because there is clearly an overlap there. In fact, if you were to dive into this a little bit more deeply, you'll realize that actually power is simply force times velocity. So if I know how much force you can produce, now I need to know your velocity. I can generate what's called a force velocity curve, such that where on that curve of if it's too heavy and I slow down, that's not a lot of power. But if it's really, really, really fast, but that means I have to go to a light weight, it's not a lot of power either.

Dr. Andy Galpin

So at some point on that curve, we get this peak power production where it's not too heavy, but it's not too slow, or it's not too fast and light either. That's really power. And so by enhancing velocity, I typically have the opportunity to enhance power. By enhancing force, I also have the opportunity to enhance power. And so almost all power programs will have a force component as well as a velocity component, and the program I'm going to go through here in a few short minutes will cover both aspects of that. And so, again, to reiterate, that program is designed and built for both strength and power because it was built for a field-based sport athlete. Now, while I did just say this program is for athletes, I do want to make sure we are crystal clear here. This is not only for athletes. You've maybe heard me say this many, many times, but if you have a body, you're an athlete. We all have a need to have sufficient muscle mass.

Dr. Andy Galpin

We all have a need to be powerful and to be strong. Whether you want to use those skills and abilities and talents to be better at a sport or to be better at life, I don't care. But we're going to have a hard time being successful in life if we have insufficient muscle strength and power. We're going to cover these things in detail in other episodes, and have, and I've done it in numerous other places. But just really quickly, your skeletal muscle is one of the most important organs in your entire body. It's the largest organ, which means it's responsible for a whole host of things. First and foremost, locomotion. It is the thing that gets you throughout this world. If you don't have muscle or your muscle is not strong or powerful, and remember, while just because you have muscle doesn't mean you're strong or powerful, and just because you're strong and powerful doesn't mean you have a lot of muscle, but there is still a massive overlap.

Dr. Andy Galpin

It is hard to be really, really, really strong and powerful with very little muscle. Take a look at any weight class-based sport. That's why they're there. Typically, as you add muscle, you also add peak and maximal strength. And so there's a relationship there. Really challenging for most people, unless you are highly trained and skilled in understanding exercise physiology and exercise science to have enough strength and power and really to be under muscled. And so for most people listening who are not athletes or working with high-level strength and conditioning professionals, you're going to want to make sure you've got some muscle and some power because again, that's the thing that lets you move through this world. You can imagine simple scenarios like running through the terminal in an airport with your luggage trying to catch your layover. Probably the most common example we'll give are things like stopping yourself and bracing yourself from a fall.

Dr. Andy Galpin

As you age in life, becomes incredibly important. But really functionality. So let's just say that you want to walk up some stairs or go on a hike, and every step represents such a high percentage of your maximum leg strength, it becomes extremely fatiguing. So one thing I always like to say is put a barbell on your back and do step-ups, and put 70% of your maximum leg strength on that step-up and just step up 12 inches. See how many repetitions in a row you can do before you get really tired. Well, if walking up a normal flight of stairs requires force production that is equivalent to 70% or 80% of your maximal leg strength, that's how you're going to feel every day.

Dr. Andy Galpin

None of us want to be in that position. I don't need to really try to encourage you more to not want to be, specifically with your legs, to be weak. Upper body, excellent research on grip strength being a strong predictor of overall longevity, brain health, wellness. You pick your metric here, but just some quick examples of why all of us really should be paying attention to having a

sufficient amount as well as high-quality and high-functioning skeletal muscle. Now, before we go too much further, I'd like to take a quick break and thank our sponsors because they make this show possible. Not only are they on this list because they offer great products and services, but because I actually personally love them and use them myself. Today's episode is brought to you by Rhone. Rhone is a premium activewear company that is easily my favorite in the world. Few things have aggravated my wife more than my clothing choices.

Dr. Andy Galpin

Let's be honest, fashion is not exactly my strong suit. Partially because I have just no sense of style, but also because I'm neurotic about texture and feel. There's not a single brand I've tried over the years that has the same quality, feel, and fit that Rhone has absolutely mastered. Rhone uses best-in-class materials to allow their products to be lightweight and breathable, but still durable enough to last even when you're training super hard. I remember the first time my wife wore it for a cycling workout and she, who let's just say is well-versed in the activewear world, was genuinely surprised by how soft and stretchy but supportive the material was. The Rhone women's collection actually just launched and is already filled with great reviews online. The Rhone Base Training Shorts are brilliant as well. They fit perfectly and have the right amount of stretch to allow total freedom of movement.

Dr. Andy Galpin

They also have pockets, which I like, and zippered pockets that are sneaky helpful for holding hotel keys and things like that. The Atmosphere Tee and Commuter business shirts completely blew my mind. I do not understand how they made this material. I'll never go back. Trust me here, friends, just stunning craftsmanship all the way around. If you'd like to try Rhone, go to Rhone, spelled R-H-O-N-E, .com/perform to get 25% off your first order. Again, that's rhone.com/perform to get 25% off your first order. Today's episode is also brought to you by Continuum. Continuum is a membership-only wellness club designed to help high performers reach their fitness and performance goals. Continuum just opened its flagship club in Manhattan, quickly making it one of the most sought-after memberships in the city. Its location in Greenwich Village is incredible. In fact, it's stunning. It's a 25,000 square foot space with state-of-the-art equipment, a beautiful design, and everything you could possibly want in this unique mix of a gym, wellness center, and social club.

Dr. Andy Galpin

Continuum members start with a thorough Olympic grade assessment that results in a biometrically driven, AI-assisted wellness program that updates in real time and incorporates everything from personal training and physical therapy to hyperbaric and IV therapies. By bringing together true fitness experts, best-in-class technology, and proven wellness services and amenities, Continuum delivers the most comprehensive solution to performance. I've been

involved with Continuum, working as their head of performance science since their founding, and I've been incredibly impressed by what the team there has built. If you're interested in joining Continuum, their team has agreed to give a select number of you, the listeners here, a fully waved onboarding, which includes VO2 max testing, DEXA scans, blood panels, sleep analysis, and more, all at their fabulous New York City flagship location. To learn more, visit continuum.club/perform.

Dr. Andy Galpin

Again, that's Continuum with two Us [.club/perform](https://continuum.club/perform). Okay, as a very general overview, when we're talking about training for hypertrophy, we're typically looking at something like eight to 12 repetitions per set. Now, in the last five to eight years, it has become extremely clear hypertrophy happens pretty equally from as low as five repetitions per set all the way up to 30 repetitions per set. So you can go anywhere in that window as long as you're training to the same effort and expect equal hypertrophy. But that said, most of the time, most people stick closer to eight to 12 repetitions, but by all means, go lower or higher and it should be no problem at all. Absolutely equally effective. What that means then in terms of intensity is that will scale based upon how heavy you're lifting. Generally, if you're in the eight to 12 repetition range, you're probably in the 70% to 80% of your one-rep max range.

Dr. Andy Galpin

If you were to go a little bit lower, say five, six repetitions per set, you might be a little bit higher, maybe 80%, 85%. And if you were to go lower, in fact, you could go as low as 30% of your one repetition maximum. That's been shown extensively in the research, equally effective, but that would just require you to do 25 or 30 or potentially even more repetitions per set. I've talked about the pros and cons of this in other episodes and potentially will even next season go into the details. They are not the same because of things like strength. So while you will expect equal hypertrophy with, say, 25 repetitions per set as you would with eight repetitions per set, the strength progress will not be the same. Strength needs to happen at a lower rep range so that you can get the intensity of the load high enough. Typically, what we're looking at there is, of course, what I've spoken of before, the three to five method, so three to five repetitions per set, but that could go a little bit higher.

Dr. Andy Galpin

Really do remember, these are not hard cutoff lines. These are just phased out. So if I can get strength at five repetitions a per set, what do you think happens at six? Still some strength. What about seven? Yeah, still some. Eight. Yeah, sure. But what about at 30? Well, okay, very little. And so what happens is it's just like where is the general place to be most of the time? That's all we're saying with strength. But because of what we're trying to do, reach a high load, we have to have a low repetitions per set because fatigue starts to reduce the amount of weight we can

actually lift. So strength is generally something, again, like three to five repetitions, plus or minus. Can be as low as one. If you want to truly peak strength, you do one repetition as heavy as you can, and there's cons to that as well. You want to go a little bit higher, five, six, seven reps, okay, still fine, but maybe you have to go a little bit lighter.

Dr. Andy Galpin

Gives you rough context of what you're looking at. For power, just continue that logic one more step. So because power has a strength and velocity component, not only can I not afford to lose some force output, I can't afford to lose velocity either. And so power happens typically in a similar rep range, almost always, though, less than six reps per set at the most. Usually even less than that, right? Two to five, probably more so even than strength. And we have to do it at a fast speed. So the intensity, the load, can't be as high because I have to move it fast, okay? So while you could do something like this, say three sets of three repetitions at 95% of your bench press for strength, that's going to move very slow. And so that wouldn't be great at developing power. We would want to go to maybe three sets of three repetitions at 65%. So not super light because now we're just working on pure speed, but not super heavy either because now we're just working on pure force.

Dr. Andy Galpin

Somewhere in the middle. Every exercise has a different optimal load. In other words, how heavy you can lift, what percentage of your one-rep max to maximize power. Generally, very generally, upper body, smaller exercises tend to achieve their peak power at a lighter percentage, 40% of your max, 50% of your max, maybe as low as 30% of your max. Bigger exercises like a squat Higher, maybe 50% of your max, 60% of your max. More complicated movements like a snatch or a clean and jerk can even be as high as 80% to 95% of your one-rep max. So it does vary a little bit, but the point with power always is it has to be a combination of heavy and fast. If it's fast and no load, it's speed but not power, which is okay too if that's what you're after. If it's heavy and very slow, it's force, which is okay, but it's not power either. Power needs to be somewhere in the middle. So with that in mind then, the rest range for hypertrophy can really be whatever you'd like.

Dr. Andy Galpin

It can be as small as 30 seconds. Now, by doing that, you're going to accumulate more fatigue, which means you're either going to have to do less repetitions or less weight or a combination. But that's absolutely fine. It can be high rest. Even up to five minutes of rest have been shown to produce equal hypertrophy as 30 seconds. Obviously, if you go more rest, you get more recovery, which means we now need to keep the weight higher, go higher, and keep the rep range higher, or go higher. And so pros and cons, there are subtle differences, but equal benefit from short rest ranges as low as 30 seconds, all the way up to longer rest ranges up to five

minutes. For strength and power, though, it's a different story. You need to stay away, for the most part, of low rest intervals. Remember, this is all about quality. We need to practice moving fast a bunch of times. We need to practice moving heavy a bunch of times.

Dr. Andy Galpin

If we shorten our rest intervals and we can't move as fast and we can't produce as much force, then we're not practicing producing force, and we're not practicing moving faster. And so we're really undercutting our adaptations. Two to five minutes of rest is the rough recommendation for power and strength. But you do want to think about this in context. If I were to do, say, one vertical jump, I don't truly need to rest five minutes. That's not that fatiguing. I could probably honestly do one minute and be, depending on how fit you are, you might even be able to do 40 seconds and be fine. And so they're just guidelines, okay? Think about the person. Think about what phase of training they're in. Early in a training phase, maybe you want more rest. But 16 weeks into a training program, you're very fit, you're very strong, you're in shape. You maybe don't necessarily need a full extensive rest interval to produce peak power again, okay?

Dr. Andy Galpin

If you're trying to maximize, truly maximize your strength, you're probably going to take five-plus minutes of rest. If you're trying to work on a lot of different repetitions on a lot of exercises of power, maybe two minutes is good. Five, oftentimes when I say that, people are like, "Oh my God, five whole minutes?" And they go to the gym, they do it, they start their clock, and 30 seconds in, they're like, "Oh my gosh. I have to wait another four and a half minutes?" Well, not necessarily all the time and not for every exercise. I will caution, though, you are not nearly as recovered as you think you are. If you're used to doing things that are moderate strength or hypertrophy or muscular endurance, you're not really understanding, and you typically can't register what it feels like to be at 100%. You get to 90%, 92% and you think, "Yeah, I don't feel any difference." In this particular case, if we're trying to maximize power and strength, that last 7% matters, but you may not be able to perceive it if you're not used to it.

Dr. Andy Galpin

And so typically what I would say is if you're not used to this type of training, I would still take more rest intervals than you think you want to. What's the harm? You cost yourself an extra six minutes combined at the end of the workout by doing 20 more seconds of rest. Okay, you can live with that, okay? If eventually you realize that's enough and you want to back it back down, that's great, but initially start off with more rest than you think. For the most part, people err on the side of too short when it comes to power and strength, not necessarily too long. Okay, so now that we're speaking the same language about what we're going to get into, hypertrophy versus strength and power, we need to understand a few things that are going to be true of both of these programs, and I want to say that now so I don't have to repeat it twice as we go through

the individual programs. When we're talking about training for muscle function, we have to acknowledge a few things.

Dr. Andy Galpin

One, there are just a handful of concepts to go after, but there are infinite methods. I'm simply going to present to you a couple of them. These are scientifically validated and supported, as you'll hear later, but there's many other scientifically validated and supported methods for hypertrophy and muscle strength. So I don't want you to think this is the only way or I'm necessarily even espousing this as the single best approach, because that's not necessarily the case. I just know that these are effective, and there are many other ways to go about that. Depending on your context, your availability to exercise equipment, your background, your goals, your age, your sport that you're participating in, injury history, all of that would go into designing your program. I don't have any of that context for you right now for this individual program, so I'm just going to walk you through some highlights, but that is absolutely true.

Dr. Andy Galpin

These programs are highly effective, as I've experienced personally, but also there are many ways to get to the same route. That said, when we're talking about enhancing sport performance, that is clearly about more than just muscle action. So I tend to default to muscle because I'm a muscle guy, but I'm absolutely acknowledging many things go into performing at your best on the field or on the court or in the arena. That's outside of the scope of today, but we'll acknowledge that. Even something as simple as power, so hitting a golf ball farther or throwing a baseball harder requires some muscle power. But then you have things like movement technique and skill and timing, and all of these allow you to Perform better in your sport, to express more power in your sport that don't necessarily require you to enhance your functional ability in the gym to produce more strength and power. So that is a little bit different, I'll acknowledge that, but from this perspective of let's just start at the beginning, all those conversations I just said maybe we can have in future seasons, but right now, if I'm just trying to get more powerful in the gym, what would I do?

Dr. Andy Galpin

This would be my answer. So a few other things you'll see consistent across both these programs. Number one, they are both going to leverage a concept called progressive overload, which means you have got to overload the system in some sort of systematic and intentional fashion. The easiest adage here is add five pounds every week. That doesn't necessarily work. I'm going to talk through how we do that. And even the idea that you have to add load or weight as your method of progressive overload doesn't have to be the case. In fact, the programs I'm going to share with you, the strength and power one does choose to overload with intensity or weight, but the other one is actually keeping weight somewhat consistent and overloading with

volume. And that's because with hypertrophy, the primary driver of muscle growth is going to be volume, and so you want to hold that most sacred. If you go up or down in some weight, it's not nearly as important as it is that you continually progress and overload your volume.

Dr. Andy Galpin

Strength and power are the opposite, though. Maintaining intensity and the expression of force production and power is more important than your total volume, typically, and so you'll want to hold that one more sacred. And so I actually picked these examples. What's nice about them is they are going to follow in practice what the science would also say about the physiology and the mechanism. That doesn't always happen. In fact, quite often doesn't happen in our world. So it's really nice when we see the science of mechanism and physiology line up perfectly with what the experts are actually doing, and that ends up getting you the best real whole world, whole body performance outcomes that are the best. Some other things you'll notice, both programs are heavy on balance, and what I mean by that is not your physical balance of tripping and falling, but balance among the programs. So they do some work in the frontal, sagittal, and transverse planes, which means sort of up and down, front and back, and rotation.

Dr. Andy Galpin

They're balancing upper body and lower body, left side and right side. They're balancing things like doing bilateral, so two legs at a time, versus unilateral, one leg at a time. They're balancing kettlebells and dumbbells and barbells and bands and sprinting and movement, and they have this general balance of equipment. Now, when I say balance, I don't mean a mathematical equal balance. I just mean they're acknowledging and making sure nothing's getting too squirrely, that we're not doing 80% of our work on our quads and 10% on our hamstrings, or 80% of our work on our upper body and 10% on our lower, et cetera, et cetera. It's just a reasonable balance, and there's no specific numbers behind that. In fact, they're different among the programs, but they're really trying to pay attention to, over the course of these eight to 12 weeks that we're going to put somebody through of intensified, progressively overloaded training, we need to have a reasonable balance between these different ways so we're not creating asymmetries.

Dr. Andy Galpin

We're even maybe correcting some of the asymmetries we have, and we're keeping our joints overall healthy. That is probably the most critical key component to training and training harder over time while staying healthy and injury-free. So progressing in an appropriate manner, as well as paying somewhat attention to balance of the program. Last thing to note here, and this is really true against any exercise program for any goal, is we have to understand how we're modifying and really be intentional and judicious about all seven of the modifiable variables. If you've not heard that phrase before, I would recommend checking out my guest series with Dr. Andrew Huberman on the Huberman Lab podcast I did in 2023. We talked about them in detail.

So to go through them quickly here, I use an acronym developed by my former colleague and lab mate, Dr. Lee Brown, which is called COFOVERP. It's a wonderful acronym.

Dr. Andy Galpin

Scientists are always great at developing acronyms. But it stands for choice, which is exercise choice. So what exercises are you selecting? This includes equipment as well as what movement patterns and a lot of the things I just discussed a second ago. So the choice of the exercise you're selecting influences, in part, what adaptation you're going to get, strength and power or hypertrophy. O, which stands for order. It's another way of what order do I do them in? So what exercise goes first in my day, second, third, fourth, fifth, et cetera. In the case of things like strength and power, order is incredibly important. You need to be hyper-specific. With hypertrophy, it's far less important.

Dr. Andy Galpin

The next one is V for volume. This is how many repetitions multiplied by how many sets throughout the week. So what's my total weekly or monthly volume? Again, as I said a second ago, it's important in both categories here that we're paying attention, but really, we need to make sure that we're not losing volume over time with hypertrophy. And for strength, we just want to make sure we're not doing so much volume that it's compromising our ability to come back and use high force and high power in our next training session, because those are the ultimate drivers generally for those adaptations. The next is I for intensity, and that refers to, again, what percentage of your one repetition maximum you're going after. It's the inverse answer to what I just said a second ago, where intensity needs to be key for power and strength, and where it is important but far less relevant for actual muscle hypertrophy.

Dr. Andy Galpin

F stands for frequency. This is how many days per week. Easy distinction here. When you're training for hypertrophy, you don't necessarily want to train the same muscle on multiple days in a row because you need to allow some recovery. Now, where a lot of people actually make the mistake here You don't need the muscles to have complete rest. It doesn't need to be completely turned off for two or three days. As you'll see in the program, it's not needed. But you definitely don't want to work it hard multiple days in a row in your typical fashion. Strength and power is the opposite. You can train the same muscles every single day. As you'll see, the program does. Not a problem here because there's not a lot of residual fatigue, not a lot of local fatigue, rather, in the actual muscle, not a lot of soreness because we're not pushing that adaptation. And so frequency can be very different between these two programs and should be.

Dr. Andy Galpin

Strength and power requires practice, which means more repetitions, which means a lot more frequently. R stands for rest, which is your rest interval. How much time am I taking between

sets or even repetitions? You have the option for hypertrophy, can be low rest, say 30 seconds of rest or maybe even less, all the way up to five minutes of rest. But for strength and power, almost always you need to have a minimum of three minutes of rest because, again, we're going after something different here. This is really about the quality of each individual movement, and so if we're keeping ourselves to a short rest and we're losing our force or power production, then we're losing our actual goal, which means we're not going to get what we're after. There are exceptions to all these rules, but this is just a standard default of typically what we're trying to do. The last variable here stands for P, progression, which is how are we progressing these things over time, and that is really what we're going to talk about along the way.

Dr. Andy Galpin

So that said, that is the fundamental background of everything here, and what I'd like to do now is get into the two programs. I have intentionally selected things, as I mentioned earlier, that I have done personally, I've done in my actual self, my training. I've done them with athletes I have coached, and there is research directly supporting them. You're going to see some of these. In fact, one of the protocols is one I've used in my laboratory for training studies that we've completed. So again, I know that these things work quite well. You're also going to notice that they're both set up to be four days per week. I did that just to help you understand both the training programs. If you want to modify them a little bit to three days a week, that is absolutely possible. That's something you'll have to figure out on your own. If you want to increase this up to five days a week, that may be challenging, but could be done as well.

Dr. Andy Galpin

I would recommend, though, if possible, to do both these programs if you're going to try them yourself. Really do your best to try it at four days per week. You're going to get the best results because that's intentionally and specifically what they were designed for. I've also selected a couple of different examples. The hypertrophy one, as you're going to see, is very straightforward. I wanted this to be pretty simple. This will be easy to listen to, and it'll be something to just really jump in and try. Now, neither of these programs are easy. They're going to have to work hard, as hard as you choose to, but it is, again, a little more straightforward. At the same token, I wanted to go over something more advanced. I know a lot of you listening are at the beginning of your fitness journey or have been coaching for a little bit, but some of you are at the other end. Some of you are very high-level coaches, and so I wanted to provide some context of letting everyone see this is what this strength training stuff can look like at a simple, straightforward.

Dr. Andy Galpin

That doesn't mean less effective, doesn't mean it doesn't work as well, but programs can be very simple, and they can be highly complicated, and both can work. And that's really what I want to

highlight is the fact that just because your program looks very simple doesn't mean it won't work, and just because it looks really simple doesn't mean it's actually any better either. Absolutely rationale to make programs very straightforward, absolutely rationale to make them far more complicated. Entirely depends on the context, the situation of both the client you're working with, as well as your personal coaching abilities and skills. I'd like to take a quick break and thank our sponsors. Today's episode is brought to you by Renaissance Periodization. If you want to put on muscle through science-backed training programs, look no further than Renaissance Periodization. RP, as we call it in the industry, guides users through effective and easy-to-follow lifting programs all through their hypertrophy app.

Dr. Andy Galpin

These programs are designed by the absolute best in the industry, including one of my absolute favorite sports scientists and professional bodybuilder, Dr. Mike Israetel. You may recognize that name because I've referenced him and his work countless times over the years. So whether you're looking to put on muscle, gain strength, or both, these programs will help you achieve your goals and have produced results in literally thousands of men and women. Renaissance Periodization also has a diet app that is backed by the latest science and innovation in the fields of nutrition and takes the complexity out of dieting, helping you achieve your ideal body composition. If you'd like to try Renaissance Periodization, go to rpstrength.com/perform to save up to \$50 off of your subscription. Again, that's rpstrength.com/perform to save up to \$50 off your subscription. Today's episode is also brought to you by Momentous.

Dr. Andy Galpin

Momentous makes high-quality nutritional and dietary supplements. I was deeply skeptical of them, as I am of all supplement companies, given what I know about the industry, the low quality, contamination, mislabeling, and other issues plaguing many companies in this space. However, I was so impressed by what they're doing and plan to do in the future that I decided to not only bring them on as a sponsor to the podcast, but to formally partner with them as well. Every single one of their products is third-party tested, and 100% of their product line is NSF or Informed Sport certified, giving you peace of mind that you're getting exactly what they say you are. So while they offer excellent quality foundational products such as vitamin D, creatine, and fish oil, they're also highly innovative, having received 10 US military innovation and research grants in recent years. No supplement is mandatory.

Dr. Andy Galpin

Even the foundational ones, like the ones I just mentioned, or their grass-fed whey protein isolate, are never meant to replace or be used instead of high-quality food. However, they do have a strong base of scientific support and give you more options to hit your macro and micronutrient targets. For example, I personally found that the recovery powder is fantastic for

getting protein, carbohydrates, magnesium, and some glutamine in without needing to give my coaching clients a ton of directions or several supplements to carry around. If you'd like to give it a try, go to livemomentous.com/perform to get 20% off your order. Again, that's livemomentous.com/perform to get 20% off your order. Okay, let's dive into the programs. The first program I want to get into is the hypertrophy one. Now, this is designed to be eight weeks and is something we used in my laboratory for an actual, real training study.

Dr. Andy Galpin

I can't go over and tell you which study we used it for because it's currently in review, but what I can tell you is without question, it worked. It worked for muscle size. The people actually got a lot stronger, too. As I said earlier, when you add muscle, you're almost surely going to add some strength. Unless you're at the very end of that spectrum, you're a very high-level bodybuilder, where you might add some muscle and not see a lot of functional gains in strength, most people that add a sufficient amount of muscle in the appropriate way are going to add a lot of strength, and these folks did as well. We also had them specifically, because this was actually a nutrition-based study, on a hypercaloric diet, so we were controlling for their nutrition and their training and everything else there. So a lot of context went into this, but this program absolutely works. We put it into practice.

Dr. Andy Galpin

This was led by three of my fantastic graduate students, Cody, Chelsea, and Danny, all of whom have gone on to be excellent and very high-level coaches themselves. So a lot of confidence in the quality of this program. Final important note, it was built directly by a gentleman named Menno Henselmans. Menno has a master's degree in the field. He is a highly published scientist as well, so he collaborated with us on this program. So this is actually developed by Menno. His website is mennohenselmans.com. A really high-level personal trainer, strength coach, worked with tons of people in the past and is wonderful with education. So if you like learning about this stuff, he has courses, excellent social media. So Menno is a great person for evidence-based personal training and strength conditioning. So Menno built this program, so wanted to make sure he got due credit for that because he just gave it to us, and we plugged it in and played, and it worked wonderfully well.

Dr. Andy Galpin

So thank you for that, Menno, and let's go ahead and get into it. The way the program was constructed was to use what we call an ABAB model, which is to say it's four days a week, and you basically repeat the exact same day twice every other day. So A on Monday, repeated A on Thursday. B on Tuesday is repeated B on Friday. It's not necessarily an upper-lower split, if you're familiar with that term, because you're doing really upper and lower body every single day. Now, I like the fact that we kept the two days identical. If you need more variation in your life,

you can do that, but it is actually quite nice scientifically to have the same day repeated twice per week because we can control and monitor and measure volume intensity and a bunch of other variables. It's also easier to coach because we don't have to teach twice as many exercises. So a strong value proposition to this is it's simple, easy to explain, and your body will become incredibly accustomed to the workouts because you're doing the same workout twice per week.

Dr. Andy Galpin

It doesn't necessarily have to go Monday, Tuesday, Thursday, Friday like we did in our lab, per se, but that would be the typical approach. That way, the workout from Monday, you're resting on Tuesday, you're resting on Wednesday, and then coming back and doing it again Thursday. The same basic idea for the Tuesday and Friday approach. And then you've got the two days on the weekend to fully recover. Again, if you want to do it a little bit differently, if you wanted to take two days in between, then come back, that's fine, but that's entirely up to you. It was also built on a methodology which is really common and quite popular these days called autoregulation. Been a bunch of research on it. It is highly effective. A handful of meta-analyses and review articles have been published in the last few years on it. It is somewhat newer, though. Now, autoregulation has been around for a very long time, but the scientific research on it really has been around for the last 10 years or so, and it is quite effective.

Dr. Andy Galpin

What this means is instead of pre-programming out exactly how heavy you're going to lift and how many repetitions you do, you let your body's response guide us a little bit. That's why it's called autoregulation. So we're regulating the intensity and the volume based on how your body's responding rather than a pre-planned number. Okay? It's actually quite simple, but this is a nice blend of having a structure and a plan while also letting your body respond to it. This allows you to be individualized, and so instead of me putting everyone in the entire study on the exact same program, knowing that it wouldn't be enough volume for some people, it'd be way too much volume for others, and then there'd be a bell curve in the middle where it's okay. I want to maximize my response in everybody. Just like you, I want all of you to get the best results. And I can't give you exact numbers without knowing any of you, and so the better way is to let your body respond and see what's actually happening, and those of you that need less volume will see that your body is asking for more of a back off.

Dr. Andy Galpin

Those of you need more volume will see the opposite, and those that this is perfect for, you'll know exactly what that means. So how this operates is every set we ask you to do the most amount of repetitions possible at the given weight. If you can do two or more repetitions more than the set requires, then we actually increase the weight by 2.5%. So let's say I ask you to do a set of 10 repetitions, and you do 12 repetitions. You've done two more than what we planned.

Therefore, the next set, we increase the weight by 2.5%. If you could do two or less than the requirement or what we asked you to do, so in this case, we asked you to do 10, and you only did eight, then we drop the load by 10%. So we take that off. And we do that for every single set for every day For every single week. And so depending on if you're getting really tired and you start executing less repetitions, then we're going to start backing the weight off.

Dr. Andy Galpin

And if we back the weight off and you still can't get 10 repetitions, we back it off even more. But if you're responding, even if you're sore or tired, but your body is executing and performing, then we continue to add. And how do we know that we added too much? Well, because then your repetitions would go down too much. And so we are really seeing what happens. We know exactly what you did last week. We came back and we start there. If you did, again, more than two repetitions above the planned or less than two repetitions, we either add 2.5% of load or reduce 10%. Now, for the most part, we're working on five to 10-pound increments. We don't have always necessarily access to one-pound plates. And so this isn't going to be perfect. Do the best thing you can. If you can get to two-and-a-half-pound increments, that's great, but a lot of times most people are going to be working on five to 10 pounds.

Dr. Andy Galpin

So don't get overly specific about that 2.5%, 10%. Just do the best you possibly can. All right? So what this actually specifically looked like in our program, here's the following workout. Remember, there's just an A and a B workout, but you would repeat A and you would repeat B twice during the week. So the A workout was a Romanian deadlift, four sets of eight to 12 repetitions. All of these would have, for the most part, three-minute rest intervals, by the way. And so just as a very specific example, you would warm up for all this stuff. Every single day has a basic aerobic warm-up. It has a specific warm-up. So you may do two or three sets of Romanian deadlifts to build up to your load here. We would never just start you at say 100 pounds with the most amount of reps you can do as your very first set for the day. So all that is going to be taken care of. And when you're really actually truly ready to get to what we call a working set, this is when this autoregulation part starts.

Dr. Andy Galpin

All right? So let's just say this very first week, the very first set of Romanian deadlifts, we did 100 pounds for, we said eight to 12 repetitions, and you got 10 repetitions done. Great. We'll leave you at 100. And on the next set, you got nine repetitions. Great. We leave you at 100. Now the next set, you got seven repetitions. Okay. Well, now since you've done less than two, two less than what we wanted, we're going to reduce that load by 10%. So we'll take 10 pounds off and see how many reps you can do for your fourth and final set. That's the basic idea, right? So that day, four sets of eight to 12 RDLs, Romanian deadlifts, five sets of leg extensions at eight to 12

reps, barbell bench press for four sets, six to 10 reps there, neutral grip pull-down for four sets of eight to 12, seated calf raise for five sets of eight to 12, and then finally cable lateral raises for three sets of eight to 12.

Dr. Andy Galpin

Those last two exercises would be at two minutes rest rather than three, but everything else would be at the three minutes rest. In addition, want to add some context. This was specifically designed for whole body hypertrophy, but also we did make sure that there was specific exercises on the muscles that we were measuring. And so we were using ultrasound and other tactics to measure direct muscle gain. And so if you're wondering why we chose some muscle groups over the other, it was just to do a whole body workout. You can't do every single thing, and we wanted to make sure we were targeting the muscles, in this case, especially the vastus lateralis and the quadricep muscle, to ensure they directly were getting activation. So if you see things like the leg extension being the second exercise of the day and you think, "Well, why didn't we do a back squat or a front squat or something like that?"

Dr. Andy Galpin

is we just scientifically wanted to ensure, without question, that the quads directly got activated, so we did that very first. So typically, you wouldn't do a single joint exercise, like a leg extension, prior to doing your bigger multi-joint exercises. But there's also a thing about exercise order that says do the thing that's most important first. And so we did that really early on to ensure we got the quads, and if this means we lost a little bit of performance in our seated calf raises or something, that's fine because it wasn't the primary muscle of interest. To be as clear as possible here, when we say if they have two or more or two or less repetitions outside the range, what I'm talking about is outside that range. And so as you see, the repetition range for the exercises was eight to 12, six to 10, et cetera. So in this particular case, if the range was eight to 12, we would need them to do two or more outside of that range.

Dr. Andy Galpin

So two or more over of 12, so 14. Or two or more less than the bottom of the range, eight. So you have to do six or more before we start changing the load. So it's going to be really hard always to get an exact repetition number, and that's why we usually work within a range. It's also because we know that hypertrophy is very well-stimulated in eight to 12 repetitions. It's also stimulated in other repetition ranges, but to make sure we still stayed most of our time in a really highly productive and effective repetition range, that's where we landed them, eight to 12. And if they got below that, we're probably getting excessive fatigue, and above that, it may not be enough load to maximize mechanical tension, and we wanted to make sure we did that because we're trying to maximize muscle growth. Now, the B workout was very similar. First exercise there was a high bar squat, four sets of five to eight repetitions there.

Dr. Andy Galpin

Now, I don't know, I could ask Menno this, but my assumption is the reason why we went to five to eight repetitions there as opposed to eight to 12 is when you add that kind of fatigue to a complex movement like a barbell squat, now you're talking about multiple joints that are involved. You're talking about a load on your back which compromises and restricts breathing. The fatigue associated with something like a high bar squat relative to a leg extension is unexplainably higher. And so a couple of reasons probably behind that, but that alone is probably why we kept that a little bit lower. Doing as many reps as possible for four to five sets of eight to 12 repetitions is insanely gnarly for an exercise like a back squat. In addition, you've got other issues and concerns with safety and technique and stuff like that. So that's probably my reason why. Now, actually on that note, I want to say one more thing that I forgot to say at the beginning, and that is, as a part of our autoregulation, technique counts.

Dr. Andy Galpin

And so when we're saying if they did less than two repetitions outside of the range or more than, the failure point is technique. The failure point is not them racking the bar out, but if they see a change in technique, we count that as a failure. It's never a reason or allowed for us to try really, really hard when you have a combination of kind of heavy load and a lot of fatigue, and then allow repeated breakdowns of technique. And so that is what we're looking for. A break of technique represents failure. It's not necessarily just explicit direct muscular failure. It's if you break position, you have more than a very moderate or very mild breakdown in technique, then you're considered to be failed. Okay, so the B workout. High bar back squats, four sets of five to eight repetitions.

Dr. Andy Galpin

Lying leg curls, five sets of eight to 12 repetitions. Barbell overhead press, three sets of six to 10. Seated rows, three sets of eight to 12. Cable chest fly, five sets of six to 10. Triceps push down, two sets of eight to 12. And then finally, seated dumbbell curls, two sets of eight to 12 repetitions. Now, those last two exercises, like we did on the A day as well, those last two tricep push down and seated dumbbell curls were at two minutes of rest rather than three. As I mentioned earlier, the training program did work in our particular study. Important to note, our participants were young, so these were college individuals. They were men and women, and they were very highly trained. So the results are going to be different if you go into different scenarios. However, if you look across the research landscape, you'll see that this style is an effective method. Now, just to give you some context and results, whenever we analyze study participants in training programs, we're looking how every individual person responds, because we know some people will be hyper-responders, others will be non-responders.

Dr. Andy Galpin

And so it's important to understand each one of you, if you were to actually get this program and do it yourself, there's going to be a range in responsiveness. So I will just share with you kind of the group averages, but it is important to acknowledge that, again, results may vary, if you will. So just going over some of the basic things. Now, our participants got a lot stronger. Their squat maximum strength, so their one-rep max increased by about 13%. Again, just a rough average there. Some more, some less, some quite a bit more, some quite a bit less. And there was other interventions going on in the study, and that there were differences. But as a general answer, it worked quite a bit. Raw numbers here, you're going to see something like a 14.5-kilo increase in strength, which would be about a 32-pound improvement or something over the course of eight weeks, which is quite a lot, especially considering it wasn't a program designed to optimize strength.

Dr. Andy Galpin

Bench press is a similar story, about a 10% improvement collectively across both wings of the study in men and women. About an eight-kilo jump in performance, which is about 17.5 pounds. Muscular endurance, we tested this in a number of different ways, so not to confuse you, but you can kind of think of that, that improved by 13% to 16% or so. So your ability to perform multiple repetitions at a given submaximal load went up. That should make the most sense, because if you're thinking back to the style of training we did, where we asked them to do as many repetitions as possible every single set, we were training them for this test, is one way to think about it. Now, not directly, but indirectly. So how many repetitions can you do at a given weight? Then you had a similar training style. So not surprised that they had a very large response there in both their legs and arms, and again, across all the groups there.

Dr. Andy Galpin

They also improved muscle size. So you're talking about a group average of 1.8 kilos or more, which is about four pounds, which is, again, quite impressive. Represented ballpark about a 3% improvement, but that's really hard to interpret because you had pretty big men and pretty small women all combined together. And so wouldn't be concerned so much about the actual percent change there, because that may sound low to you. But the fact that fairly trained folks put on an average of four pounds of muscle in eight weeks is a pretty impressive response, and I think is realistic. So you would expect not much more than that, but less than that also would be maybe concerning. So probably a pretty good number that does suggest a very reasonable but effective program. The next program I want to cover is designed to maximize strength and power. I'll explain a little more of the context and walk you through it in one second, but I do want to reiterate it's best if you get this thing and follow along with me if you really do want to learn, because while the previous program was pretty easy to digest just listening or watching here, this one is more complicated.

Dr. Andy Galpin

And I'll do my best to kind of walk you through the concepts and give you a couple of samples, but it is a four-day-a-week program that has three different phases over 12 weeks and multiple subcomponents to each phase. And so just that alone is going to let you know that I can't walk you through the entire program because it is complicated and changes every single week. With the previous program, it was the same exercises all throughout the eight weeks, so we didn't have to worry about that. And really, it was a two-day-a-week program that you double. This is not the case. So will do my best to highlight the big picture of why the coach designed it the way he did, and then give a couple of sample days and some progressions, but you really will need to get the full thing to see it more. As I mentioned, the program was developed really for an athlete. This is assuming you're in a preseason phase, so you've got 12 weeks or three months prior to competition, and it finishes with a taper, so it's a deload, and it backs you down so that you can roll right into performance.

Dr. Andy Galpin

This was developed and built by a friend of mine named Travis Mash. Travis Mash has a master's degree in the field as well. I believe he's working on his PhD now. He has over 20 years of experience coaching athletes in a number of sports, including NFL players, a number of Olympians across multiple sports. Travis himself is one of the most legendary and famous powerlifters of all time. I think he still holds world records in the total. He competed mostly in the 220-pound weight class. I think his best total, I'm looking at 2,414 pounds. This was a 970-pound squat. And remember, at 220 pounds, so almost in the neighborhood of four and a half to getting close to 5X body weight of a squat. So a 970-pound squat, 705-pound bench press, 766.1, .1 for you there, Trav, pound deadlift, for a total of, again, 2,414 pounds, which I believe is still an all-time record to this day. So Travis himself is a practitioner.

Dr. Andy Galpin

He has multiple athletes he's getting ready that will likely qualify and compete in the Paris Olympics in the sport of weightlifting, and he is extremely decorated. I could go on and on about Travis. But coached tons of people from youth to college to these high-level ones. So really designed this program with this in mind. Also uses a concept similar to autoregulation, so you'll see hints and twinges of that as well. But instead of based on how many repetitions you can complete, it is based on how fast you can complete. So he uses a method called velocity-based training. Lots of research in the last decade on VBT, for short. And so it's a similar idea, which is to say, instead of us pre-programming and using entirely repetitions and sets and loads that we think six weeks in advance will work, it is seeing how your body responds and adjusting to what's actually happening. But instead of adjusting it by your muscular endurance or repetitions, it is by the actual velocity you achieve on the barbell.

Dr. Andy Galpin

So how fast can you move that load? If you're too slow, we change things. If you're too fast, we change things. So autoregulation, but again, by velocity in large part. There's a large component of it that is pre-programmed and pre-delivered using a concept that I've talked about in other places called the Poliquin chart. So basically, it says how many total repetitions did you accomplish at 60% to 70%, 70% to 80%, 90% plus, et cetera. So that is all baked in as well. So it's a combination of Travis' powerlifting and Olympic weightlifting background, as well as his work with field sport athletes, and really blends it all together under this autoregulation velocity-based training approach to make sure that you are getting stronger, getting faster, and then moving better. Last little part here is that you'll see this program actually involves a lot of on-field movement. So there's acceleration and change of direction, there's sprint work, there's agility work, there's plyometrics.

Dr. Andy Galpin

And so this is really a nice comprehensive program to develop an athlete, particularly a field or court or pitch-based athlete, for an actual going-into-season phase, and it is pretty comprehensive in that fashion. So the workouts are highly effective, and what they typically will do is use a style of programming where we address multiple different variables in the exact same workout. So as a concept, and we'll get into this in a second, we're not going to just do, say, strength in one day or hypertrophy in one day. If we need to do strength and hypertrophy, we'll do them both in the same day. But depending on how much of an emphasis we want to place on one over the other, we will alter the amount of time we spend. So, for example, if we want to just do a little bit of speed work, we might do one speed drill for two or three sets. And then we want to have a big strength component, we might do three or four strength exercises, and then we want to do just a little bit of muscular endurance at the end, there might be one muscular endurance.

Dr. Andy Galpin

In a different phase, when we want to emphasize speed more, maybe we still do that speed, strength, and muscular endurance component, but now we take three-quarters of the strength movements away and replace those with an extra three or four speed components. And so we're doing a lot of different things, speed, acceleration, change of direction, high velocity, low velocity, eccentrics, muscular endurance, muscle health, all kinds of things. And we're almost always doing it all in one day, but we may only do literally one exercise or a couple of sets for each thing. Now, this is important and used a lot in this style of training because they need to be able to make sure that we don't, say, go five or six weeks without training a particular style or component. Think of it this way. Imagine you're going into season and you spent eight weeks focused on hypertrophy. You did the program I talked about earlier, and that's great.

Dr. Andy Galpin

You got a little bit stronger, you add a lot of muscle, and that's awesome. But you're a soccer player. You play lacrosse. Okay, you haven't moved yet. You haven't done any change of direction. You haven't gone faster. You haven't jumped. You haven't put your body in a weird position. You've just gained muscle size and some strength. Now we switch over, and we start doing things like on the field. We're doing agility drills. We're doing cleans and throwing medicine balls. Well, if we do that exclusively for the next 12 weeks, by the time we get six, eight, 10 weeks in, it's now been two and a half months since we've done any hypertrophy work. So what do you think happens to all that hypertrophy we spent so much time and we worked so hard to achieve two and a half months ago? A lot of it goes away. And so for an athlete who needs to have multiple components, as I mentioned, you need to be fast, you need to have acceleration, peak velocity.

Dr. Andy Galpin

Those are different components of speed. You need muscular strength, connective tissue health. You need muscular endurance. You need size. You need all these things. Instead of just doing one at a time in these big eight or 10-week chunks and then not seeing the same type of adaptation again for the next eight to 10 weeks, you do a little bit of it every day, enough to just keep it stimulated, to keep it alive, but then you change your emphasis and your focus on another component as you go from week to week to week. So before we jump into the actual details here, a couple of final reminders. Again, the program is available on a PDF in the show notes in its entirety. And Travis as well has a ton of education on this program as well as others on his website, mashelite.com. Travis is exceptional with his education on his social media and podcast. Lots of free stuff there, so tons of other programs you can get from Travis, so I'd encourage you to go to all of those before you get here.

Dr. Andy Galpin

With this particular program, as I just laid out, there are multiple components, and so the workouts are a little bit longer. You're going to be asked to rest a lot, maximally almost, three minutes plus between most of your sets. And so they do extend and do a little bit longer period of time. If you are not an athlete and you're listening to this and you're like, "I want to get stronger and more powerful, but I don't have 90 minutes for my workout," you might have to modify something like this. You may have to take out entire components. You may reduce it to three days a week or spread it out. And so absolutely there can be some modifications, and they should be. But these workouts, candidly, will take you a little bit longer because you're not only strength training, but you're also doing your field work and you're doing things that would be typically done even sometimes across multiple workouts in a day for an athlete, and that would be fairly standard.

Dr. Andy Galpin

But I would admit not necessarily applicable for the non-athlete folks that are out there listening. So keep that in context. However, we're not spending a full workout on each sub-component. For example, if we're doing power, we might do one exercise for two sets for power. That's not going to take very long. That's five minutes, and then we're rolling on our next one. So you can actually get four or five or six different components of training done in a single day and not have it be two and a half hours. In fact, I could say the same would be true for the hypertrophy training program. Even if you do three or four exercises in a day and you're just focusing on hypertrophy, if you do enough sets, that could easily end up being a two-hour workout. And anyone who's trained a lot for muscle growth can certainly attest to the fact that it is not crazy to do a 90-plus minute workout, and I would see this to be no different.

Dr. Andy Galpin

So it can be shorter, but candidly, probably going to be fairly long because you're trying to get a specific outcome and you're training for a lot of different things to make you the best athlete possible. I'd like to take a quick break and thank our sponsors. Today's episode is brought to you by AG1. AG1 is a foundational nutrition greens supplement. That means AG1 provides a variety of vitamins, minerals, probiotics, prebiotics, and adaptogens in an easy-to-drink greens powder. Initially, I was very skeptical of AG1, as I am with all supplement companies, frankly. But after months of discussions with their lead nutrition scientists and the team at AG1, I've been impressed by their commitment to sourcing the highest quality ingredients and rigorous testing to ensure that every single batch is free of banned substances, allergens, heavy metals, microbes, pesticides, herbicides, residual solvents, and mycotoxins.

Dr. Andy Galpin

It's even earned the prestigious NSF Certified for Sport third-party testing approval. Now, AG1 is not a replacement for eating whole foods, but it is a great way to fill in the gaps, and it's been a big help pushing some of my clients just in the right direction for eating more high-quality foods because it helps them with cravings, digestion, and many other benefits. Now, not everyone needs to consume greens powders. But if you're going to do so, you better make sure it actually includes the ingredients that it claims to and that those ingredients are of the best sourcing. If you'd like to try AG1, you can go to drinkag1.com/perform to receive five free travel packs plus a year's supply of vitamin D3 plus K2. Again, that's drinkag1.com/perform to receive five free travel packs plus a year's supply of vitamin D3 plus K2. Today's episode is also brought to you by Maui Nui Venison. Maui Nui Venison is my absolute favorite thing to eat, period.

Dr. Andy Galpin

It's beyond delicious and the highest protein per calorie meat you will find. Maui Nui Venison is 100% wild harvested meat, not fenced, farmed, or fed in any way. The venison is ethically and

sustainably hunted on the island of Maui and is far beyond the quality of any beef, grass-fed or whatever, you've ever tried in your life. And I know because I grew up in the country and I've tried it all. It's easy to cook and tastes incredible. My wife and small kids absolutely inhale it, and the jerky sticks are a daily staple for me with 10 grams of protein and just 55 calories. While Maui Nui Venison offers the highest quality meat available, there is a catch. Supplies are limited by nature. Responsible population management means they won't go beyond the harvest capacity. Memberships are the best way to ensure that you can get the meat you want whenever you want it. So be sure to secure your spot now.

Dr. Andy Galpin

Maui Nui Venison is offering Perform listeners 20% off their first purchase of jerky sticks, fresh venison, and bone broth while supplies last. The bone broth, by the way, has 25 grams of protein in it itself. Visit mauinuivenison.com/perform for 20% off. Okay, so what's this program look like? 12 weeks long, and it's going to go through three specific phases, four days a week for the entire 12 weeks. And it uses a style of periodization called block periodization. It's been around since probably the 1960s, but certainly has gotten much more popular in the last 25 years or so, and for a number of reasons. But one of them being, one of the biggest proponents of it, a gentleman by the name of Dr. Vladimir Issurin, a Russian scientist who's been around this world for a very long time and has produced a number of publications using block periodization. So you can read more about his work. We'll certainly put a number of those instrumental papers available as a PDF in the show notes.

Dr. Andy Galpin

But a lot of work from Vladimir and his group in this area. Also been directly applied to tons of athletes in a lot of different sports and contexts and is very effective. And so really with block periodization, there are three fundamental phases we want you to go through, and they're called accumulation, transmutation, and realization. What this really means is we're typically looking at one to four weeks per phase. So in this particular case, four weeks of accumulation, four weeks of transmutation, and four weeks of realization. Accumulation is what it sort of sounds like. You're going to accumulate money in the bank, if you will. So you're making deposits that we're going to cash out later. You're accumulating volume. You're building up fatigue in the system on purpose. You're overloading and overreaching the body so that we can get results later. Now, once you've done that, you're going to transmute it.

Dr. Andy Galpin

You're going to transfer it. So you're going to take, let's say, your newfound muscular size and strength and try to translate that into power and speed and eccentric control, and you're going to transmute it into what specific things you want. Now, one of the reasons this style of programming becomes so popular among strength and conditioning coaches is it allows you to

be specific at this phase. So we can be general with accumulation and now be super specific by transmuting your adaptations for a discus thrower and transmuting it slightly differently for a wrestler and transmuting it slightly differently for a high jumper. All right? And so we're transmuting it into a more specific fashion. The last phase is realization, where you start to peak. You start to realize the benefits. You start to actually get faster, jump higher, hit the tennis ball harder, and all those things. So we're building up volume, we're transmuting it and transferring it into the exact output we want, and then we're realizing it, peaking, and tapering at the end.

Dr. Andy Galpin

At the highest level, the way that we accomplish that is if you think about three primary variables, volume, specificity, and intensity. Volume is repetitions multiplied by your set. Intensity is what percentage of your one-rep max or maximum speed or maximum heart rate, how hard are you working? And then specificity. How specific are you to the actual thing you want to get done? So again, for a volleyball player, you'll want to think about things like vertical jump. Okay? That's really specific to a volleyball player. That's not necessarily as specific as something like a 100-meter sprinter. Yes, they want to be able to jump high, but really they want to be able to run horizontally as fast as possible. So at the very beginning, in this first accumulation phase, your volume is the highest, and as you go from accumulation to transmutation to realization, your volume comes down in all three of those.

Dr. Andy Galpin

Intensity does basically the opposite. So the very first phase, high volume, low intensity. The next phase, volume comes down, intensity goes up. The last phase, volume goes way down, intensity comes way up. If you think about this from the field sport, and I know I'm using a lot of sport athlete analogies, but remember, the same concepts are true whether you're an athlete or not. As we get closer to wanting to have our peak, you want to be producing the most speed, power, strength, however you're going to express these newfound physical capabilities, and you don't want to be fatigued, though. Volume drives fatigue, so we reduce the volume, we increase the intensity, so you go your fastest prior to having to go fast. You produce your most power prior to needing to actually produce your power on the field or on the court. Specificity continues to go up. So it's very general at the very beginning, gets more specific in the second phase, and then specificity really takes off during the last phase.

Dr. Andy Galpin

This could come in a number of different areas. Energy systems, range of motion, type of exercise, the uniform you put on. As easy examples, maybe you start off on machines at the very beginning, which are not very similar to what you would be doing on an ice hockey rink. Right? When you're playing ice hockey, you're on skates, you're unbalanced, your feet aren't in the same position, and in a machine, you take all that away. But you're trying to be general here,

just as an example. And then maybe the next phase, you move in off of a machine onto dumbbells. And then the final phase, you move off from dumbbells onto maybe an unstable surface. Not necessarily to say that that's a great way, but you get the point. You're moving from general stuff into more and more specific things as we get closer to competition. So that's how we're going to play with all those variables as a general example of how the philosophy of block periodization works.

Dr. Andy Galpin

With all that background, I'd like to walk you through how Travis has set up these different weeks. We're going to start off with just the accumulation phase. I'm going to show you how he's built day one, day two, day three, day four, and how we're going to change goals slightly. After this, we'll go through transmutation and then finally realization. Along the way, and at the end, I'll give you more, but I'll give you specific examples of the exact days as well as, and I think this is important for a lot of people, how Travis progresses from, say, day one, week one to day one, week two to day one, week three, et cetera. So how are we going from Monday to Tuesday, but also how are we going from Monday, week one to Monday, week two to Monday, week three? What small changes are we making? How are we progressing intensity? How are we managing volume? I can't cover all of it. You can run the grid there.

Dr. Andy Galpin

Right? Many different sub-goals, four days a week, 12 day. That's a big matrix I need to cover, so I'll just pick out a couple of key examples that I think are the best way to represent what Travis is doing overall, but the final details will just be in that PDF in the show notes. So getting us started. Phase one is accumulation. Now, in this particular phase, very first day, the overall focus is acceleration and lower body rate of force development, as well as some hypertrophy. So again, you can see there's multiple components there. And what I also love about this style of programming is Travis tells the athlete specifically what the big goal is. A lot of people jump in, they just want to know the exercise or the reps, and that's important. But let the athlete or client and yourself know, what are we trying to do? We're trying to move fast today. We're trying to accelerate today. We're trying to do max speed.

Dr. Andy Galpin

We're trying to do a little bit of this. It's incredibly effective to let them know because when questions pop up, they run short on time. The exercise isn't available. Maybe something's hurt. If they're just following the program, they may not necessarily know what to say. Okay, you know what? The primary goal today was, in this particular case, acceleration. So while I don't have this piece of equipment, I know a good substitute is anything I can do where I can still accelerate. Something that blocks my acceleration but is maybe good for strength wouldn't be a great switch out here because I know I'm trying to go after acceleration. If that piece is gone and they're just

seeing a speed movement, they don't necessarily know what you're trying to get at, and so they can't necessarily make changes. So I love the fact that we're telling them what's the outcome goal we're after, and in this particular case, you got three of them.

Dr. Andy Galpin

On this particular day, he's got four sub-components. Now, I probably should have said this at the beginning, but every single day, no matter what phase or what week we're in, there's always an extremely long, high-quality dynamic warm-up. Right? So I'll go through one example of that, but just plant that in your head as that is incredibly important to this process, especially because we're going to start these workouts asking you to go as fast as possible. We need to make sure your neurological system, your muscular system, and mentally, you're ready to actually move fast. So there are long and very specific warm-ups, and these warm-ups do differ from day to day based on the movement patterns needed in that day. As a quick example, if you're going to be sprinting more that day, there's probably going to be more of a focus on making sure the hamstrings and the calves and the feet are really warmed up.

Dr. Andy Galpin

If there is maybe some speed work, but maybe a large focus on strength, then the hips are going to be nice and opened up, and the back are going to be activated. And we want all those things for everything, but you see the point where we're just emphasizing something slightly more or less based on what we know we're going to ask them to do in a few more minutes. And so going back to it, we've got the four components for this particular day, dynamic warm-up, and then it's going to be acceleration. In this particular case, it's going to be sprinting acceleration. Second component is power or power development. The third is what's going to be kind of combined together as strength, hypertrophy, and rotational power. And then the fourth is knee health for speed. Now in that, Travis is specifically saying, when we start going fast, I know knee injuries tend to pop up, and so we're going to go ahead of that.

Dr. Andy Galpin

Call this prehabilitation if you'd like, and we're going to start working on knee health in a specific way where the knee can start to brace high movement and control so that when we get into knee speed stuff later, our knees are actually nice and healthy. Day two is a little bit of a different overall focus. Now it is athlete-specific hypertrophy, meaning maybe one athlete needs more size in their quad, another needs more in their glutes or hamstrings or wherever it may be. So it's different amounts of hypertrophy work specific to the athlete, as well as change of direction. What Travis is also doing here, as you notice, and you'll see when we get to the exercises, you're going to be working full body every day. But by changing the emphasis slightly, so we're not doing hypertrophy necessarily every day. We're not necessarily doing agility, or we do agility one day or change of direction, and then full sprinting the next day.

Dr. Andy Galpin

So we have enough variation in our movement where we're still working the same muscles, but we're asking the joint and the movement patterns to be so different, our likelihood of overuse, just general strain, goes down pretty low. And so we can allow us to do more stuff more frequently at a higher intensity by having variations in the movement patterns. So overall emphasis again for the day, athlete-specific hypertrophy, as well as change of direction. Four sub-components within that. We've got our dynamic warm-up, of course, rotation, and change of direction to start off with. Then we go into posture-supporting strength. You can probably imagine what that type of stuff is. Third component is strength for high-velocity force. If you dive into this world deeply, which we're not going to have time to get into today, force is not just one thing. Power is not just one thing. Velocity is not just one thing.

Dr. Andy Galpin

There's a spectrum within that, and so Travis is at the level, and this program is designed to be at a level where we're actually going to be nitpicking different areas of that force curve, different areas of the velocity curve, and then different areas of the force velocity curve on top of that. I told you, it can get very advanced and complicated, and I wouldn't say that this program is overly complicated, but it is very well thought through to make sure we're hitting all components of speed, agility, acceleration, peak velocity, et cetera. So that's what he means when he says strength for high-velocity force. So this is a little bit of force, but at a high velocity. Okay. Fourth and final component for that day is hypertrophy for symmetry. So this would simply be looking at, again, is your anterior side much larger than your posterior side? So the front, maybe your front shoulder is much bigger than your posterior deltoid.

Dr. Andy Galpin

So we would then do hypertrophy to clean up that asymmetry. Maybe your right side's bigger than your left side, or whatever the case may be. So nice little component there. Again, as clear examples, that hypertrophy for symmetry, as we'll see in a second, might be a couple of sets of one exercise. But the majority of our day we're going to be spent on part one, which is our rotation change of direction. So we can do small amounts of everything here and not still really make this an incredibly high volume fatiguing or even really that long of a workout. Day three is an athletic speed development as well as a lower high-velocity strength day. Now, I know that's a little bit wordy. But it'll actually make sense when you see the program. Four components here. Going to be our pure speed stuff at the very beginning, then power, then strength for high velocity force production, and then finally, back to knee health for speed.

Dr. Andy Galpin

So we've gotten that in twice already in our week. Fourth and final day is maximum speed and upper high velocity strength, so upper body high velocity strength. Do speed right at the

beginning to get us going there. We'll work on concurrent power, which is a different style of power, athletic strength, and then finally transmutation, using a giant set for our upper body development. This is hypertrophy kind of for the upper body, but we're going to be transmuting a little bit into the next phase already. What he's kind of doing there is saying, we know what we're going to get to in the next phase, so I need to set it up right now so we can actually get to that work when we get there, and we're not unsupported for that. So that's the overlay of that first phase. Before we go on to transmutation, let's go over some examples right now. You got four different specific warm-up patterns. But let me just give you a couple so you can see.

Dr. Andy Galpin

I'm not going to do this for the next two phases, so I want to tackle warm-up a little more detail right now, and then we'll skip past it a little bit later. But just want to give you some exact repetitions and exercises to help you understand. So remember, what we're talking about here is day one. We're focusing globally for day one on acceleration and lower body rate of force development, so not only developing high force production, but doing it as fast as possible, as well as hypertrophy. Okay? The dynamic warm-up for that day is going to focus on getting actually warmed up for the rest of the workout, as well as laying the groundwork for acceleration. So all that context, this is what we're working on. Starting off with something like a walking lunges for 10 repetitions. And that's it. 10 reps of a walking lunge, one set. Then we're going to go to unilateral standing hip abduction. So you can imagine standing up and raising your leg out and away from you.

Dr. Andy Galpin

So adduction. A-D-duction is like add, where you bring your leg back to the midline, you're adding to the midline. A-B-duction is you're taking away. So you're raising your leg outside. So like the outside of your hip is kind of controlling, pulling your leg out to the side of you. And you do that for eight repetitions. Then you move on to a side lunge for another eight repetitions. Then a quadruped, so on your hands and knees position, and you're going to do some hip mobilization, working on the anterior and posterior side for about 30 seconds. Then moving into intentional hip internal rotation, so kind of like fire hydrants and hip circles, if you will. Moving that stuff around, and you're going to do 30 seconds for a couple of repetitions of 30, take a small break and do another one. Again, really what you're seeing here is emphasizing the lower body. We've moved forward, we've moved backwards, we've moved side to side, we've moved one leg at a time, two leg at a time.

Dr. Andy Galpin

We've moved the hip in all different positions. And we're building up a little bit of a burn and a little bit of fatigue in the system there is what we're trying to get. There, we're kind of warmed up. Now we're going to actually go into the acceleration development part of the warm-up. In this

case, we're going to do 10 meters of a linear power skip, kind of skipping up and down. So you're going to do however many steps that takes you, kind of walk back and do two sets of that. We're working on acceleration. We're not going as fast as we possibly can, but we're starting to use this kind of combination of move fast, move a little bit faster, work on accelerating off the ground, but we're still building up into maximum intent. Then we'll do a similar thing in the vertical session. So we did this for a linear, kind of power skips for linear, so out in front of you, and then power skips for vertical.

Dr. Andy Galpin

So how high can we go?

Dr. Andy Galpin

Two sets of 10 meters for that. And now we're going to go into linear bounds, so we're bounding in front of ourselves, four repetitions, maybe three sets of that. And at this point, we're probably feeling pretty good and we're popping. So we're moving and we're springing. Maybe not necessarily 100%, but with high intent here and high purpose. This is the warm-up, but this is also the training, okay? We're trying to get something out of this. We're trying to improve our acceleration. Okay, after that, those linear bounds, we get into something like a get up. So you're starting in a down position, and you get up to deceleration, that kind of exercise. Maybe three reps or three sets of that or so for 15 meters, something like that, with an RPE, so a perceived effort of kind of like nine out of 10. So again, we're moving as fast as we possibly can here. We're sprinting, we're controlling that deceleration, but it's not like every ounce of everything we have until the last set.

Dr. Andy Galpin

And then we'll probably do one at a true maximum effort because we should be at that level. Okay? After that, we'll actually go into some sprints, 20-meter sprints, maybe three of them, right? RPE. So again, rate of perceived exertion on a scale of 1 to 10 of maybe eight for the first one, nine for the second one, and then the last one is a final 10. Right? You can't do maximum effort on every single thing, but we're going to get pretty close, and we're going to get some stuff done out of the previous one. So that would all be accounted for in our warm-up and acceleration. Hopefully, that helps you conceptualize how Travis is getting this program started. The warm-up is also, as you notice, preparation for the day. This is a very big component to getting high-quality training sessions in. Everything should be intentional. Don't just treat your warm-up as hop on the treadmill and run for five minutes.

Dr. Andy Galpin

Do something that's actually going to help in your training later in that day and even later in your program. Very high-level coaching from Travis here, setting up multiple benefits and getting you really time-efficient training there. So let's go ahead and move on and talk about the actual

workouts on the individual days. Remember, day one here, we're back. We're focusing on acceleration and lower body rate of force development with a touch of hypertrophy. In order to get acceleration done, we already knocked that out with our dynamic warm-up, right? So we did that. We did our power skips, we did our bounds, we did some get ups to sprints, and we were really working on accelerating as fast as we possibly can. We haven't yet touched on our lower body rate of force development, though we did some of that in the warm-up. nor our hypertrophy. So we would finish that initial warm-up session, finishing with that last exercise being the sprints.

Dr. Andy Galpin

And our next block then is actual power development. So in this particular case, there's two exercises. First one is a hang clean. So for those of you that are unfamiliar, the barbell would start mid-thigh, just above your knees region, and you would catch the clean in an upper power position. You can catch it all the way at the bottom if you'd like, but a true hang clean is starting not with the barbell on the floor, but starting with it elevated and then potentially catching it as low as possible. So that's the clean exercise. You're going to do something like three repetitions for four sets, and you're going to do this at maybe 80%. All right? RPE is 7 out of 10. We're using this to go fast, but we're also using this to develop technique. So whether you have a lot of skill or no skill at all, we really need to get good quality practice in. It is light enough, but in fact, if you look at the research, peak power in the power clean or the clean itself happens somewhere between 70% to 90-plus percent of your one-rep max.

Dr. Andy Galpin

So being at a 70% or 80% here is going to produce a ton of power, even if you are moderately trained or experienced with the clean exercise. If you're not familiar with the Olympic lifts, you can modify it potentially, but a phenomenal exercise. In fact, looking at sports science in general, the highest power outputs found of any exercise will come with the power clean, the hang clean, or the hang snatch, the power snatch. Those exercises trump anything else you can do for total peak power production. So a wonderful option there. Again, we're looking at four sets of three repetitions. Non-fatiguing with a lot of rest. Second exercise is going to be a seated box jump. So you sit on a box, you explode from that seat, jump up, and land on a small box. A big tip I would give you here, though this is not directly in Travis's program, so I apologize for putting words in your mouth. Typically, you want to set that box that you're landing on to be much smaller than you think.

Dr. Andy Galpin

This is not a game of who can jump on the highest box. We're trying to develop power, and we need to do it in a way where we can actually complete high quality and use a lot of technique with our jumping. And really, we're trying to make ourselves better when we're in our sport. And so putting a really high box up there where we're in fear for our life, or worst case, we're actually

slipping, smashing our shin against the box. Now we have to take some time off of training or go through a bunch of pain is not the goal here. So put that box lower than you think, and then just work on jumping higher than you need to. Don't just jump enough to get on the box. Jump as high as you possibly can and get a lot of quality out of that. In his particular case, he's recommending a 90-centimeter box, which is not particularly high. And you're going to do five repetitions per set, four sets. If you wanted to probably super set these things, you could.

Dr. Andy Galpin

So you could clean, do the jump, come back and clean, do the jump. But you could do them separately as well. Once we've finished those two exercises and we've completed our power development, we're going to go on to our strength hypertrophy and rotational power. A couple of different exercises here. We're going to do a barbell back squat as well as a medicine ball perpendicular throw from a kneeling position. Okay? Now, with the barbell back squat, we're going to be doing 10 repetitions. We're going to do four sets of that, and we're looking at a combination of 60% one-rep max, plus or minus. So we don't want this to feel like what we did in the hypertrophy workout. I don't want you to be completely exhausted taking this all the way to the end. We're just trying to stimulate a little bit of hypertrophy, but we're not trying to maximize it. We're not trying to get complete muscular failure.

Dr. Andy Galpin

In fact, in this particular case, he puts a restriction on barbell velocity. So no lower than 0.73 meters per second. The way that this works is there are various devices. I know Travis uses a particular piece of equipment called a GymAware, where it attaches to your barbell, and every single repetition, it tells you the velocity that you've achieved. And so what he's saying here is we want hypertrophy, but we don't want to lose context of this is still speed development and power development. So if you go too slow, we're stopping you. So you have to still be able to go fast enough. In this particular case, no less than 0.73 meters per second. Maybe a little bit lower, but not much more than that. If you're going way faster than that, then we probably don't have enough load on the barbell. So he's controlling the situation, the repetition range, as well as the load by controlling the speed.

Dr. Andy Galpin

So it's a nice blend there of going after multiple things. He's also saying we're going to shut the rest interval down just a little bit. We're going to go to a minute and a half here. So a little more fatigue, a little more buildup, but not all the way to the end either. Now, as I said, you're also going to combine this with that rotational power. So you're going to use a four or five-kilogram ball from that kneeling position. You're going to rotate and slam it as hard as you can. Four, six repetitions per set, four sets total, and you'll rest a little bit more, maybe two minutes between all those because we're trying to develop power, so a little bit more rest. The last part of the day is

now our knee health for speed, and we're going to have three components of this. First is going to be a single-leg squat with a counterbalance, really making sure we can control our foot, knee, and hip position, as well as our upper body and our torso's alignment.

Dr. Andy Galpin

So not rotating left or right or off-center. Making sure our hips and pelvis stay in alignment while our feet and knee and toe overall are going in the right direction. So we're going to do that. You're probably looking at, again, six repetitions per set, per leg, four total sets, and we want that to be at 85% difficulty. This would be hard to program as a percentage of your one-rep max because who knows what their one-rep max single-leg squat is? I don't. You can't probably program this by your velocity either because you're not trying to go fast or slow. RPE would work here, but he's also just saying, hey, work pretty hard, but don't smoke yourself. We want to stimulate. We don't want to annihilate. Okay? Call that 85%. Yeah, some people will misjudge what that means a little bit, but we're getting pretty close here. to what we're trying to do, and we'll do a minute rest interval. Another exercise we're going to do here is a Nordic curl.

Dr. Andy Galpin

These are fantastic, one of my favorite exercises ever, and one of the quickest ways to get yourself into an internet fight is to talk about your position on the Nordic curls. It is a beautiful exercise, but eight repetitions, maybe three sets here. Now, your chances of getting very sore hamstrings are high, and so he's keeping the load a lot lower here by doing three sets instead of four. With our previous exercise, it's going to be very quad-dominant, and your quads typically handle that very well. Wants to make sure you don't blow your hamstrings out too much because we're going to do more stuff tomorrow. And so 85% here, RPE, again, kind of 8 out of 10 with that one-minute rest. Then our last exercise is going to be ankle strengthening exercises, maybe three sets of eight, and really rounding ourselves out and keeping our knee in the healthiest position possible. Now, every week, we're going to progress this day one a little bit, and I want to just hit the highlights of how we would go about that.

Dr. Andy Galpin

Remember, we're just in the first phase, and so our progression strategy for our transmutation and realization phase will be a little bit different. But really, you have a lot of options. This is just the example and the way that Travis went about it for this particular program. The warm-up will stay almost the same. No real changes to that in terms of exercises, in terms of how many repetitions, how many sets, or your effort. None of that really needs to change for the entire four weeks here. The only exception are the last two exercises of that dynamic warm-up and speed phase, when we start getting into actually the deceleration and the true full-out sprinting. And on the second week, Travis adds an entire new set to that, but then actually backs that set back off in the third week. And so he's dosing things like full maximum effort sprinting very specifically

and very cautiously. So add one more set next week and then bring it back down, and then add it back after that and to really pay attention to it.

Dr. Andy Galpin

But the rest of the warm-up is pretty identical. For the power development section, remember, we're talking about a hang clean as well as the seated box jumps. As we go from weeks one, two to three to four, from week one to two, we're basically just increasing RPE. So remember, week one, he said kind of, say, at a 7 out of 10. Well, week two, let's go ahead and take it to 8 out of 10. And then week three, we'll go back to that 7 out of 10. So really trying to keep people healthy while progressing some. We also might increase the amount of volume. So by the third week, we would add an additional set. So instead of doing four sets of three, we now added five sets of three. But because we've added that set, we've taken the RPE back down to 7 out of 10. So he's playing with intensity and volume a little bit. And to be honest with you, while you might think these subtle, small changes, what's the real difference between an RPE of 7 out of 8 on a power clean?

Dr. Andy Galpin

Those subtle differences are what make everything work. It is really how you keep people healthy over years of training. I know Travis has done this many times, taking kids from kids to adults to the NFL. And so making sure somebody stays healthy over the course of 10 or 15 years is why these small things matter. To pay attention to, as to well as acknowledged, they are important, and going from an extra set of three or another RPE is what makes these things successful. So really subtle but important points there that I didn't want you to gloss over or just think, oh, that's not a big deal. I'll do four, five, six sets and kind of figure out based on how I'm feeling that day. Maybe. But unless you're thinking about that in the context of weeks, months, and years, you might be putting yourself in a position where eventually problems start to occur and you don't know why. From there, we're going back into our strength, hypertrophy, and rotational power emphasis.

Dr. Andy Galpin

Reminder, there are two exercises there, barbell back squat, as well as our medicine ball rotational throw. As we go from week one to two, we're going to allow a slight increase in intensity. So going from, say, 58% of your one-rep max to 60%. What this functionally means is your speed is going to go down. And so while we kind of said, hey, a minimum of 0.73 meters per second, we might say the minimum is now 0.7. Small change but will matter. We'll keep this going. For the rotational med ball, you can't do much about that. Maybe if you have a slightly heavier ball and you can add a kilo to the ball, that would be great. That'd be recommended, but you're still going to keep the load the same, and you're still going to try as hard as you possibly can. Now, as you go into week three, similar idea as we had before, where we're going to go

back to the lighter ball that we used in week one, and we'll take our overall intensity like we used in week one, and we'll take that back down to allow us to go a little bit faster.

Dr. Andy Galpin

Now, in this particular case, we will hold the velocity to minimum of 0.87. And so we're progressing by saying go faster at the same load, at the same intensity, and that's how we're going to progress. Our final block in this phase is our knee health. Three exercises, single-leg squat, Nordic curl, and then our ankle mobilization stuff. In terms of our ankle strength, we're not going to really progress that. You're just going to kind of do the same thing as the weeks go by. But we really have an opportunity to move with the Nordic curls and the single-leg squat. So single-leg squat, week one, remember, we're going to do three sets of six at 85%. Week two, we might take that up to 90% difficulty. So asking you to go substantially harder on that. But then week three, coming all the way back down to 75%. So really making this as like, hey, we put a lot of load and a lot of ask on there. Let's really back off a little bit to not run ourselves into the wall.

Dr. Andy Galpin

And then for the Nordic curl, you're going to see a similar thing, 85% week one, 90% week two, and then back down to 80%. And even not only back down to 80%, but we're going to back down to sets of six instead of six to eight to give the hamstrings a break. For week four of all that stuff, you would basically come back and do a little bit harder of everything. And so now what you're kind of seeing is we went hard for week one-ish, but we tested the waters. And then we went a little bit harder for week two. And then week three, we backed down a little bit, paid the price, and now we can come back week four and have our hardest week yet and really go after it. This is a very smart approach and it's effective. It allows you to accumulate volume while working towards higher and higher intensities, but to do your hardest week, week four, after one of your easiest weeks in week three, not the other way around.

Dr. Andy Galpin

Typically, folks like to just add more and more and more, and they do their hardest week immediately preceded by their previously hardest week, which was preceded by their previously hardest week before that. And that's fine for some outcomes like hypertrophy, but in this context, this kind of up, down, up, down approach is probably a little bit better. If we can now, I would like to zoom back out and get into our second phase of transmutation. Lots of details left, and I'm sure plenty of you are going, "Oh my gosh, I wish you would stay there and go over more of the days." But as a final reminder, you'll have to check out the PDF in the show notes to do that, because I do want to get into our next one at the highest level, and that's transmutation. Similar idea, four days. Each day has a big overall concept and theme, as well as four to five sub-components. So day one for transmutation is an acceleration and lower high-velocity

strength, and the four sub-components are always a dynamic warm-up, acceleration, power, strength for high-velocity force, and then finally, knee health for speed.

Dr. Andy Galpin

So it feels very similar. You can see we're going to progress slowly, carry concept over from the first phase into the second one. We'll change some things, and then you'll see some of these concepts carry over from this phase into our third and final phase as well. Day two is an acceleration in upper high-velocity strength. Five components for this day, so a little bit longer. Dynamic warm-up and change of direction. Now we've integrated single-leg bounding. If you know much about plyometrics, bounds are a harder and more difficult thing than hops. So in the first phase, we were hopping. This is two leg, like a bunny, like hop, hop, hop. Now we've progressed by going one leg at a time and we're bounding. So a bound single leg landing on the same single leg. So by doing that, we've represented a little bit of progression of difficulty. We've also gotten more specific. So you see, most athletes are going to be competing in single-leg situations.

Dr. Andy Galpin

So when you're running, you only ever have one leg on the ground at a time. When you're jumping, you're generally cutting, moving off of one leg rather than both at the same time. So we've progressed from dual leg to single leg, and thus by doing that, made ourselves automatically more sport specific. Now, I don't even know the actual sport this program was built for. I think maybe football, but I'm not even entirely sure. But it doesn't matter because by going from bilateral to unilateral, we've almost always made it more sport specific.

Dr. Andy Galpin

So the third component then is still postural supporting strength. Fourth is strength for high velocity, and then again, of course, hypertrophy for symmetry. Still investing in the body, still cleaning things up, but making that a smaller component. Day three is now speed and lower high-velocity power. Four components. First one is our athletic speed development. And every time you hear this athletic part, so athletic strength, athletic power, athletic speed development, this generally means we're doing things that are more range of motion, more looking, more sport-oriented to this individual and their person. So more like what they're going to go through in their sport. So being more specific this fashion. Second component for the day is power. Third is power contrast, which is a different style of power. And then fourth is lower body accessory. So these are, again, particular movements that need to be added to the program for hypertrophy's sake, for strength's sake, for injury prevention, for injury reduction, known injury history.

Dr. Andy Galpin

Just lots of different accessories we can add on there or just things that we have thought we haven't trained in a while that need to come back into the program. Day four is in a maximum

speed and upper body strength and power. Four components, dynamic warm-up and maximum speed. So now is our first time we're actually really going after true maximum speed. Concurrent power, athletic strength, and then our upper body accessory. Remember the day before had lower body accessory. Now today we have upper body accessory. Our next chunk is power, but if you remember, it's actually specifically referred to as concurrent power. And so Travis uses a little technique that we call waving, and there's some other ways to think about this in terms of contrast, but he's going to do five different sets, and he's going to wave the repetitions and the intensity per set. Right? So in this particular case, set one is three repetitions at 80% of your one-rep max.

Dr. Andy Galpin

Set two is two repetitions at 85%. So one less rep, but a little bit heavier. And then back to three reps at 80%, and then two reps at 85%. And so you can see we went up in load, down in load, up in load, down in load. This helps you develop power over a higher area of that force velocity curve. It allows you to also go heavier but not get as fatigued because when you went heavier, you did one less rep. And then we finished it with a final set of one repetition at 90%. So it allows us to really go high. If you were to go back to how I opened up when I talked about the Prilepin chart, you'll see Travis is also taking advantage of that, making sure he's not doing too many total repetitions across the week at more than 90%, at more than 80%. There are general standards we have there, and so he's really counting every single repetition to make sure we stay within that total range. Now, outside of that, the second exercise here is a banded rotational chop, five sets of five at 65% difficulty.

Dr. Andy Galpin

Again, this is with a band or maybe a cable or row. Hard to do velocity here, hard to do RPE, really, outside of just saying, "Hey, give me 85% difficulty." By 85, it's still 100% effort and intent. That is critical for power development. In fact, I've talked about this before, but there is research showing that intent alone, even when you actually move the same speed, but intending to move faster, will result in more gains in strength and speed than when you actually still move the same speed but didn't try to move any faster. So really, really important that you're trying to move as hard as possible, but it should be about 65% because we're trying to develop power, so it should be light and fast, but not too light. Too light is speed. We need to have a little bit of a load here, and 65% is a good number for this particular exercise. So that is our concurrent power. Now we're into what Travis calls athletic strength.

Dr. Andy Galpin

Got a couple of exercises here. The first is a close grip bench press, as well as a med ball punch and drop step. For the close grip bench press, we're doing four sets of three repetitions, and we're going to be kind of in this 80% wonder a max range or so. And again, he's going to come

back to our velocity. So this is going to be in the neighborhood of 0.4 meters per second, and it kind of differs. Honestly, every set's a little bit specific right here, but we're trying to work on different components. For our med ball punch, a five-kilo ball or so for three sets of six, something like that. And so again, transferring our strength kind of into our athletic development, and he's combining that bench press with the medicine ball throw to try to take the strength, combine it with the power, ideally thinking that'll transfer a little bit better into actual sport. Our last component for this particular day is our upper body accessory.

Dr. Andy Galpin

In this example, we're going to use an overhead press with a standing barbell. We're going to do three sets of three for the most part, kind of in that same 80% or so at a specific velocity load. Something like 0.4, 0.5 meters per second as a minimum. He's going to combine this with pull-ups, same thing, kind of three sets for speed with some load. And then finally, TRX banded pulls for 12 repetitions. So a little bit of stuff going on there. Accessory work to try to develop some specific adaptation, in this case, in the upper body, and as well as providing us overall balance. To finish this off now, we'll go into our last big phase of realization. Day one, big focus is acceleration and lower high-velocity strength. Five components here. We're going to go after acceleration and realization. Then we're going to go into acceleration and potentiation peak. Third is power, fourth is strength for high-velocity force, and then five is knee health for speed.

Dr. Andy Galpin

Day two is our speed and upper high-velocity strength. We've got four components today to deal with. Our athletic speed, number one, our posture and supporting strength, number two, strength for high velocity, number three, and then hypertrophy for symmetry, number four. Day three is a change of direction and lower high-velocity power. First component is change of direction, second is power, third is power contrast, and then fourth is lower body accessory. Day four is our final day, really, and this is going to end with a maximum speed and upper high-velocity power. Our four particular components are linear speed, athletic power, upper body strength, and upper body accessory. I should note, before I get into the examples here, this last week of this last phase would be a taper, and so we would get into backing off and peaking there. So wanted to make sure we note that. As you look at the program and you're seeing the progression throughout this last phase, it's intended to start the season or compete or whatever we're going to do at the end of the last day in this last and final phase.

Dr. Andy Galpin

Sticking with our theme and going through just day one and getting through the warmup, we're looking at trying to develop acceleration and realization. Reminder, realization just really means taking the previous eight-plus weeks of training and realizing it on the field, on the court, on the pitch, in the arena as actual movement in whatever sport you're in, right? So this would be

different. The exercises would absolutely be different depending on your sport. So this is just the one example we've got to go off. Walking lunges for a warmup, side lunge warmups, forward lunge, elbow to instep to get us going. Hip mobilization and a half kneeling and elbow instep to really open up the adductors, get them moving. Hip internal rotation. We've now added a heel to glute, an inverted hamstring movement, power skips, pillar skips, 10-yard power skips plus a 10-yard sprint, really starting to move.

Dr. Andy Galpin

Linear bounds, as well as a half kneeling acceleration sprint to finish off that first initial block for the day. We then go into the next phase, which is acceleration potentiation, and realization. Here, we're looking at a couple of exercises. Accelerated running as our first thing. That comes with actually a load and release. So you kind of get loaded and released, and you develop acceleration there. And then actual formal sprinting. So that load and acceleration, you're looking at four sets of that. Obviously, we're doing something like 25% body weight as our restriction. A lot of people are familiar, but some are not, with the idea of acceleration training such that you can put a small load. Imagine doing a sprint, and I held you back to a load that is equivalent to 25% of your body weight. So you take off and you run, and you're accelerating and trying to move as fast as you can, but you're actually moving slower because you have a small load, 25%.

Dr. Andy Galpin

In this particular case, we would do that for a small amount, a few meters, and then we would release it, and you would then take off and sprint faster because you had a couple of steps with that preload on it. That is a great way to develop acceleration. That is in contrast to a way of producing, say, peak velocity, in which you would do the opposite. So instead of dragging that sled with 25% of your body weight and having you go slower while you're still trying to go as fast as possible, if I put that load in front of you and I used it to pull you And I would probably only use something more like 10% or 15% of your body weight. I would actually let you run faster than you normally can run without anything on you. This is called overspeed training. This is tremendous for developing peak speed. Okay, now, if I go too fast with that, I pull you too hard, I say use 25% or maybe 40% of your body weight, I actually ruin your mechanics because you spend the whole time trying to not just fall on your face, and you end up braking.

Dr. Andy Galpin

And so you want to give them a light tug there so they can move faster than normal, but not so fast that you ruin mechanics. You can do the same thing with punching, with jumping, with any other area. This is, again, called overspeed. I've published research on this before. Dr. Lee Brown, who's a colleague of mine at Cal State Fullerton, spent over a decade publishing research in this area, and it is extremely effective. Not great for acceleration, because you're not

overcoming any load. And so that's why in this particular phase, Travis is really trying to work on acceleration, so he's got a little bit of a load there, and we'll work on peak speed or max speed on different days. Wanted to share that insight with you, though, right there. A lot of people just kind of think all speed work and power work is the same, and they just randomly and haphazardly throw different drills out there. And the reality of it is, it's probably okay, but that's certainly not optimal, and it is absolutely not the best way to go about it.

Dr. Andy Galpin

There are different components, and there are different drills for specific purposes, and it's best for us if we use them that way. So getting us back on track here, the second exercise of the day would be a true and traditional sprint. This is something, again, short sprint. We're trying to accelerate. This is 10 meters. This is starting. This is getting going because we're trying to just work on that component. RPE at 10 here. Lot of rest, two, three minutes of rest or more, and we're going a couple of sets as hard as we possibly can, RPE 10, and then a couple of them, maybe half, two of them, just at a nine. So really being careful with when we're truly going peak speed. Next component then is our actual power development. Couple of exercises here. Now we're looking at a hang clean, where we're starting specifically below the knee, as well as a banded hip flexion for sprinting. And a component a lot of people forget to work on is hip flexion matters.

Dr. Andy Galpin

How fast you can do that will determine how fast your knee can get back into position, reloaded, and then struck back into the ground behind you to move you forward. So spending a little bit of time on that. For the hang clean below the knee, we're going to use a little bit of a staggered approach here. So two sets of two at 80%, and then three sets of one at 85%. So really trying to spend a lot of time in this power range, very low fatigue, and a lot of power output. For the hip flexion stuff, we're looking at five sets of eight at about 50% difficulty. You can't and don't want to necessarily take your hip flexion stuff to a maximum fatigue there. So just touching it, putting a little bit of resistance on it, helping it develop power is really all you need to train the hip flexors. Our second to last area is strength for high velocity force production. What we're going to use here is a high bar back squat as well as a depth jump, a 30-inch one, plus a jump repeat.

Dr. Andy Galpin

So for our back squat, we're talking five sets of three, kind of at a range of 78%, 80% or so of our one-rep max, and we're going back to our GymAware, using our velocity. Something like 0.55 meters per second as our minimum, something in that ballpark. For our depth jump and our rebound, we're doing probably five sets of four repetitions, and we're trying to jump as high as we really possibly can, and particularly emphasizing that rebound, highest quality possible here. Our final category here is our knee health for speed. Couple of exercises. RDL from a deficit with

bands is our very first one, so really getting extensive amount of work in the posterior knee range to keep that nice and healthy. Four sets of five at 85%. Want to be careful of, again, not putting the back or the hamstrings in a lot of fatigue, but really also training them with a minute and a half of rest. Going to finish that also with some single-leg squats in a goblet position, so holding a kettlebell or dumbbell in the front.

Dr. Andy Galpin

Four sets of six here at also 85% with a minute rest. Now, I know that was a lot to handle if you're just listening or even watching without seeing the program in front of you. But hopefully, there was a lot you could glean and gain from that. If you want to follow the program exactly as it is, that's great. If you're thinking, "That was too advanced for me, too complicated. I don't have access to all those things," or, "I want to be stronger," but maybe you don't want to be an athlete, feel free to make modifications with this program. The concepts will be true, though. We need to do all the things I talked about at the beginning, like progressive overload, train multiple planes, work speed and power and acceleration, and all these different components if you're trying to get those well-rounded adaptations. So hopefully, you took something out of this, no matter what your situation and scenario is.

Dr. Andy Galpin

I chose this intentionally for a couple of reasons. One, I know it works. I've used this and very similar approaches countless times with my athletes. I've used it personally in my training for many years. In addition, Travis himself is an extremely credentialed coach. He has had a ton of success. He knows what he's doing. And then finally, it is sometimes nice to talk about what are the best in the world doing. What are these advanced ones? You'll see, if this is your first episode or if this is your many episodes into this series, I like to do both aspects. I like to talk about what can the everyday person do, and then what are the best in the world doing. And I think that makes us all better by seeing what both ends of those spectrum look like. So if I lost you a little bit in this program, I do apologize, but I think it was actually for your benefit. And maybe I didn't. Maybe you're thirsting for more.

Dr. Andy Galpin

That's exactly what you're looking for, and you wanted me to go deeper. In either case, just let us know. I would love to know what all of you want to know more of, but I really do like this approach of going both ends of the spectrum. Want to reiterate a couple of things before we finish. Just because a program is more complicated doesn't make it any more effective per se. On the same token, you may have a lot of experience or even a moderate amount of experience and be thinking to yourself, "That actually wasn't that complicated." Once you get into it more, you'll realize it wasn't actually. It is pretty straightforward. When I look at it, I was able to pick it apart pretty quickly. And so as you go on, or if you're listening to this and you are advanced, I

hope I didn't insult your intelligence and make this sound more complicated than it really is, because it was really not that much.

Dr. Andy Galpin

It is very smart. It is thought through, and it is detailed, which may then be more complicated than you're used to. But this is what it looks like to be a high-level strength and conditioning coach for performance-based athletes. I'm saying that to acknowledge many things here, but one of it is the fact that if you're going out to, say, hire a strength coach, there's a difference. So high-quality coaches really think through every aspect. I tried to pull this out in my conversation and discussion of this, but what I mean is how a couple of percentage points per week matter. A couple of seconds matter. The order you do things in, the various components of speed, how we're progressing something as simple as our first warm-up exercise over 12 weeks. A really high-quality coach is paying attention to every single one of those details. So if you are out there looking and you're paying attention to the coach you've hired or you're interviewing another one for your kid or yourself and your training, they should have this level of quality.

Dr. Andy Galpin

And if they don't, it doesn't mean it has to be this complicated, but if it hasn't been this judiciously thought through, maybe consider another candidate for that position. Because your best service, your best progress, and your best benefit will have this kind of care and thought and diligence placed into your programming. If you're still here with us at this point in the program, I thank you. We covered a lot of ground today, and I really wanted to do an episode like this because we've had so many people over the years just say, "Will you take me through a program? I know it's not perfect for me. I know it hasn't been contextualized. I know. But just give me something to marinate on, and so I can see exact examples." So hopefully, we accomplished that goal. I know it wasn't specific and applicable to everybody in all your contexts, but I really want to do it for those reasons. Let me give you some starting place.

Dr. Andy Galpin

Anyone who's ever written anything or created music, built something from scratch, you all know day one is the hardest. So it's way easier if you have a model to work off of, even if you throw that entire model away, than it is to just sit down on your computer and go, "Okay. Day one, squats." Okay. It's really hard to write a program like that, create a story or music, design a house if you're literally opening the computer up and you got a blank Word document in front of you. So by using this as a model, hopefully I've made your life a little bit easier. I've inspired you, maybe brought some creativity into your programming, maybe gave you things to think about that you hadn't considered before, and also let you know sometimes if you want to just go very simple and straightforward, do the same exercise a couple times a week, that's fine too. It clearly can work in either case. We walked you through as many of the concepts as I could in training

for hypertrophy, as well as training for strength and power.

Dr. Andy Galpin

I picked examples, one that was a little more straightforward, one that was a little more complicated. I picked examples of programs that were done in my view, in my experience, that have been supported by the scientific evidence in well-trained people. Most people are aware, but if you're not, there's a thing in the sports science and training community called the newbie gains, which is a little bit of a joke, but it is actually scientifically true such that people early in their physical training tend to benefit from everything. And so almost regardless of what training program I put you on, people will get stronger, gain endurance, lose fat, get more powerful. And so that's not really telling us is the program great. It's just simply telling you that person has a low training age or low experience. So when I intentionally picked this program, I did ones that I know work and people that are very well trained to highlight the fact that if it still works in these people, it's going to work in all of you.

Dr. Andy Galpin

Sometimes you can be confused by programs that look like they work because we took somebody, again, who's untrained or has been many months or years since they've done any training, and so everything looks like it works. These work in a variety of people. These worked in men and women. They've worked in different athletes and sports, and so I really have a lot of confidence and support of these styles of training.

Dr. Andy Galpin

One more time, to reiterate, they are not the only ways to go about it. Block periodization, as an example, is effective, but there are plenty of other styles of periodization. There's exercise choices, there's philosophies, there's progression approaches. Travis himself uses different ones in different contexts. So lots of options out there. I hope this inspired you to go learn more of them. And for those of you that maybe that's not your passion, you have a couple of examples to work and develop your own training programs out of. Or if you really want, you can simply take these ones as given, try them out on yourself, and then see what happens. Hopefully, you enjoyed this entire thing. I had a lot of fun and appreciate the time and attention. Thank you for joining for today's episode. Our goal is to share exciting scientific insight that helps you perform at your absolute best. If the show resonates with you and you want to help ensure this information remains free and accessible to anyone in the world, there are a few ways that you can support.

Dr. Andy Galpin

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