How to Improve Your VO2 Max & Build Endurance

Perform with Dr. Andy Galpin · Episode 3 · June 26, 2024 · Transcript

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. And today's episode, we're going to be talking about specifically how to improve your VO2 max. In previous episodes, we talked about the heart. We went over what it is, how it works, why you should care about it. We also spent some time going over the three Is.

So how to investigate or assess your overall cardiovascular function, how to interpret that, to know whether it's good, bad, terrible or potentially a world record, and then how to intervene. So what to do about it and how to improve its function. If you missed that previous episode we did on the heart, please, go back and check that out. But I'd be remiss to not remind you or tell you for the first time about how important VO2 max is.

If you want all the studies, direct links, specific details on the statistics and values, you can see that in the previous episode as well as the show notes for that episode. But really quickly, your VO2 max is one of the most significant predictors of all cause mortality that we know of. In fact, if you compare it to more traditional markers like blood pressure, smoking history, cholesterol levels, while those are all very important, VO2 max can be two to three to even up to four-fold higher predictor of survival and mortality than those other traditional markers.

So it's insanely important and in fact, many folks would argue it is the most important metric to pay attention to if you want to know how long you're going to live. Now, I apologize for being overly dramatic about that, but really, it is that astounding about how important that number is to determining how long you're going to live. The other important point about this is there is no upper limit, such that the higher your VO2 max, the higher your chance of survival continues to go. It really doesn't seem to get to any point of diminishing returns.

And so it's a metric that is within your control. It is arguably one of, if not the most important metric for how long you're going to live. And the higher, the better. And so focusing on this, whether you want to run a marathon or want to play sports, it really doesn't matter. If you want to live longer and better, VO2 max should be one of your top priorities. But in today's discussion, I wanted to do something a little bit different, and that is really spend our entire time going over practical applications.

I want to walk you through exact programs and protocols, giving you both the concepts as well

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as specific methodologies as samples to help you get guided in either developing your own program or helping others with theirs. In order to do that, I need to start with a very quick overview of what we're trying to actually accomplish when we're improving our endurance or VO2 max so that you understand the different components that tend to be pretty similar amongst all different styles and training approaches. I promise we'll keep that very brief.

After that, we're going to jump right into a very specific protocol for improving your VO2 max. And then after that, I'm going to share with you a specific protocol a friend of mine used to complete his first ever marathon. 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 LMNT. LMNT is an electrolyte drink mix that has an ideal ratio of sodium, potassium, and magnesium, but has no sugar. Electrolytes are critical to proper hydration, which I've been harping on for years. But you can't do that by only drinking water. In fact, many of you will probably remember that I featured LMNT in my YouTube series on optimizing hydration all the way back in 2020, which is obviously long before this podcast even existed. So I've been a fan of LMNT for a long time.

In fact, astute listeners will also realize these hydration videos were the genesis of the Galpin hydration equation, named not by me, but by the legendary neuroscientist doctor Andrew Huberman. I featured LMNT in these videos because their blend of 1000 milligrams of sodium, 200 milligrams of potassium, and 60 milligrams magnesium, really is different than any other electrolyte on the market and has great scientific support. However, I want to be ultra clear. 1000 milligrams of sodium is a lot. And not everyone needs that much.

In fact, that may be way too much if you don't exercise or sweat much, already eat a lot of salt in your diet, say from a lot of processed foods, or otherwise have sodium-related medical concerns. I personally use the citrus and watermelon flavors, a ton, to prehydrate before heading out on a full day of training or long hike or a hunt, since I know I'll be losing a bunch of fluids and won't have many opportunities to take things with me.

LMNT has also just released a new line of canned sparkling LMNT, which I am all about. If you'd like to try LMNT, you can go to drinklmnt.com/perform to claim a free LMNT sample pack with the purchase of any LMNT drink mix. Again, that's drinklmnt.com/perform to claim a free sample pack. Today's episode is also brought to you by Vitality Blueprint. Vitality is the world's only comprehensive blood work company built specifically for high performance.

As we'll cover throughout this season of the Perform podcast, a high-quality blood test is one of

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the best ways to better understand your physiology and areas for improvement. Vitality Blueprint uses over 100 molecular biomarkers that are critical to physical and mental performance, then provides unrivaled interpretation and analysis of these data so you know exactly what's going on in your body. From there, Vitality's innovative software allows you to easily create clear and highly specific lifestyle, nutrition, and supplementation plans based upon your unique physiology and goals.

Experience the world's most premium performance blood work by going to vitalityblueprint.com/perform. I know exactly how dope this thing is because Dan Garner and I built it ourselves, based upon the system we've used in thousands of athletes over the last decade or so. So we're stoked that something that's previously only been accessible to the world's most decorated athletes, musicians, and so on is now open to everyone. Let's finally get you looking, feeling, and performing at your absolute best. And that starts by going to vitalityblueprint.com/perform. Let's go.

So to get us started, I really do think it's important that we zoom out just a little bit. When we say improve our VO2 max, we have to acknowledge that is only one component of endurance. So do you truly mean VO2 max, or do you mean your ability to have more energy throughout the day, to feel less fatigued? Those are really different conversations, all important, but in this particular example, I want to focus on really improving just the VO2 max. OK?

So then thinking through that, I'd like to use a method called first principles, which says let's zoom all the way out. Let's think about everything that would have to happen for me to have a high VO2 max, and then number one, analyze my own self to figure out where in that program am I fatiguing or lacking? And then how do I solve it? If you don't know, then you would actually just do a program that addresses all potential areas of failure. If you do know your area of failure, then you would probably hedge a little bit more towards that.

What do I mean? Well, we could come up with any number of examples here. But let's say you are feeling like you're just not running as fast as you used to. Well, that may not be a VO2 max issue. It may be a speed issue, maybe a mechanics issue. Let's say you're having a different issue where you're feeling fatigued in games if you're an athlete. Well, this may actually have to do with your warm up. It could be nutrition-related. It could be sports psychology. You are upregulated or downregulated or something like that.

And so when we really go into solving problems for high performers, I would encourage you to not just grab a program like this, put it in place, and assume it's going to work for everyone. It may work for many. Now, obviously I'm going to present to you programs I think are very effective. But I really would encourage you to think through the performance of you and your individual situation. In my experience, it's not always a physiological issue. There could be other

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lower-hanging fruit that improves your performance in a way that you care about that's not necessarily just physiology.

All that aside, let's go ahead and dive in to VO2 max. Remember, what we're talking about here is a central and peripheral issue, meaning central, as in your cardiovascular system, specifically really your heart, and peripheral, as in your musculature. So there's two sides of this equation. VO2 max, the equation I like to use, the modified Fick equation, which we talked about and described in the previous cardiac episode, is your VO2 max, is equivalent to your heart rate multiplied by your stroke volume.

That's also-- heart rate times stroke volume is known as your cardiac output multiplied by your AVO2 difference. And so it's how much blood you can get out of your heart per pump, how many pumps you can get away with. That's the Q. That's the cardiac output multiplied by your AVO2 difference, which tells you how much oxygen you can extract from your blood into your working tissue. All right. So I'm going to stop right there with the details. That's really what we have to think about.

And so along the way then we start thinking, all right, where is my point of failure? If I'm limited in my stroke volume, why? Is it because my heart's too small? OK, well, solving that problem is a different style of training than if my issue is extracting oxygen into tissue. There's a different training solution for that. Maybe your issue is mechanics of your lungs. So maybe you're not breathing properly, or maybe your intercostals or diaphragm fatigue. Maybe it's posture related. And so there's various components we want to get into to really address this.

So high-endurance athlete or endurance performance solutions are individuals who can dive into that stuff and figure out, hey, your most-- your biggest hole here or your biggest problem is this particular area. And so we're going to design your protocols to solve that problem. Nonetheless, though, let's assume you don't have any of that information, and we'll just move through with one quality example. I will reiterate just one more time. There are many, many, many ways to improve VO2 max.

I've talked to and know a bunch of high-level endurance coaches. There's a ton of research in this as well. And so you could pull up just endless amounts of protocols. My goal is to not tell you that the protocol I'm about to present to you is the best or better than anything else, but it is just a sample of one protocol that I know works very well. And so depending on your goals and situation, you may want to make many changes or use an entirely different setup.

All those caveats to say now, let's finally jump into the protocol. Remember, when we say VO2, I'm assuming you mean VO2 max, which is that maximal capacity or ability, maximum heart rate, maximum oxygen extraction, maximum stroke volume, et cetera. You may actually be more

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interested in something like a submaximal performance. So how can I cover more distance at a given heart rate? Or how can I run my race faster, or how can I perform better without getting so tired in my given event, in my pickleball or canoeing or volleyball or whatever I'm playing?

Those are different conversations. We're really going to talk about how to maximize the VO2 right now. We'll cover the things like performing better in your marathon a little bit later. So VO2 max training then per se says, all right, we've got three major components to discuss. The very first one is what is your modality? In other words, what's your exercise? If your exercise is agnostic, then really, you can pick anything you want.

You can push a sled. You can sprint. You can swim. You can bike. You can use an assault bike. You can use whatever you would like. If you're trying to improve performance in again a given race or your VO2 max is for a fight or a competition, then you're going to want to pick the mode specific to that. Again, if you are simply after the VO2 max, then you are mode agnostic. In fact, you could probably use a combination and probably should use a combination of different modalities. What you want to do is pick something that accomplishes two things.

One, allows you to execute sufficient effort so you can do this a bunch at a high effort or a high intensity or long duration or high focus or whatever we're going to want to do there, and then secondly, one that's not limiting your technical proficiency. So if you're not good at running, I wouldn't recommend doing this. One of the common and largest mistakes folks make when trying to improve their VO2 max or endurance in general is they hop into things like running, and then they just start adding volume.

So they do one mile today and two miles next week and three or et cetera or intensity. So they do 30 seconds of hard work, and then they do three rounds of that. And then next week, they do four rounds and then five rounds. And we start building this intensity and volume on top of either truly dysfunctional or suboptimal movement patterns. And that results in a lot of injury and a lot of excessive fatigue. So you want to be really careful. Pick something you are technically proficient in if you are modality agnostic and something you're not going to be broken down or injured with.

The next thing then is the intensity and the volume we're going to want to play with. Every coach defines these things differently. They think you should spend a different amount of time in different zones. You can think of this, though almost all coaches acknowledge there's at least three, potentially four areas that you should train in. The bottom easiest level, if you'd like to call this zone one or zone two, you can. I don't honestly, candidly don't use that stuff much. You can call these gear one or gear two.

If you're Brian McKenzie or someone like that, you could call these things just more like blue

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zone. You could call them RPE or Relative Perceived Exertion. How hard does this feel on a scale of 1 to 10 and call this something like two to four on a scale, again, of 1 to 10. So there are lots of different ways people shake this up. Just to give you very rough examples, this is probably something like 60% to 65% of your heart rate. Again, some folks will define those numbers a little bit differently.

This could be exercise that you could do while maintaining a conversational pace, so lots of different ways to go about it. You could make an argument for many of them being better than others, but this is just getting you the basic idea of lower-intensity exercises. After that, you move up to your next zone or area. Again, it could be a combination of zone two or zone three, maybe gear three on that system. Maybe others call this a green color. This is probably something like an RPE of five to six, maybe up to seven. You're in this moderate intensity zone.

Heart rates are going to range here between that 65 all the way up to 85%, plus or minus, something in that neighborhood. And then finally, all the way at the top, you're now at 85% plus of your heart rate typically. You're now into gear four in that way of defining it. And others would call this red. OK. So you're really moving really, really hard. You're definitely not at conversation pace. You're almost surely not going to be able to breathe through your nose alone. You're going to have to open up your mouth, and you're moving here.

Now, depending on how trained you are, those three zones, blue, green, and red might be enough. If you are highly trained and you're comfortable or even moderately trained, you might add a fourth one on top of that. I like to call this one infrared. And this is your 95% plus. So there's a difference. And most folks would notice that training at 80 to 85 or even 90% of your heart rate is challenging but manageable. When you cross that threshold of 95, 96, 97, it is really, honestly a different thing. 97% is not the same as 87%. And so I call that last 5% the infrared zone.

So with all of these things, there are pros and cons. The global general benefit of the really high-intensity stuff is it creates a tremendous amount of physiological adaptation in a short amount of time. So you're talking minutes to seconds of work. This could be things like high-intensity intervals. This could be maximum all-out efforts, lots of different stuff there, typically 20 seconds to maybe like a couple of minutes at most. And then you're going to repeat that effort time in and time in and time again.

The moderate stuff is a little bit different. It requires not as much effort, not as much pain, not as much suffering. It's going to be a little more time-demanding, but it's not quite as intimidating or hard or mentally difficult to get into for a lot of folks as the red stuff. The bottom stuff is the opposite, also effective, easier to do. You don't necessarily have to have as diligent of a warm up. Your injury risk is pretty low, but you're going to have to go for a longer period of time. I think

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you're going to have a difficult time making a cogent argument that you could stick in any one of those zones for all of your training and optimize your VO2.

I'm not really sure I know of any research or high-level coaches that pick one zone and stay in it entirely. In fact, I think you're going to run into a lot of problems with that. And so most are going to use a combination of these three to four areas in various pieces. And ideally, you're going to find you can maximize the benefits of one of the areas while minimizing the consequences. And that's how you blend your program together. Really quickly as an example, the downside of lower-intensity stuff, if it doesn't create a lot of stimulus for adaptation, so it requires a long amount of time.

The more time you spend in a movement pattern, the more likely you are to have tissue injuries. You're just simply creating more contact time or more overall exertion. And the biggest reason people don't exercise, number one by far is adherence. And the number one driver of adherence is time. So a downside is there. But if you go to the other end and you go to that infrared stuff, well, that's great. The total workout can be under 20 minutes. But it really, really taps into your recovery reserves.

It is way harder to recover from 95% than it is even 90%. And so it's not a linear increase in recovery with an increase intensity. It's exponential. And so you really have to be concerned with dosing that stuff too much because it really takes away your ability to recover, which means it's going to eliminate your other training. So that's really the game we're playing. We're trying to improve our VO2 max. We also have specificity we need to pay attention to. So if you want to get better at your VO2 max in a given modality, say this is on a rower, then you're going to get faster at that by rowing.

We see that very clearly. There's excellent research on if you take people and train them on a rower, and then have them do a VO2 max test on a bike or running, for that matter. And you compare that to their VO2 max on the rower. They're going to have greater percentage increases in their VO2 max on the rower than they will on the bike or on the treadmill, simply because they became more efficient. They became more relaxed. Their motor patterns were better, et cetera, et cetera. So specificity is a way to get an extra small but important percentage increase in your VO2 max by simply working on that modality.

So that all being said, let's go ahead and dive into this sample program I've got prepared for you. Now, candidly, it is a little challenging to follow just hearing my voice or watching this in the video. And so please, go to the show notes. You're going to be able to download this program. There's a lot of graphics and explanations and stuff that's going to really help you use these things better. But it would be pretty challenging for me to just explain this entire thing to you step by step, rep by rep, for the entire eight weeks just verbally here.

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So you have more resources there if you're having a hard time, or maybe it's not as crystal clear as you would like it. I'm going to do my best, though, to walk you through it so that you can get some usable information just simply listening or watching the video. Just for a little bit of context, the program I'm about to explain to you was developed to improve VO2 max over an eight-week training phase. I'm going to get into the details here in one second, but it's important to recognize this is probably best for people who are of a fairly low training, age, or physical fitness to up to moderate.

It can absolutely be used for high-level and elite endurance athletes, but it's not optimized and designed for that cause. To give you an example, the program starts off pretty conservative and works your way up. If you're highly trained, you may want to be a little more aggressive than that. There's a really easy example if you've listened to the previous episode we did on the heart and cardiac tissue. You may remember the story of the Norwegian cyclist Oscar Svensson. His training program was something like 75% of his time. He worked in the 60 to 82% heart rate peak range.

This program is not going to get you that high that fast. So Oscar spent 75% of his time, 60 to 82%, 20% of his time, between 83 to 87%. So again, that's a differentiation that we're not going to make in this program, that mid upper range, and then only 5% of his time in that 88% plus. All right. So we're going to have a similar theme. And again, I think you will see most programs will do that. You're going to use a combination of this low, moderate, and high-intensity stuff. You're not going to spend that much time at high intensity.

You're going to dose it appropriately. And you'll probably spend the bulk of your time in lower intensities. But the percentages here are really going to be different than the percentages I'm about to explain to you. So that's the point I really wanted to make. You may want to start, if you're moderately or just new to training, at a little bit lower intensity. And there's a lot of reasons for that, but we'll get into those at another point. So let's dive right into it.

This program is called metamorphosis. And it was developed by Joel Jamieson. Joel has been around for a very long time, a legend in the field of conditioning, if you will. He's got a fantastic book on conditioning. You're welcome to pick that up. We'll have links to all these things as well as Joel's website. He has excellent education and courses and a whole bunch of other training programs. He is probably one of the people most relevant in bringing HRV, which we've talked about in other episodes, to America and making it a big part of it.

So a monumental figure in the world of conditioning and endurance has trained many professional athletes and world champions along the way. So I know the program works. I've used it plenty of times, and I've used a lot of the concepts. And I've read Joel's work extensively for many years. So I reached out to him and I asked him if he was OK with me sharing this entire

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program with you. And of course, Joel is such a great guy. He said, absolutely. So this is Joel Jamieson's metamorphosis program and his eight weeks designed to improve your VO2 max.

It's going to start off with the assumption that for the first month or so, we're going to build a foundation. The second month, we're going to start picking up the pace a little bit. He's got it developed and designed to be five days a week initially and then moving to six days a week after that. Of course, if that doesn't work for you, feel free to make the modifications that you need, whether you can do four days a week or three or anything else. So I'm going to give you the specifics and details, but please, I don't want you thinking that if you can't follow this to a T, that you can't use the program at all.

Think about the concepts and adjust accordingly for your circumstance. So initially, what he's going to do for the first month is say, all right, we're going to alternate between what he calls easy and moderate. So day one is easy. Day two is moderate. Day three is easy. Day four is moderate, then day five is easy. He's really again leaning heavily on this lower-intensity stuff, trying to work on cardiac output, building stroke volume, building the heart's capacity, getting you more efficient, developing capillaries in your tissue, and then honestly, getting you efficient in your movement patterns.

You can use again it's movement pattern agnostic. So you can cycle with this. You can do kettlebells with it. You can do whatever you would like to do to continuously move. It's also designed and developed so that people can pretty much jump right into it and get going. So again, high level thing here, everything starts off with a specific warm up. You want to make sure that your tissue is getting ready to go. So there's a sneaky important thing that Joel does in this initial part of the program.

You'll see him use a lot of things very low level, what he calls aerobic plyometrics. What that means is you're not jumping up and down on a box. You could be doing something like a rudimentary hop, a pogo hop, some very low-level jump rope. And he's not doing that for aerobic fitness portion of it. He's kind of building it into the warm up to save you time. But he's really working on what's called tissue tolerance. So if you want to be able to put a lot of volume in, say, running, your ankles and foot need to become tolerant to the load of your bodyweight smashing into the ground.

The ground reaction forces that happen every time you take a stride are something like four to 5x your own body weight. And if you're going to be doing that miles and miles and miles every day or multiple days a week when you previously have done none of it, that's going to build up on your tissue. And you're going to have lots of soft tissue issues, potentially even joints going upstream. Your knees and hip and back and things like that, they develop. It's one of the reasons why I say don't just jump in and start adding miles.

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So Joel is sneakily saying, hey, we're going to have a warm up here, but we're going to start building the tolerance of these joints. So that's a component to all of it. He'll also use a lot of breathwork to get going and to get the nervous system activated or ready to go prior to movement. So that's really consistent across all the days. I'd like to take a quick break and thank our sponsors. Today's episode is brought to you by Eight Sleep. Eight Sleep makes smart mattress covers with cooling, heating, sleep tracking, and more. I've had one for years, and it is glorious.

I even put one on the bed and my guest bedroom because as you'll hear me talk about endlessly here on the Perform podcast, there really is nothing you can do that makes a larger impact on your health and performance than getting tremendous sleep. The Eight Sleep is a game-changer because I run hot, or as my wife calls it, I'm a furnace. And that's particularly driven by the fact that I often have to do my exercise training in the evenings, which is honestly not always great for sleep. But this is also the case of many of the athletes that I work with, who don't have a choice when they compete.

And so being able to cool down immediately in bed does wonders for both sleep latency and sleep quality. Eight Sleep recently launched their newest generation of the pod cover, the Pod 4 Ultra. The Pod 4 Ultra has two times more cooling power, yet is virtually silent and even has snoring detection that will automatically lift your head in a few degrees to improve the airflow and stop you from snoring. Go to eightsleep.com/perform to save $350 off their Pod 4 ultra. Eight Sleep currently ships to the USA, Canada, UK, and select countries in the EU and Australia. Again, that's eightsleep.com/perform.

Today's episode is also brought to you by Momentous. 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 planned 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. They're also trusted and used by the best, meaning over 175 professional sporting organizations. That includes 28 Major League Baseball teams, 31 of 32 NFL teams, 15 NBA, 93 NCAA, seven MLS, and three Olympic teams. I think you get the point. No supplement is mandatory. Even the foundational ones or there 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

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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.

So from a big-picture perspective, here's how the week's line up. You're going to start off with an easier day, and then the second day is going to be a moderate day. And then you're going to flip up. So day one is easy. Day two is moderate, easy, moderate, easy. As the weeks go on, you're going to slowly start to build time and a little bit of intensity within each one. So say on the easy day, day one of week one, you'll have a 15 to 20-minute workout. Then maybe the next week two, that moves up to 22 minutes.

Week three, that moves up to 24 minutes. Maybe you're going to do on your moderate day a tempo run with 10 rounds, and then maybe by week two, you've got up to 12 rounds, so very small increases as time goes on. Once you get to week five, there'll be a different insert, where we'll actually have our hard day or our red day built in there. But overall, you're seeing that the progression is very slow and conservative. And that's how we can make sure we're still challenging adaptations while minimizing our risk of injury and overuse.

So what I'd like to do is walk you through a couple of the days. I'll start off with week one just to give you a sample. Every day in the week is going to have the same three core components. You'll start off with a high-quality warm up. You'll do some sort of conditioning and then some sort of strength piece. I'm going to go through a couple of sample days to help you understand, but please, check out the show notes for the full program, as that will be a little bit easier for you to digest.

So again, just to keep this big picture, the warm ups are going to be the same on the easy days and then the same on the moderate days. For the conditioning piece, the easy days are going to be more steady state, lower intensity. And the moderate days are going to be what we call tempo stuff. I'll explain all this to you and give you examples in just one second. For the strength component, the easy days are going to be split up so that day one, you'll do some sort of upper body press and pull.

Day two, you'll do some lower body, press, and pull. And then day three will be more hinging and then a combination of upper press and pull. For your two moderate days, so days two and four, your strength work is going to be more core and accessory-based. OK? So that's the big structure of how the week is laid out. Let me walk you through a couple of days here in detail so you can start seeing what this stuff actually looks like. So let's go over day one of week one.

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Remember, there's three components to every single day, warm up, endurance, and then strength. And now, since this is an endurance-based program, you'll notice we're doing the strength work after the endurance. If this was a program designed to optimize strength or muscle growth, you might see the inverse order. But it's not, because we keep the thing that we have the most priority on, our biggest goal first. So in this case, the strength training is really there just to supplement and keep you healthy. Conditioning is the goal. So that's why we're going to do it first.

So going through this very first day of warm up, we'll start off with five minutes of low-intensity aerobic movement. So you can do whatever you'd like here, jog, whatever you want here. And then there's three specific warm-up activities. The first one are ankle rolls. So you're going to do two or three sets of eight to 10. Most likely here, we're doing this because we're assuming people are going to run, and we're going to want to make sure that those joints are warmed up and activated so that we can move well and not put ourselves into bad positions.

The second exercise is going to be windshield wipers. This is-- imagine standing and swinging your feet out in front of you, left to right, if you will, warming up your adductors and your hips and low back and things like that. Again, two to three sets here of eight to 10 repetitions. And then finally, a goblet squat-- so this is now a full range of motion of our hips, knee, and ankle, holding a kettlebell in front of you, in front of your chest. You're squatting up and down for the same thing.

In total, here, we've invested maybe five minutes. We've gone through a full range of motion in most of our joints, and we should be activated and ready to go. The working conditioning sets here are going to start off with what Joel calls aerobic plyometrics. Now, this is very important here because we're trying to develop tissue tolerance. So this is very low-level easy jumps. We're not jumping up and down on a box. We're doing pogo hops. We're doing rudimentary hops, maybe some jump rope, some very light activities for two to three minutes.

This is not going to be building much conditioning in our cardiovascular system. That's not the point. It's really to give the joints, in this case, the ankles, the ability to start learning how to develop tolerance to load over time. Remember, earlier when I talked about one major mistake folks make is they just start to hop into volumes, specifically with running. You want to give your tissue the ability to get ready for that. You've probably heard and seen and been aware of the Achilles snapping epidemic that's happening right now, a lot of reasons that that's actually going on.

But one way to make sure you hedge your bets against that is just to make sure your Achilles is being loaded often. So spending two to three minutes hopping up and down prior to activity is a pretty good way to build long-term resilience throughout that joint. So that's in large part what

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that stuff is in there for. So then really, we get into our work. In this particular stuff, this is going to be steady state, lower-intensity stuff. You're probably looking at 70%, maybe less, probably less of whatever exercise you would like.

Again, if your exercise-specific, you want to get better at cycling, get on a bike, push a sled, go uphill. It doesn't really matter as long as you're moving consistently at this intensity. And you're going to do this for simply 15 to 20 minutes. Typically, we're looking at heart rates, 120 beats per minute or lower, maybe a little bit higher for some folks, maybe a little bit less, but it is lower-intensity stuff. Me, personally, I'm going to be doing this and recommending this entirely nasal, only breathing.

This is going to also then help you work on your respiratory muscle control, breathing mechanics, as well as it de facto keeps you at a little bit of a lower intensity for most of us. From there, you'd finish that and go into your strength work. So again, if you're counting here, we've got a five-minute warm up. We are now at most 22 to 23 minutes in to our conditioning. So we're under 30 minutes total investment at this point. And then from there, that strength piece is going to be-- remember, it's going to be upper body, press, pull. What does that mean?

Oftentimes-- and I like to program this way as well-- rather than picking a specific exercise, then you just program concepts. So upper body press, this could be a bench press. This could be a push-up. This could be any number of things. If I know a lot about you, and I'm privately coaching you, we're absolutely going to select exercises with a lot of intent. But if we're just giving global recommendations, then an upper body, quote unquote "press and pull" is great.

In this example, a barbell bench press for two to three sets of eight to 10 repetitions, remember, we're not trying to drive hypertrophy or strength here. We're trying to just keep the joints healthy, develop a little bit of mitochondria, start getting blood flow, and getting the tissue able to handle some tolerance of load eventually. So we're going to go reasonably under control in terms of our tempo, maybe four seconds up, four seconds down, and then rest 60 seconds or so in between repetitions.

So maybe, you would pair that upper body pressing movement with a pull, in this case, say a lat pull down or a bent row, same repetitions, same tempo, same sets. So those would be your two exercises that you'd pair there. I mean, if you wanted to do those by themselves or you wanted to superset them, meaning you would, say, do one set of bench press and then one set of lat pull, that would save you some time there, and you could absolutely do that, no problem.

Second two exercises then, one of them is going to be a rotational movement. So this is a cable rotation or a 90/90 trunk rotation, something where we're moving in that rotational field, same thing eight to 10 reps or so. We're not trying to maximize strength. We're trying to just get a good

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feel here and move on to the next one. And then finally, again, an additional repetition method here for pushing and pressing, maybe something like a push-up where you do one sets for as many reps as possible. That entire thing, those four exercises, again, should not take you more than 10 or so minutes.

And so really, we're out of the gym in under 45 minutes, which is not that bad. Ideally, before leaving, you would finish with some sort of aerobic cool down and then really, really ideally-- and I've talked about this plenty of times in my guest series with Dr. Andrew Huberman on the Huberman Lab podcast and many other places, but doing some sort of down-regulation breathing, box breathing, maybe a four-second inhale, four-second hold, four-second exhale, and a four-second hold, or really just any extended exhale, hold would be fine as well. But investing three to six minutes in that before you walk out the gym would be, again, the ideal scenario.

So that would be day one of week one. Moving on to day two, your more moderate day, since we want a little bit higher intensity here, but remember, we're still not in red. This is moderate at most. We're going to use something more like tempos rather than steady state. Here's what I mean when I say tempo. Various coaches define this differently. So in this particular protocol, what he's referring to is still something that is easy. This is an RPE of five or six, maybe a heart rate of 70%, something like that, maybe a little bit lower.

But instead of just saying, hey, go jog for 20 minutes straight, we're going to play with intensity variations a little bit. You may also know this as fartlek training. That's an old Swedish term. It's been around since 1930s, I think. In fact, I think fartlek stands for fast play or something. It's effectively saying, oh, yeah, we're going to pick a time, let's just say 20 minutes to make it easy, and we're going to continuously move for 20 minutes. This is not interval training. You're not resting. You're not recovering in terms of taking time off.

You're going to continually move the whole time, but you're going to play with intensities throughout that duration. So we're going to go 20 minutes, and instead of going one pace, it-- actually, think about this like any time you've gone into a hotel and you've hopped on an elliptical or something like that, and they have those various workouts you can play with, and you pick the ones that's like the rolling hills. And so you're going to do 20 minutes. You're going to go up and down on intensities, but you're never going to go totally off. That's kind of what a fartlek is. All right?

Again, very different than a high-intensity interval training where you're going to go say 30 seconds or 90 seconds as hard as you can, then you're going to rest entirely or walk. You're going to maybe active rest, but you're basically at zero. And then you're going to repeat that high-intensity intervals. Fartlek is not that. It is continuous movement but a rolling intensity.

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Temple training is like that as well, at least according to Joel here. So in this example, he's going to say do something like 10 to 15, 20 seconds of higher intensity.

This is not high intensity. It's just higher. We're still at an RPE of five or six. So we're going to pick it up a little bit. Maybe we've shifted into gear two, nasal breathing as fast as we can or as much as we need to, but it's not even close to 85% of our heart rate. We're not way up there. It's just a little bit higher. We'll do that for 10, 15, maybe 20 seconds. And then we're going to back off and go all the way down to active movement, the lower intensity still moving for 60 seconds.

And so what again is really working on here is not just jogging straight or swimming straight. It is moving up and down the intensity. This is a little bit different than steady state. That's why he differentiates the two. We're going to be asking for different physiological demands. We're going to go up. We're going to come down, and we're going to build up a little bit of waste and then recover, build up a little bit of waste, and then recover. We're going to get to a touch higher intensity and start dosing that in small portions, but not jumping all the way up to really max intent or max effort types of things.

So when we say tempo, that's really what we're talking about. So in this particular day, you'll do somewhere between eight to 10 repetitions of tempo, which would be something like 10 to 15 seconds of higher-intensity work, again, not all the way up, coupled with 45 to 60 seconds of lower intensity. So we're going to be continually moving for something like eight to 10 minutes, but we're just going to play and roll with the intensity a little bit.

In terms of heart rate zones or perceived exertion, for those 10 to 15 seconds of additional work, you're probably looking at 70% heart rate, maybe an RPE of five to six. So again, it's just a little bit higher, but it's still a moderate-intensity at best protocol. Our strength work for that day is going to be core and accessory. So this could be something as simple as some front and side planks for however long you can hold them, maybe two to three rounds, each of those, and that'll be a wrap.

And again, as always, ideally, some sort of down-regulation breathwork before we walk out of the gym. In this example, Joel likes to use what's called bear breathing. You can imagine a bear in the wilderness doing the [INHALES] [BLOWS RASPBERRY] kind of thing. So bear breathing is like a three-second Inhale, three-second exhale, but you really want to put yourself in that super down-regulated [SIGHS] mentality. That's really the point of bear breathing.

Moving on then to day three, it's going to be similar to day one, still an easy day. But just as some sample here, instead of doing our conditioning for 15 to 20 minutes, we maybe notch it up to 20 to 25 minutes. Same basic idea could be the exact same modality that you chose for day one. Our strength work now is going to be a little bit complementary. So instead of doing our

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upper body press and pull, it's our lower body. So now, we're looking at exercises like a barbell squat, lunges, box step ups, and cable exercises, and things like that.

So same concept we did before, but now we're just exchanging it for the lower body. Moving on then to day four, you'll see that it's actually very similar to day two. So it's a little bit more of a moderate day with the tempo and the same core and accessory exercises. Day five then our final day is back and basically a repeat of day one. So that's really as complicated as it needs to be. As I said, we're going to progress all of these things over time. As the weeks go on, we start adding a small amount of minutes. So we start adding a few more repetitions per set, not much though. Be very conservative in your approach until you get to week five, where we finally start adding in that red day.

Let's zoom ahead now and see what it would actually look like when we integrate some of these harder, high-intensity days into it. So here, we're looking at week five, same structure as before. We've added an additional day of training. So we're going easy day one, moderate day two, hard day three, moderate day four, easy day five, and then moderate day six. So we're still doing two easy days. We're doing three moderate days, and we've actually sandwiched the hard one with two moderate ones.

The day-to-day structure is identical, though. You still have the same three components, always a high-quality warm up, always some conditioning piece, and then always some sort of strength piece. It looks a little bit different though now, right? Now, on the easy day, day one, we're going to be using a combination of our steady state and our tempos. So those are really in the same day. And then, our strength work is still that upper body press and pull. Day two, the moderate day, we're going to be now adding in a little bit more of repeat works-- we'll talk about what those are in a second-- and our core and accessories for our strength piece.

Our red day now is still some steady state stuff, but we're going to go really into some harder intervals after that. And then we'll finish with our strength work, which will be our lower body press and polar squat and lunge, however you'd like to think about it. The fourth day-- so again, we're back to moderate now, just similar to day two here, almost identical approach. And then the following day is going to be an easier day, where we're really in a low-intensity, steady-state stuff followed by some hinging and our upper body press and pull. So we're getting a combination there.

This allows us in if you're paying attention. We'll have two days for strength work for lower body, two days for upper body, and two days for our core and accessory. That's why it's all built together the way it is there. The sixth day, which again feels new here, is really just another moderate day where we're using some tempos. We're not doing the strength piece at all there because we've already gotten each area of our body twice. And so it's a short work, just an

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additional flush and recovery and get us moving on final day.

So let's break some of these days down individually. Starting off with day one, it's going to feel really similar to what day one of week one was. Remember, this is an easy day. We're going to do that 20 to 25 minutes of our lower-intensity movement. And then we're going to add in some tempos on top of that. So basically, you can say the tempos we talked about earlier that used to be on day two is now just added to day one. So it's 20, 25 minutes of our steady-state stuff combined with 10 to 12 repetitions of the tempo work.

So we've added a lot of work to this day. The strength work is very similar, but now we're up to three to four sets. So we've added probably an additional set for every exercise. And we've moved our repetition range up to maybe sets of 10 to 12, so small, subtle increases here that are going to pay a lot of magnitude over time. The exercise selection can stay the same for this entire day that you've been doing the previous four weeks. Day two, our moderate day, instead of using tempos, we're going to switch and use what are called repeats.

OK, so again, these are not high-intensity intervals. It's not 30 seconds as hard as you can with rest. It's a little bit different. Joel calls them repeats. So what you're looking at here is RPEs of six to seven or so heart rates probably closer to that 80, maybe 85%, but not completely crazy. We're looking for bouts of 30 to 60 seconds of elevated intensity. This is certainly gear two, and that system may be even touching into gear three, though still probably gear two, so nasal only, but as fast as you need to ventilate.

And you're going to do 10 or so repetitions of this, so 30 to 60 seconds of harder work brought back down, still moving though. 30 to 60 seconds elevated, but what you're seeing happen is rather than just jumping into again, max effort, high-intensity interval thing, we're slowly getting prepared for that. So let's get a little bit higher intensity for a while, come back down a little bit higher intensity for a while, come back down. First week, we kept this stuff at five to six RPE. Now, we're five weeks in. So now, that is up to six to seven RPE.

So we're just gradually building this stuff over time, in this case over the course of a month. So all in there, we're talking about 15 to 20 minutes total for our conditioning of repeating those 30 to 60-second moderate-intensity intervals. Our strength piece, very similar to when we talked about in week one, but now we're going to add maybe a more complicated core exercises. We'll add in some trunk rotation stuff. We'll do some more advanced movements rather than just sort of planking all the time. And we're probably looking at two to three sets of eight to 10 repetitions plus or minus.

So again, slowly building up competency, adding more difficult movements, adding in whatever you have available, whether you have medicine balls or bands or ropes or weights or whatever

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you have access to and feel comfortable and confident doing. This leads us to day three, which is our first installment of a harder, higher-intensity workout. But please, note, we're not trying to completely max ourselves out here. We're just starting to get closer to that top end and intensity.

We start off with our high-quality warm up, and then we move into 15 or 20 minutes or so of a very low-intensity, steady state. So we don't want to leave that component out. We're continuing to get those adaptation. And in de facto, it works as a higher-quality warm up. And now, we're ready to go into what are called power intervals. And so this is going to look something like RPE of seven to eight. I know most of you are probably going to pick eight. You're going to get all the way up there. Heart rates are probably 85% or so.

Now, in that ballpark, you're definitely going to have to be using your mouth to breathe. At some point, you might be nasal in, mouth out, or the opposite, but we shouldn't be just mouth only or at that maximum intensity yet. We're going to do five to 10 seconds of work here, and this work is going to be high effort. We're really trying to get after it at the hardest way we possibly can. Now, what keeps us from being like a infrared level is the fact that we're doing this for five to 10 seconds And so this is your ability to repeat peak power a bunch of different times.

I love this style of training. I've done it for forever. It's always blown my mind why nobody does it. It's so effective, so impactful, especially if you're an athlete or you compete in anything. Your ability to repeat power outputs over time, it's just so lost. People want to get to conditioning. They want to get to fatigue. So they either keep their rest intervals way too short, or they do way too many repetitions of this, where it ends up just being like moderate effort, hard, but not truly hard. It's just a huge mistake.

So make sure you're going really hard in these short, short, short bouts. Keep those bouts very short so you can really get to peak power, recover, and then do it again. That recovery is going to be 40 to 60 seconds. So a really good example that I use all the time is the air assault bike. And we'll go five to seven seconds as hard as we possibly can and then rest for a minute. That's what we're talking about here. Maximal effort for five to seven seconds, it feels like nothing resting all the way upwards of a minute.

If you want to press it a little bit higher to like 10 seconds of work and 40 seconds of rest, that's fine. But we want to be anywhere between a one to four to up to one to 12 work-to-rest ratio. So what that means is for every one second of work, we have anywhere between five to 12 times the amount of rest. So a five-second workout with 60 seconds of rest, you can do the math there on that ratio. 10 seconds of work, 40 seconds of rest, that's a one-to-four ratio. But we want to go all the way up there.

One to one, like 30 seconds on, 30 seconds off are fine, but they're just fundamentally training

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something different than what we're trying to get after here. And that is your, again, repeated peak power. So in this first day of the truly high-effort stuff, we're just going to repeat that for eight to 10 repetitions. So again, to really be clear here, say you do five seconds of all-out work on the assault bike, you rest for a minute. You do 10 rounds of that, and you're good. As you build up your abilities over time, you will increase that number.

And so instead of 10 repetitions, you'll go to 15 repetitions eventually, or all the way up to 20 or even more if you'd like. You could start extending the work time. So go from five seconds to 10 seconds. You could start reducing the rest, so going from 60 to 40. But please, please, please, please, keep in mind simply reducing rest and making it feel harder is not always making it better. If we're compromising our ability to produce power, in this case, we've undercut what we're attempting. Value there, but it's a different thing.

So just adding weight, just making things harder, just reducing rest is not necessarily always the best approach for progression. So you may be thinking to yourself, well, that's not a hard day. Well, a couple of things, we haven't done our strength work yet. And remember, it's just our first touch at this here. We're going to have more stuff built in later. So our strength work in this day is just three exercises, in this case a squat, a lunge, and something for our core. You could do a superset with all these if you'd like.

And you're really going to be trying to keep your rest intervals fairly low, 60 seconds at most, three to four sets, or an eight to 12 repetitions or so per set. And as always, always, always, we finish that up with some sort of down-regulation work, in this case probably worth it to do some sort of physical unwinding, so some sort of stretching or mobility. That could be combined with your breathwork and downregulation, but you want to bring the pieces back out that you've condensed with the higher-intensity work.

I also need to remind some of you, while you're just raring to go here, you had a moderate day before that. You're about to have another moderate day right after this. And so hard is really the context of the entire week. We're working out six days that week. We're doing a decent amount of work every single day. This is going to accumulate over time. Another major mistake that we've seen in the athletes we've worked with, as well as younger coaches that I've mentored, is really not appreciating what's going to happen over the course of the week, and then over the course of those weeks stacking up.

It's not necessarily just about the individual workout. It is really the thought and progression over the next week to months that matters. And so in this particular case, we've added an extra day. We've added repetitions. We've added sets. And now we're adding a whole bunch of higher-intensity stuff that we haven't done yet. This is a big difference than week four. And it's even a big difference than week three. And so keep our eye on the prize of total volume. That

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number will always stick with, for the most part, is you don't want to add more than about 10% volume or intensity per week.

And so what that really means is a couple of extra sets or a couple of extra even repetitions on every workout multiplied by five days gets that number to 10% really, really, really quickly. So your fatigue over the week will start to build up. This may not seem like a lot of high intensity or nearly enough that you want for some of you folks out there, but appreciate what's happening on the other days of the week. And so what you don't want to do is train harder than recommended on this day and have that compromise the next moderate day's workout or even the one following that.

So appreciate the process. There is extensive science behind this and a lot of coaching experience. The program will work. You will get enough high-intensity stuff in there, and we'll get you everything that you want. Moving us all the way to the end, week eight is the hardest in terms of both duration and intensity. So it's the most volume you'll do at the highest heart rate or effort. However, you're monitoring it. And that's the same structure as we just walked through in weeks five, but just slightly more advanced. And that's because on the fifth day, which is traditionally an easy day, you're going to actually do your test.

So how do we know if your program worked? Well, in this case, if you have access to a metabolic cart and you've done a VO2 max test before and you want to test it after, this would be a day to do it. If not, you can simply do any number of submaximal tests. The great one, the one we talk about all the time is a Cooper's 12-minute test. So you're effectively going to take 12 minutes on a track, run as far as you possibly can in that 12 minutes, and then you're going to enter that distance in. And that will give you a prediction of your VO2 max test.

It's an easy way to get a pretty good scientifically validated estimate of your VO2 max. So if you wanted to do a little bit of pre and post testing, you could actually do it that way and validate whether or not the program worked for you. So once again, if you want more information about this program, you can check out the show notes as well as Joel's website. It's called eightweeksout.com. And they've got a bunch of different programs on there for all kinds of different scenarios and outcomes. So check out those resources for more information.

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. What does that mean? It means that AG1 provides a comprehensive variety of vitamins, minerals, probiotics, prebiotics, and adaptogens in an easy-to-drink greens powder. Getting your nutritional right is hard for many people. I certainly know that I have clients who really struggle, for whatever reason, to get the proper nutrients from whole food sources.

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Now, AG1 is not a replacement for eating high-quality whole foods, but it is a great foundational supplement for filling in the gaps where needed. I've also personally found that with many of my clients, AG1 helps move them just in the right direction for eating more high-quality foods because it helps them with cravings, digestion, and many other benefits. I especially personally like taking AG1 when I'm on vacation or traveling because it helps me just stay on track with my nutrition.

I know that missing a few days of getting the proper vitamins and minerals and other micronutrients is not a big deal at all. That's not really how those things work. But for me, again, I just like knowing that I'm staying somewhat on track when I'm definitely not making the best nutrition and food choices of my life. 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.

So let's move on and talk about our training for our first marathon program. Now, a little bit of a backstory here-- this is called Faster in 50 because it was designed to get you to a marathon in 50 days, really important though, and actually, you could say the same for the previous program. Just because that was eight-weeks long and this one's 50-days long, they don't necessarily have to be that. There are two big components of faster in 50, which we'll talk about in a second. And they're broken up as phase I. It's 25 days, and phase II is 25 days, 50 in total.

But they could be much longer. So if you're not in the same position that this individual was in for 25 days and you need longer for that foundational piece, make that foundational piece 50 days. Make it 150 days. Make the second piece longer. It's absolutely fine. All these programs are meant to get to a certain place. So if you're not there as fast as this individual was or you're starting off in a different spot, which almost surely is the case, please, I want to make sure you understand this does not have to be done in just 50 days. It also definitely does not have to be done in 50 consecutive days.

So we can extend this thing out to be meeting you where you're at and your needs for improving your marathon. Now, as we take a quick step back, when we look at success in a marathon, there's three specific components. We just got done talking about a program designed to improve your VO2 max, but that's only one of the three major predictors of success in a marathon. The other two are your lactate threshold and then your movement efficiency. Now, we also have to think about whether you're trying to maximize your performance in a marathon or simply finish it.

Those are also very different goals. Many of us-- in this case, this program was designed for somebody running their very first marathon ever. It's just trying to accomplish all 26.2 miles

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without having to fail or stop or try again. If you can already do that and you're highly successful, say you're already running a three-hour marathon and you're trying to get it faster, that really is a different approach. OK? So really want to just walk you through this program of Faster in 50, again, designed to help people go from zero to their first ever marathon in 50 days.

As we've done before, you can have direct access to this full program. There'll be links to this in our show notes as well as the actual program, and you can go check it out. Faster in 50 was developed by two individuals, Mark Bell and Dan garner. And so the backstory here is Mark Bell, if you don't know him, is a lifelong powerlifter and bodybuilder. He has been training for probably 30 years. He's competed in numerous powerlifting events and competitions and bodybuilding events. He is outward about his long use of anabolic steroids and many other agents.

But really, what's interesting about this is you have an individual who's probably six feet tall or so, has weighed certainly 300 pounds or more, and has spent his lifetime either maximizing muscle growth or strength. Anything in the realm of conditioning was completely off the table. Mark was very anti-running, very anti-conditioning, for a long part. And if he did do it, it was higher-repetition-range lifting, no running that I know of really before he started this, certainly, very minimal conditioning at all.

And so for whatever reason, Mark decided he wanted to take up running. So he had done this for a while. I can't remember how long, maybe four or five months or something like that, and then decided, because he's Mark Bell, that he wanted to go from just running to running a marathon. And that first marathon needed to be Boston. And so this is the actual program Mark used to run his first ever marathon at probably 230 pounds.

So what he did is-- realized he couldn't handle that himself. So he reached out to a guy named Dan Garner, who's a human performance expert, and he asked him to build him a comprehensive program to run his first ever marathon. This included his nutrition, his supplementation, his recovery, sleep, lifting, running, and all of that. It's all in that free program. I'm not going to go into the details of all the supplements and nutrition and everything else right now. So we're just going to focus on what the training program looked like for those final 50 days.

Again, do want to reiterate, he didn't start at zero. Here, he was already running for a while. He was somewhat fit. This is like their last final push. And so if you're literally starting from nothing, you may want to take this first phase, which for Mark was only 25 days. And that itself might need to be 50 days or 60 days, or even 150 days for you before you're ready to move on to the second phase. So caveat aside, let's jump into what Faster in 50 looks like.

The first thing to pay attention to here is just like in the previous program, there is a dedicated

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and specific warm up for each day. So in this case there's an upper body lift, a lower body lift, and then of course, your running. And so you can see the full details in the program if you choose to check that out. But just really quickly, the upper body warm up is going to be things like cat camel exercises, bird dogs, push-ups, jumping jacks, YTWs, and things like that. Same idea, usually one to three sets, eight to 10 repetitions per exercise, so a full-body, full-joint, upper-body dedicated warm up.

For the lower body, it's a similar approach, but now you're talking about things like mountain climbers and fire hydrants and walking lunges and single-leg hip thrusts and things like that, same repetition ideas. Really, what we're getting at is a combination of what's called unilateral. So this is one of the two joints moving while the other one rests as well as bilateral, so both moving at the same time. Easy example of this, a goblet squat is bilateral, both legs, where a step-up is unilateral.

So somewhere in your warm up, you want a combination of these things. And you want pressing and pulling. And you want to ask the joint to do everything that it's supposed to do in its normal range of motion. The running warm up is going to be a combination of very low-intensity aerobic exercise, so skipping, jogging, cycling, stuff like that, maybe some full-body goblet squats or cossack squats, some skips and hops, some low-level plyometrics, and really other things that you would consider to just be general basic calisthenics.

As I mentioned, the program is built into two unique phases. The very first one is really meant to build your foundation. It's the tissue tolerance we talked about earlier. It's general conditioning. It's work capacity, and it's getting you physically prepared to handle the training necessary to run the marathon. The second phase is really specific marathon prep. So you're going to start getting an understanding of your race pace. How do you know if you're going too fast or too slow? How is that stuff feeling? You're going to work on your fueling and recovery. What should you be eating or drinking? At what time?

What upsets your stomach? What makes you feel great? And all those other things that go into actually running a marathon that are not just your physical training program. So those other components often get forgotten about. In fact, I'll never forget as a doctoral student, I was sitting in my cubicle and another one of the students was getting ready for, I think it was his first marathon, actually, or if not his first, it was second or something like that, and he was talking about strategizing over what he was going to use for his fuel during the race.

And he came up with this plan. And all these young scientists are talking about the research and what should be taken and what amounts and all that stuff. And I was like, oh, that's really cool. And he was pretty close. I think he was maybe a month out. And I asked him like, well, awesome, what do you do in training right now? And he looked at me blankly. He's like, well, I

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just run. I was like, wait, wait, so like, you're going to spend all this time developing an optimal training and fueling strategy, but you're not even going to practice it?

And it's just the look on his face as he stared and realized like, oh, my gosh, like, how did I forget that part? I'll never forget. It was quite amusing. So the point I'm getting at here is you want to absolutely try every component that you're going to use. Your warm up, your cool down, all this stuff should be tried prior to the competition. So this last month is really about practicing the race in all of its components. So what's the structure look like of these different phases? Let's start off with phase I, that foundation.

It's broken up into seven days. Seventh day, by the way, is optional, easy recovery run or totally off, so very similar to the VO2 max program. Day one is going to be an upper body lift combined with interval running. And this is also where definitions matter. They don't necessarily define intervals and tempo and things like that the same as the previous one. So I'll clarify what they mean by that. So again, day one is an upper-body lift combined with an interval training. Day two is a lower-body lift plus temple running, and then day three is more of that classic fartlek running style.

Day four is the second upper body lift, so very similar, two days for upper body, two days for lower body, a little bit of a different workout here. So upper body, the second one, as well as a recovery run-- day five is lower-body lift as well as a cross training. And I'll explain what that is. And then day six is a long, slow run. Now, remember, this is designed specifically for a marathon. It's not for VO2 max. And so you'll see some subtle differences there that matter. But really, conceptually, they're doing the same thing, a little bit of lifting, running in different zones, some higher-intensity stuff, some lower-intensity stuff.

In this case, the goal is to run for 26 straight miles. So you have to practice running for longer distances at some point. That's not a requirement, though it can work. But it's not a requirement to improving your VO2 max. So slight differences here because we're actually after a different target, but a lot of the same concepts. The second phase is a little bit different. So day one is now a total-body lift plus intervals. Day two is a longer fartlek strategy. Day three, a total-body lift again plus a temple run.

Day four is a shorter, higher-intensity fartlek, and then day five and six are longer, slower runs. And then, finally, again, day seven is off. Now, you'll notice they've cut the lifting in half, and they've extended the long runs. They've doubled those, in fact, and they've actually doubled the fartleks. And this makes a ton of sense. You're trying to run a marathon. Lifting is important, but running is more important. And so they've doubled down on that. And we've said instead of having upper-body days and lower-body days, we'll just combine to have total-body days.

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So each muscle is still getting two per week, but we've de-emphasized that because we need to over-- again, continue to emphasize actual running. We need to practice running long distances slow, and we need to practice running distances fast. Both of those are going to be required to successfully complete your marathon. Cool. Now you got the big picture. Let's go in and cover a couple of specific samples. Again, you're welcome to download the entire program completely free. So I can't go through all of it, but I will give you some examples to make sure these things make sense and clarify some of the terminology.

So let's just go into day one of that first phase. Remember, this is an upper-body lift, very similar. Rather than programming the specific exercise, it's done by concept. And so you're going to have a horizontal press. You're going to have a unilateral horizontal press on top of that. And so this would be something like a bench press with a then single-arm dumbbell press, something like that. Now, you're talking three sets or so for five repetitions plus or minus. We're trying to go a little bit heavy in this case, not all the way though.

What we're trying to work on is strength. So we need that. We're going to get endurance and muscular endurance and long-duration endurance from our running. And so what we're trying to get with our lifting is the stuff we can't get. So we're trying to get a little bit more strength development here. Not maximal strength, we're not competing in power lifting or weightlifting, but we are trying to get closer to that end of the spectrum. So three sets of five here for your horizontal press and three sets of eight or so per side for your unilateral press.

You then follow that up with a vertical press, so something overhead, and then basically do the same thing for the pulling. So you do your three pressing exercises, horizontal, bilateral, horizontal unilateral, and then vertical. And then you combine that with horizontal pulling, unilateral horizontal pulling, and then the same thing in this case. They chose a medial delt, so same basic idea here. Upper body is now taken care of. After this, we're going to go into our running exercise. Now, you notice they've chosen to lift first and then run after that, but the upper body lift is not going to interfere with their running really whatsoever.

And so the running here is going to be three one-mile runs with a three-minute walk in between. Also keep in mind you're talking about an individual here who's certainly over 230 pounds. I don't remember exactly what he was, but maybe a little bit more. So they're going to have to approach this running and distance stuff a lot differently than if somebody was 160 or 70 pounds. That's just a lot more mass on the joints. And so if you're wondering as this program evolves why certain things are done this way, say you have more experience with running or coaching, this is a large component of it, making sure Mark get to the race healthy, and then of course, complete the 26 miles.

But that's a little bit different from somebody who's historically been 270 to over 300 pounds for

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most of his life. Even though he's lighter now, we're still a pretty large individual here and a typically large for a marathon. So nonetheless, the endurance training, like I said, it is three one-mile runs with a three-minute rest in between. So you would run a mile, rest for three minutes, and then repeat that. So you're going to accumulate three total miles of running. You're not going to do these at fast pace at all. You're probably nasal breathing or close. But you're not walking either.

This is a fast jog, and you want to think of this as more of like seven to maybe eight out of 10 in terms of perceived speed. So you're moving here. You're going to be fatigued. You're not going to be having an easy light jog here. We're trying to accumulate high work, some rest, and get a lot of volume in without having to beat up the joints too much. So you'll do that, those three one-mile repeats, and then you'll do the same thing, but instead of being a mile, you'll do a half mile, so three half-mile repeats with 90 seconds of rest in between, still same effort up there.

So if we do that, we've accumulated four and 1/2 total miles of running, which is actually pretty good. So you think about this for somebody at the first phase here, four and 1/2 total miles accumulated, but you're able to do that at a pretty high pace, generate a lot of endurance in a lot of different areas, while also getting some miles in. Day two is the lower-body lift combined with what's called tempo. Now, in this case, again, tempo means a different thing than what we talked about earlier.

The lower-body lift follows a very similar structure, three sets of five. For the most part, you're going to do some unilateral stuff and some bilateral stuff, some sort of squat variations, some sort of lateral lunge or lateral movement variations, some sort of hinging, and some sort of carry, and then in this case, some sort of anterior rotation of the core. So your core tends to rotate, and you're going to stop that from happening, lots of different examples of that. And your endurance work is going to be a 30-minute tempo run.

So this is going to be like steady jog pace, if you will, I think seven out of 10. And what you're trying to get used to is what that marathon pace is actually going to be. So if you know your half marathon time, you can actually use that pace for these temple runs, but you're just accumulating race pace volume. If you come from an endurance-racing background, this is probably what you associate with temple runs. It's like race pace a lot of time but for a shorter duration. So that would be our endurance piece for day two.

Day three is that fartlek run. I've already explained what that means, but as a reminder, it's that cyclic variation of intensities that are not true off period. So it's going to be 45 consecutive minutes, and within that, you've got nine opportunities to cycle up for one minute. But you can do those whenever you'd like. So it doesn't necessarily matter if you go three minutes at an easier pace and then one minute higher and time it out. It doesn't really matter. You can feel this out.

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You just need to accumulate nine of those one-minute bursts before that 45 minutes is complete. During those one-minute bursts, you're going to go hard. This is like nine out of 10. You want to push the pace here, and then you're going to slow it back down. During that recovery, it's not walking. It's not off. It is still back to your slow jog, your slow movement, but you're going to cycle those things up and down. That recovery pace, think of that as like five or six out of 10.

Day four is another upper-body lift, similar to the first lift, as well as a 30-minute recovery run. This is really as low and slow as you need it to be. You're just really trying to build a little more tissue tolerance here, as well as some general physiological recovery. Almost always, we're going to want this to be nasal only to keep you nice and slow. We just want to get out and move a little bit. Day five is our second lower-body lift, combined with a 30 minutes of what Dan calls cross training. This is really just active play. It could be done on multiple different things.

So a lot of times, you'll do five minutes on a row or five minutes on a treadmill, five minutes on a bike. You may do something like play basketball or do light jiu-jitsu drilling or whatever is the case. You're not, again, really trying to stimulate adaptation here. It's mostly used for recovery and pacing and blood flow. You want to accumulate 30 total minutes, but you just want to be moving at a very light intensity. Ideally, it's not just running. You're going to be putting in a lot of miles on that specific movement pattern. So if you can open up the system a little bit more and choose some other movement patterns, that's probably a good thing to do in this case.

Day six is when you do your long, slow run. You want to keep these at an intensity of something like six out of 10 on your RPE scale. And you're going to slowly increase the miles over time. So you get a sense you might start off with six miles week one and then week two, move up to eight miles and then to 10 and then to 12 or something like that by week four. So pretty straightforward here, you're going to go out, go easy, but you need to just accumulate the ability to run for that many consecutive miles.

Day seven, our final day is optional/recovery. If you want to go do 20 or 30 minutes of very light movement, you can. You're also welcome to skip that. I would, though, recommend, as Dan does here, to pick at least what we typically call recovery accelerators. I'd like to have at least two or three of these. This could be anything from a massage to thermal, so cold or hot treatment, breathwork sessions, movement, acupuncture, something like that that's going to really aid in recovery.

So typically, we'll pick at least, again, two to three things from that list. It could be very short, but that's going to get you set up for the next day of work and really the following week in general. As you cruise through weeks one to four, you're going to see slight increases of intensity and variation throughout all the days. You can see all that detail in the program. But really, as we get into week five or our second phase, things do change. I talked a little bit earlier about how the

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structure changes in general, so you can refer back to that or look at the PDF if you're actually looking at it right now.

So to walk you through really quickly what we're looking like here-- so now, for example, on day one of our new phase, our endurance training, instead of looking like those three one-mile repeats, like we had in our first phase, plus the half mile repeats, remember we totaled four and 1/2 miles there, now, our endurance training is something like 10 3/4 of a mile repeats with three minutes rest in between. So we're doing these as fast as possible but not all-out pace. This is nine out of 10.

And so we've done a similar structure, but we've really added it. Instead of going a mile and a half a mile, we're really at three quarters of a mile, and we're doing a lot of them. 10 of them is going to accumulate a lot of work. Day two's fartlek run has gone from 45 minutes all the way up to 90 minutes. And so we've added a bunch of more work there. And so again, you can really see the concept is we're just slowly building these things over time. We've got our lifts in there. We've got our tempo runs. Those have now gone up to 45 minutes where they were previously 30 minutes. And we're just again slowly accumulating volume over time.

We've got our now two additional days. So in this phase, day five and day six are for long runs. Day five for the first week of this phase is going to be at eight miles, then the next week we'll progress up to 10 miles. And then really, we'll back off from there and keep it at that eight-mile range or so. We're really trying to move volume here, but this is not the biggest day because on day six, we're going to be at 14 miles for week one, 16 miles for week two, 20 miles for week three, and then really, week four will be all the way up to 24 miles. This is basically marathon practice. OK?

Those additional 2.2 miles really do matter on race day trust me. Anyone who's done a marathon will tell you, yeah, it doesn't sound like a lot, but those last 2.2 miles are a bunch. So it's not a full marathon, but we've walked ourselves up this hill slowly enough to where we should be able to handle that. You're going to be tired and fatigued, but it shouldn't completely break you, smash your toes, or put you in really big injury risk or anything like that from running those 24 miles.

From here, we've gotten all the way up to our final week. And so let me walk you through what those seven days look like or what we'll call peak week, with a little bit of a taper and marathon prep. Day one is going to be that phase II total body lift, plus a very short 15-minute or so recovery run. Day two, another total body lift with a short recovery run. And really, we're not trying to press adaptation here. We're just trying to keep the system activated, keep blood flowing, keep feeling really good, and start tapering and optimizing for performance.

Day three is an easy five-mile run. Start out at a really easy pace here, and then really only

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target your race pace for the final two miles. So we just want to feel it. This is like a golfer who goes out and just hits a couple of shots to remember what those feel like, but you're not going to spend hours on the range really getting all the way up to maximum speed. So five miles in total, you're kind of just moving and cruising for the first three. Feel out that race pace for two miles, and then shut her down.

Day four isn't completely off, as well as maybe a couple of those recovery strategies as day five is. These often tend to be travel days, too, if you're going to the event and getting a hotel or something like that. But you're really now just maximizing recovery. Day six or what is actually the day before the marathon, you might want to do like a 15-minute recovery run, get loose, stretch out a little bit, but not excessively, and then really, really recover, because day seven you wake up, and you run your first ever marathon.

As I said, this was the actual program Mark used. He did run the Boston Marathon. He did complete it in a time of six hours. And according to Mark, it took him six hours to run the marathon and only six hours to recover, which is sort of funny, but if you've actually ever run a marathon, you realize that's actually really fast. He actually told me personally the next day, he felt great, wasn't even sore, and then ran the next day, which is also very weird.

And so six hours is not a fast time for a marathon. In fact, it's like close to the range where they'll cut you off and say you can't go anymore. But that wasn't the point here. He's not trying to run the fastest marathon he could. He just wanted to run one and complete it. And so I think the program is clearly a success. If that's something you're interested in doing, just wanting to accomplish a task like that, I have no doubts that the program will work for you as well.

It's also worth highlighting that while Mark ran the marathon at what some might call a little bit of a slower pace, I think it came out to be about a 14-minute mile or so. That doesn't mean you can't use this exact program and run as fast as you want for the most part. What's actually going to determine your time is going to come down to, in large part, what paces you're able to manage across this entire program, particularly the pace that you can handle during your tempo runs.

So while Mark used it to run his first ever marathon and run at a pace that was effective and economical for him, you can use this to run as fast or slow as you'd like. To wrap up, I know we covered a lot of ground here, so please, do check out these programs in the show notes if you want to see them or actually follow them yourself. Please, also check out the people. Dan Garner, Mark Bell, and Joel Jamieson who are kind enough to let me share with the world for free their full training programs. So check out their material as well.

I also wanted to mention, a resource I have found particularly helpful over my career is a book

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called Unbreakable Runner. It is a phenomenal place to learn more about training specifically for running endurance without getting hurt. I hope you enjoyed this episode. It's a little bit different than normal and something we're going to consider doing more often if this is something that you appreciate. So please, do let us know if this is something you'd like us to try again. Thank you for joining for today's episode.

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