

THE MODEL HEALTH SHOW

EPISODE 545

**HIIT Masterclass for Fat Loss,
Metabolic Health, & Vitality**

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SHAWN STEVENSON: Welcome to The Model Health Show. This is fitness and nutrition expert, Shawn Stevenson, and I'm so grateful for you tuning in with me today. This is the time to get stronger than you've ever been. More resilient than you've ever been. More determined, more capable, more successful. But for us to get to that place, this is not about working harder. Of course, there's going to be a myriad of things for us to put some effort into, but it's truly about working smarter. We've only got a certain amount of time in the day, is being able to leverage our time and get the greatest benefit possible.

And so, in order for us to be stronger and more resilient in this time when it is just... To put it simply, it's crazy pants. Alright. It's like some plaid booty shorts out here. It's just crazy pants. It makes no sense on some dimensions on what's happening in the world. There's a lot of divisiveness, there's a lot of turbulence taking place. But I believe that it's a great opportunity for growth and connectivity, for us to get good contrast as to what we're not going to tolerate anymore, as to what we're going to shift our attention towards because so many things have been rolling along on automatic and we've accepted it as normal.

We've accepted 250 million United States citizens now being overweight or obese. It didn't happen overnight. We've accepted it as normal. We've accepted 60% of our citizens having some degree of heart disease right now. We've accepted 70% of our citizens being on pharmaceutical drugs right now. And it's not working. We've been treating symptoms; we've not really been addressing root causes of our issues and wondering why we're not getting better. We've been allowing the education system to basically pump out more and more of our bright minds being diminished, our creativity being diminished, our empowerment being diminished, our rebellion against norms has been diminished. And now we're seeing these rampant increases in issues of anxiety and depression really taking hold in our education system and having that play out in our lives.

And folks graduating... I'm one of those people. I got a degree. I went to a conventional university, but that does not equate to success and happiness in life and in our careers. So not really having an education system that is geared towards our own gifts and capacities and talents, really helping to bring out the best in us. Instead, it's uniformity. Again, we've allowed that to take place, as evolved as we are as humans. And so enough is enough. The same thing with what we're doing for our livelihood, our vocation. There's so much joy that's possible, but we've been programmed to believe that you got to slave away, and at the end of the day, you retire somewhere, sail off into the sunset. But that's just not the reality for the vast majority of people. It simply does not happen like that.

We got to stop with the mythmaking and focus on what's real, focus on what's proven. And more than anything, and that's what this episode is about today, is being empowered. Getting this information, understanding it logically, and leveraging it to make ourselves truly the strongest we've ever been, the most resilient we've ever been. We're going to need it. We're going to be facing some opposition. And it's not about fighting against each other. It's about the opposition of ignorance. It's about the opposition of divisiveness when our goal is to come together. When our goal is to operate from a place of integrity and intelligence. Real intelligence. Not based on what someone says but based on real-world results.

And so, in this episode, I'm telling you right now, 2022 is about increasing the intensity. Today we're going to go through a master class on high-intensity interval training. Now the reason that this is so important and so powerful, it was sparked by a conversation that I had with Dr. Martin Gibala, and he's one of the leading experts in exercise science in the entire world. He's the guy who's actually in the laboratory taking the muscle biopsies, testing different subjects, putting them through different types of exercise, tracking their fat loss, seeing which forms of exercise are actually effective. Not based on what you should do... You could shit all over yourself, but what is actually effective at the end of the day.

So conventional cardio, for example, cardiovascular exercise, this consists of moderate-intensity aerobic exercise, like jogging and cycling. This is typically done in gyms throughout the entire world, on everything from treadmills to elliptical machines to row machines to stationary bikes. This is what's known as "steady-state cardio." And it has its place. It has its place. Now, this typically looks like jogging, or as the Norwegians say, "Yagging." Yagging. They probably don't say that, but if they do, that would be cool. Yagging for 30-60 minutes or more at a steady pace and this has been promoted as the gold standard for getting fit and shedding fat. You got to get your cardio. You got to hit your cardio.

Whereas high-intensity intervals... H-I-I-T, HIIT, high-intensity interval training. High-intensity intervals consist of a short burst of fast and/or explosive movements followed by a long duration rest period of little to no activity at all, then repeating that cycle for a number of rounds. That's what high-intensity interval training is. Explosive, short bursts of intensity, and then pretty much total... Almost total rest and recovery for a set amount of time, and then you repeat that. You go into your next burst.

Now Dr. Gibala in our conversation, he detailed a study... And I went... I got the opportunity to actually examine the data on the study and it's remarkable. So, buckle your pants. Dr. Gibala detailed a study where he and his team of scientists divided people into two groups, with an equal amount of women and men in each group. Alright. So, they got five women, five men in each group. Two groups. The first group was put on a rigorous endurance training program for six weeks.

They had the subjects to ride stationary bikes five days a week for 40-60 minutes each session. They went at a moderate pace in these sessions of 65% of their maximum aerobic capacity, which is the standard recommendation in public fitness guidelines. It was enough to get them sweating and to get their heart rate elevated during those long 40–60-minute sessions. Yes. Now, the second group was put on a six-week program as well. But one that consisted of interval training that required much less exercise time. The research team and the study participants start off with just a couple minutes of a light, easy warm-up on the stationary bike, then they performed a 30-second fast-pedaling sprint, really trying to move their legs, turn them over as quickly as they can for 30 seconds, then they were instructed to rest for 4 1/2 minutes, just barely moving the pedals over, they can go as low as they possibly wanted to in this 4 1/2 minutes rest time. And after this 4 1/2 minutes of chill time, then they conducted another 30-second sprint on the bike, rested again, and repeated this process for a total of 4-6 total rounds.

Now, got these two groups doing two very different things. And at the end of the study, the researchers were shocked, they couldn't even believe it, they had to repeat the study, they were shocked at how the two groups of exercisers compared to each other. Now, before I tell you these results, I want to make it very clear, so you understand just how little the interval group worked out compared to the rigorous, endurance-training group. The interval group worked out only one-third, one-third of the time that the conventional endurance cardio group did, and that's counting the time that they were pedaling lazily on the bike. It's counting all the rest time. They still spent one-third of the time exercising. Now, if you only count the time that the interval group was actually working hard, doing those sprints, that accounts for just 10 minutes of total exercise a week, compared to the other group's 4 1/2 hours of moderate intensity exercise each week. 10 minutes of intense exercise versus four and a half hours of moderate-intensity exercise. So, how did the two groups compare? Well, even though the interval group worked out hard only 10 minutes a week versus the 4 1/2 hours a week of moderate exercise, their improvement in cardiovascular fitness was exactly the same, their increase in mitochondria in their muscles, same, their metabolic improvement in their ability to burn fat, same, same.

They were all the same, every metric that they checked, the difference was statistically insignificant if there was a difference at all in their metabolic improvement. In short, the experiments showed that approximately 10 minutes of intense exercise a week boosted overall fitness to the same extent as 4 1/2 hours per week of "traditional cardio training."

Now, again, this might not even sound right, this might sound very counter-intuitive, but this is what's happening, and we actually do the studies when we actually put these things up against one another and see what happens, and then we start to think about our ideas and

how we got to this place anyway, because again, this does not negate the potential benefits of conventional long-duration, moderate-intensity cardio, but we've got to start to examine what conventional actually means. The definition of conventional is, that which is in accordance with what is generally done or believed. Some other words that describe conventional are, normal, common, unimaginative, and uninspired. That's what conventional is. When we say conventional, it doesn't mean that it's right. When we say conventional, just because it's normal or common, look what normal has gotten us.

People are doing the modern intensity cardio, they're cardioing their face-off and wondering why we're not getting to the results that we're looking for. Of course, we've got other issues in our society, it's not just about exercise, but what if we're not truly inciting the potential that's within us through exercise, because the conventional dictation of what we're supposed to do has been leading us astray. That's what we're going to look at and examine because to hear that 10 minute of intense exercise matches up against 4 1/2 hours, it just doesn't even make sense. It doesn't make sense, but we're going to start to pull back the veil, we're going to get the cross out of the eyes, we're going to be able to see this as clear as day on why this is so remarkable and how to utilize it. Because I'm telling you right now, not only is this going to be something that adds more value to your life and makes you more resilient and strong, but this is going to be something that you look forward to because of the diversity of ways that we can snatch up these benefits, we can get snatched out here, alright?

Get that body snatched. Now, the question should be, how is something like this possible when it comes to high-intensity interval training versus conventional cardio? Well, the story starts with our muscle fibers, our amazing muscle fibers. The human body has around 450 muscles that we can use voluntarily, we're muscled up. We're Vin Dieseled out here. We're Hugh Jackedman. We have that potential within us, we got a lot of muscle potential, 450 muscles that we can use voluntarily. With that... Now, here's where it gets really spicy. With that, we have over 250 million muscle fibers.

These muscle fibers hold a major key for metabolic health. So now I'm going to take you through our different types of muscle fibers, and if you're watching on the video version, you can actually see this on screen, and we're going to go through each one step by step. And we're going to start off with our type 1 muscle fibers. Now their ability to contract, these are known as slow-twitch muscle fibers, so that's their contraction capacity, it's a slow-twitch muscle fiber. Their endurance capacity is very high, our slow-twitch fibers can go literally for hours, that's their duration of use, as far as their ability to sustain against fatigue, our slow-twitch fibers can be moved at a slower, low velocity for potentially hours.

Alright. So that's the next category is their velocity is low. So that's that kind of combination if we're looking at speed and power if we're talking about in terms of exercise and movement,

this kind of gives us a look at what the velocity is going to look like. Now their strength is also low, and the motor unit of our type 1 slow-twitch muscle fibers is very small. So, what I mean by that is there's a motor unit within the muscle fiber that allows for the conduction of electrical energy to take place. So, it's amazing how our bodies are operating on this electrical currency. And so, the motor unit within a type 1 muscle fibers, slow-twitch muscle fibers, is going to be one neuron attached to maybe 100 to maybe upwards of 180 muscle fibers, alright, so that's the motor unit, one neuron attached to about 100 different muscle fibers, all slow twitch.

That is the motor unit size is going to be small with a type 1 muscle fiber. Now moving on, so most folks who might have heard these terms of having slow-twitch muscle fibers and fast-twitch muscle fibers, but this is missing out on the juiciness here in the middle, because after the type 1 muscle fibers, the next type in this array, this spectrum is going to be our Type 2A muscle fibers.

Now, their contraction versus the slow-twitch, these have a moderate contraction, the endurance capacity here is fairly high, it's not like the hours upon hours of potential with the slow-twitch fibers, but it's fairly high, so instead of hours on end, we have somewhere in the ballpark of maybe less than 30 minutes is where these types of muscle fibers are able to sustain against fatigue. The velocity is intermediate, their strength is intermediate as well, their motor unit is medium. So now we're jumping up in the amount of muscle fibers that a single neuron is attached to. So, type 1, now we got type 2A. Now, let's move on to another one here in the juicy middle, which is a type 2X, this is really in the category of hybrid muscle fiber types, where it has a capacity to do some of the stuff that the slow-twitch does, but also some of the stuff that the fast-twitch does, it's like a hybrid.

Now the contraction rate here is fast, now we're getting into the territory here where we have fast-twitch contraction, endurance is intermediate, so we went from high to fairly high to intermediate. So, what does that mean? We're looking at the duration, the maximum duration of use is going to be less than five minutes, generally, where we have the capacity here to prevent against fatigue. So, you can use these muscle fiber types to propel you through whatever movement motion you're doing for less than five minutes.

The velocity is high, strength, high, they're more responsible for things that are generating more power, more force, the motor unit here is large, so again, we're attaching to more muscle fibers. Now to finish this off, so you got type 1 muscle fibers, type 2A, type 2X, these hybrids, alright? X is going to give it to you, I'm sorry. Then we've got the type 2B, this is our final category, these are very fast-twitch muscle fibers. When we're talking about fast twitch, we're talking about these right here, alright? So, the contraction is very fast, endurance is low, maximum duration of use is less than a minute. This is key, you got to remember this part,

maximum duration of use is less than one minute, the velocity, very high, strength, very high, motor unit, very large; not just large, very large. Alright, so we're talking here... So, I mentioned the motor unit size for a slow-twitch fiber being one neuron attached to maybe 100 muscle fibers.

With the type 2B, we've got a neuron attached to 300 to upwards of 800 muscle fibers. So, the motor unit is very large. And just within that spectrum, we'll also find that range of these hybrid fiber types as well, these hybrid muscle fiber types. So, this is a crash course on our incredible muscle fibers, these muscle fibers are engaging intelligently to provide movement and functionality for us for specific things. We've evolved to have these different muscle fibers to enable us to do specific things, and part of being human is utilizing all of our muscle fiber types, that's what they're there for. And so, to take this to another level and getting here like, "How do we go from our slow-twitch to our very fast-twitch muscle fibers?" It's really about this phenomenon called sequential recruitment. Our slow-twitch muscle fibers have a low activation threshold, this means that they are the first to be recruited when a muscle contracts. So, whenever you start doing anything, slow-twitch fibers are there first and foremost, they're turning on first, it's the first one to get activated.

But if they can't generate the amount of force necessary for the specific activity, the fast-twitch muscle fibers are then sequentially engaged, going from our slow-twitch Type 1 fibers to then recruiting the type 2A to then recruiting the type 2X hybrids, then to recruiting the type 2B when and if needed. So, it's a sequential activation process that takes place. Now, here's where we start to dig into where the magic is happening because intensity is the key. Intensity matters if we want to evoke a notable metabolic shift. According to Dr. Doug McGuff, who's a specialist in exercise science, "If the intensity of exercise is too low, nothing much in the way of stimulus is presented to the body. On the other hand, if you are able to recruit, fatigue and weaken muscle fibers within a defined time frame, then you are going to recruit all of the different muscle fiber types aggressively and therefore get the most mechanical," and we're talking about that physique, "Mechanical and metabolic effect for producing an adaptation."

This is the key; I'm going to say the last part again. Recruiting all of the different muscle fiber types aggressively, you, therefore, get the most mechanical and metabolic effect for producing an adaptation. We want to adapt, that's what we're here for. We are here to adapt and to supersede what is. Adaptation. So, the change that we see with our bodies when our body composition is changing, it's an adaptation taking place. It's not just because we're like, "Ugh, I don't like you belly fat. Get away from me." It's an adaptation, it's not going to do anything until it is encouraged to adapt to the biochemical feedback, to the environmental feedback that's going on. It's all about adaptation. And as noted, sequentially recruiting these different muscle fibers, and this is the leading science, so we're talking about exercise science,

activating these muscle fiber types, all of them sequentially, is a major key to getting the most pronounced metabolic change and mechanical shift and change to our body composition.

Now, how does the mechanistic and metabolic adaptation actually take place more profoundly with high-intensity interval training? Well, high-intensity exercise promotes glycogenolysis, glycogenolysis. So instead of the building up and storage of glycogen, so the storage of... Glucose is going to get stored as glycogen in our muscles and in our liver. Instead, we have glycogenolysis, which is the breakdown of the stored glycogen within our skeletal muscle, because that's what we're really looking at targeting here, through exercise. Obviously, we're using our muscles. Now, one of the most remarkable benefits that this creates, this glycogenolysis that's activated with high-intensity interval training like nothing else, one of the most remarkable benefits this creates is that it restores insulin sensitivity on our muscle cells. We're restoring insulin sensitivity.

Insulin resistance is at epidemic proportions. This is something, one of the fastest, if not the fastest way to directly improve insulin sensitivity on the cells that would then uptake and utilize the glucose that would be just running wild in our bloodstream and helping to normalize what's happening with insulin and our pancreas being able to have a level of proper or optimized function, as well as our liver, as well as what's happening with our cardiovascular system. The list goes on and on. Our endocrine system, everything is going to be affected by improving the insulin sensitivity of our muscle cells. That's what high-intensity interval training does.

Now, our muscles are the largest glycogen depot or storage house in our entire bodies. Approximately 80 to 100 grams of glycogen can be stored in our liver, whereas upwards of 300 to even 400 grams of glycogen can be stored in our muscles. This is energy to be used on-site by our muscles for activity. Now, this is key. We went through and broke down the different muscle fiber types, this is one of the biggest takeaways from today. Our fast-twitch muscle fibers contain the most glycogen. They contain the most stored energy. They're just tucked away there, tucked away. And to be able to access this because we've got to literally, in many aspects of metabolism, burn through our stored glycogen to then encourage our body to utilize stored fatty acids.

There's a sequential recruitment of fuels in the body as well. Your body is going to use the calories you just took in more readily, if you just brought some stuff in, they're not all completely getting stored somewhere, then we're going to hit the muscle glycogen, liver glycogen, then we're going to get to breaking down stored fat. That's generally what's happening. Now, there are ways to bypass this situation and get to stored fat a little bit easier in a sense, but as far as sustainability and the aftereffect of continued fatty acid oxidation,

high-intensity interval training is in a league of its own, because again, our fast-twitch muscle fibers contain the most glycogen.

Now, low to moderate intensity "steady-state" activity, what's widely referred to as cardio in our society, does not tap into these fast-twitch muscle fibers. Where the most glycogen is stored at for our body... It's just tucked away, stored there, and we're not even accessing that, to get into a different... Literally shifting our entire metabolic cascade, we're not even activating those muscles. Consequently, by not proactively engaging these fast-twitch muscle fibers, our muscles are never emptied of meaningful levels of glucose, it never even happens. If we're not using those muscle fibers, it's just sitting there. And as a result, the glucose resulting from our meals is going to be more readily stored as fat, because the reserves are already filled. We're not getting a chance to empty those bad boys out.

Furthermore, these muscle cells also, this is a massive key here, lose their insulin sensitivity because it's just chronically stored with energy, lose their insulin sensitivity, prompting an easier build-up of circulating insulin, glucose, and corresponding inflammation. Now, we know we've done masterclasses on inflammation, what it really is, how it affects our metabolism, and the like. We'll put that episode for you in the show notes. Definitely check out that episode after this one. It's the true masterclass on inflammation. Breaking down what it is, how it functions, and in particular, understanding that when we venture into a state of carrying excessive amounts of weight, our fat cells themselves, which our fat cells are really remarkable, this is something...

Again, it's not something to target as bad, we have fat cells because it's an evolutionary advantage. Our fat cells themselves can literally expand their size to 1000 times their volume to facilitate the storage of energy. They're very, very good at it. But when our fat cells start to store and hold on to too much energy, it starts to basically send out a false distress signal to our immune system because the cell itself is getting stressed and is sending out this false distress signal as if your fat cells are infected, as if you're infected creating this low-grade chronic inflammation that's always happening. This leads correspondingly to higher rates of diabetes, higher rates of heart disease.

If we're wondering why is obesity connected to hundreds of thousands of deaths that aren't, "The person died from obesity, but they died from heart disease or diabetes, or an autoimmune condition, or cancer, or liver disease." We know that somewhere in the ballpark of about 400,000 deaths here in the United States are obesity-related as of now. But that's not often talked about because it's usually something else is the thing that's on the death certificate as the cause of death. And a big part of the reason that obesity is that key ingredient is that inflammation, is that pre-inflamed body struggling with another dynamic of health,

whether it's regulating the cardiovascular system, the immune system, the endocrine system, whatever the case might be.

Alright, now, here's where we get into more good stuff because when you do high-intensity interval training, muscle glycogen gets cleaved off right on the spot and quickly gets metabolized as energy within the same cell. It's used as on-site energy; it has to be. It's not getting reabsorbed. It has to be used for energy. We're going to talk more about this in a moment because there's other forms of exercise, there's other things that we can do where we get fatty acids released. It gets reabsorbed. We get a glucose released, gets reabsorbed. When this is happening in the muscles, they get released, not getting reabsorbed. They have to be used. Now again, the glycogen that's released, it's not going to get released from the muscle and then recirculated somewhere and wind up on your badunkadunk. It's not going to happen. It's not how it works. So, when we incite the release of glycogen from our muscle cells with high-intensity interval training, it's used as on-site energy for those muscle cells.

Now, here's another major key. This is a major key alert. This glycogenolysis process also does something else really special. It also activates something called hormone-sensitive lipase or HSL. We've talked about hormone-sensitive lipase many times on The Model Health Show, but this definitely deserves some more attention because if we're thinking about the process, how does fat loss actually work, how does fat get released from the cell to actually be used for fuel. Like how does that happen? Hormone-sensitive lipase is like an enzymatic key that unlocks that fat cell so that the contents can be released and then be used for fuel. Nothing's happening unless somebody comes through with hormone-sensitive lipase to unlock the cell.

Glycogenolysis, that's activated through high-intensity interval training, quickly activates hormone-sensitive lipase. Stacking, we're stacking benefits here. And now this is one of the coolest things as well. So, we get this activity of hormone-sensitive lipase being on the scene like, "Hey guys, I got some keys. Let's unlock some of this fat." But from here, we've got another really interesting and powerful thing, it's called an amplification cascade. Through our normal day-to-day activities, and even through conventional exercise, it's similar to a one-to-one process where we have one molecule acting to produce one metabolic effect if we're talking about our body releasing energy for it to be used. So, for example, what I mean by that is one molecule of glucagon cutting in and causing the release of one molecule of glucose off of the stored glycogen. So, it's just kind of happening one at a time. It's doing one at a time. It can happen very quickly but it's doing it one at a time. So, glucagon stepping in, cutting in, we're getting one molecule of glucose from the stored glycogen one at a time. One at a time. One at a time. Or maybe it's going fast, one at a time, one at a time, one at a time.

Now, with high-intensity interval training, something totally different happens. It's an amplification cascade of events where we have one enzyme instead activating another set of

enzymes. So, we talked about hormone-sensitive lipase. That's an enzyme. So now we have this amplification cascade where one enzyme is now activating a set of other enzymes which then that may activate 10 or even 100 other enzymes, and each of these is activating the next step in the amplification cascade. So instead of one molecule of glucose getting cleaved off at a time, one at a time, one at a time, one at a time, just one molecule of adrenaline. These catecholamines that we release when we do high-intensity interval training, just one molecule of adrenaline serves to cleave off literally thousands of molecules of glucose from stored glycogen at a time. It's not one at a time, one at a time, one at a time. Amplification cascade alert all of them, thousands getting cut off at a time. It's just accelerating that release. And again, this cannot be re-absorbed, it has to be used or fuel, it has to be used.

Now, this amplification cascade serves as an extremely effective way of supplying huge amounts of energy to our working muscles in an emergency situation. That's what they're evolved for. If we got to quickly move, now this can be an emergency, like we're trying to hunt down our dinner or we need to get away and not be dinner. Alright, but this is something that we evolved having as a part of our lives. There will be this activation of our fast-twitch, our legit fast-twitch muscle fibers, and this served us as an aspect of our fitness for survival. Today, we're not even tapping into our greatest capacity, because we're living with all these creature comforts, and so we're trying to replicate, how can we engage and incite this very powerful molecular programming, this very intelligent, hyper-intelligent system that we have to create the best out-picturing of us, our potential. Creating the best version of ourselves.

So, while this amplification cascade is breaking down glycogen for use, there's another enzyme involved with the formation of glycogen, by the way. So, we got enzymes that are breaking down stored glycogen, but there's another enzyme that's involved in the formation of glycogen, and when we're utilizing this amplification cascade, that enzyme that's synthesizing glycogen to get stored, that gets turned off. It prohibits that enzyme from doing it's job, to store more glycogen. So not only are we cleaving off molecules of glucose from the glycogen, the stored glycogen, now we're emptying out the glycogen.

It's turning off the enzyme that makes glycogen storage to take place. So now we're putting ourselves in a really prime position here. So, the metabolism is turned in the direction of glycogen breakdown and of glucose utilization with nothing moving in the direction of more glycogen stored. Now, what does that look like in the real world? That looks like our metabolism shifting in such a profound way that it's blocking the storage of fat for several hours after exercise. It's literally changing the way that our metabolism operates. So, I've been saying this multiple times that the energy has to be used, and the question should be, how?

You're just going to keep... Your muscles are just going to keep pumping and pumping away? No. What we're doing here is just shifting the metabolism. How? Are we going to just sit there,

and our muscles are just constantly activating and doing their own thing to get rid of this energy? No, what's happening is, when this energy is being released, it has to get converted into ATP, because ATP is this energy currency of the body. So, it's an expenditure currency. But ATP, once it's getting released and then it gets converted, it's not readily reabsorbed because ATP is a highly unstable molecule.

This isn't talked about enough. So once we get to that energy currency, it's going to get used, it's not readily getting re-absorbed. It's kind of like you getting this \$100 bill for energy like if somebody is, you're passing it to a source in your body to get used, "Here's \$100 bill," they get it, and they tear that bad boy in half, so it's not going to get used again, they use it right there on the spot. Then tearing it is the accepting of the exchange. So, it has to get used.

Now, ATP, again, it's a highly unstable molecule. Unless quickly used to perform work, ATP spontaneously disassociates and the free energy released during this process is lost as heat, that's what's happening. So, it's not just the muscle just trying to use up all this fuel, your body is just going to start expending heat, whether you realize it or not, you're just going to be kicking off more heat. And also, we breathe out a substantial amount of this metabolic process. The end product of fat getting burned just the breakdown of a certain spectrum of atoms, we're breathing out a substantial amount of that. So, your body's just going to ramp up its expenditure, and it can be something very subtle that you don't even realize.

So, to take advantage of this amplification cascade, the sequential recruitment of our muscle fibers, this is going to be done through high-intensity interval training, and even that, we got to reframe things, what this is, is we're doing a form of exercise, we're having a level of intensity that our DNA expects us to do. That our genes expect us to do, to provide us with vitality, to provide us with youth inducing a supportive hormone release and human growth hormone, list goes on and on. It's shifting our metabolism in a way that signals that the body has more vitality.

Not enabling us to move faster, but because we're moving faster. And so, the bottom line is this, the intensity is the key. A lot of folks might have heard about high-intensity interval training over the years, I've been talking about this real talk... I'm knocking on the door of my 20th anniversary in this field of health and fitness, doing work ranging from strength and conditioning coach to clinical practice as a nutritionist, to writing international best-selling books and speaking and all these different things. I've done a lot in this field, that's just scratching the surface on all the things. I've been talking about high-intensity interval training for almost that whole 20 years, it's one of the first things that I got into. And now it might become popularized, but are we actually utilizing it effectively? And I think that people are missing out on a big part of the equation because the intensity simply is not there.

Now, the apprehension might come up, and logical apprehension and resistance to this because in some aspects, it depends on the personality type and experience, the cognitive association with exercise, there's some folks that are going to be in the camp of being resistant to even really challenging themselves in the first place. Some folks are going to be acclimated towards fear of what they can't do, fear of moving fast because they might not see themselves as young as they used to be, they see themselves as "old" and we're not supposed to be moving that fast.

One of the hallmarks of children, if you pay attention, is speed. Kids move fast. They don't just go to the other room, they run to the other room. They don't just go get something, they run and get it. They're constantly moving at this interval pace; they're doing short sprints and movements all the time. And as time goes on, we are conditioned to settle down. Slow down. That's what the parents will say, "Slow down." And what we're doing is we're conditioning ourselves to slow to the pace of what's socially acceptable. There's a time and place for you to do that. It's not here. Instead, we can create... And I'm not saying to tell your kids who run around the house and whatever, do like... When my mom wasn't around, we were doing stuff we shouldn't have been doing.

So, I had my little brother and little sister, we watched a lot of wrestling, WWF. Back in the day, it was WWF. I don't even know when the transition happened with WWE. Shout out to everybody in that. But yeah, so my sister... Me and my brother, we were tag team wrestlers. We were Demolition. Those were the ones that we liked, the wrestlers that are called Demolition in these spike little shoulder pads and stuff, The Road Warriors, the Bushwhackers. What are these names though? So silly. So, my brother put my little sister upon his shoulders, I'm coming with the flying forearm. And so, we're running around doing all these crazy stuffs. I'm so sorry to my little sister, by the way. I love you. You're amazing. Sorry about that. But for kids, we get conditioned to... They're so much telling us what we can't do. No running here, no jumping, no skateboarding, no bike riding, whatever.

We have all these signs telling us what we can't do, but where are the signs telling kids like, "Hey, come climb here. This is a running area," or whatever, just some directives towards positive affirmation towards movement. Everything is detracting or telling people not to move it. We've got to keep an eye on that part and look at our culture, but also as we get older again, the hallmark of youth is speed, quickness, is power, velocity. And it's not that as we get to a place where we are in our senior years that we don't have that capacity, it's that we stop utilizing the capacity, and then we develop fear along those lines that help to affirm that we just aren't supposed to be moving that fast. And we've oftentimes been conditioned for many years that it's just... Again, if you think about how we progress, it's this gradual slowing down process.

But I'm here to tell you, no matter what level you're at, no matter your age, no matter your level of athleticism, no matter your level of health, whether it's chronic condition, whether it's a physical condition that you're dealing with because I've been there. I have been there; I've been in your shoes. I was 20 years old, and I was diagnosed with advanced arthritic condition of my spine, I was just a kid. But that doesn't happen overnight. That was years in the making for me to get that diagnosis. And I was told by every doctor that I saw, bed rest, do nothing. Do as little as possible. I even got a note for work, for my teachers when I was in college just... I'm moving slow. I might miss a class.

I got a note from my doctor, he said, "Bed rest. Don't do much." The worst thing that you can do is do nothing. That's the worst thing you could do, 'cause not only is my back accelerated aging and atrophying, the rest of me is now atrophying because your body truly does operate on this use it or lose it basis. You got to use it. You got to use it. That's what it's there for. And so, coming from that place, and one of the first things that I did was I started just... And this was years, and this is after I gained a lot of weight and just feeling the worst that I've ever felt. I didn't even know that... I mean, it was just a very, very difficult and dark time. Just doing what I could do. I just started peddling on a stationary bike 'cause I was in a lot of pain. From there, I'll do a little elliptical machine, started walking around the school track.

Eventually, a few weeks later, pick up a couple of dumbbells, and before you know what, I'm just feeling better I'm using my body. I'm feeling better and eventually, I got to a place where I found some of the science about high-intensity interval training because I wasn't just jogging, doing conventional cardio, I was doing sprints. I got to a place where literally I was just doing some short sprints, walking back and repeating, kind of like what I was picking up from football, doing these drills. Now, here's the key. We've got to put aside the fear. You've got to put aside the apprehension because you want to flip the switch in your mind and proactively get after it. You want to reach your fast-twitch fibers, and this is what people fail to do when they're doing their high-intensity interval training.

Because here's the truth, again, I mentioned, and we went through... I charted this out, your real fast-twitch muscles that, again, this is key, fast-twitch muscle fires contain the most glycogen. Those fast-twitch fibers are only able to sustain you for less than a minute! If you're doing an interval and looking to get these benefits, and you're able to do this longer than a minute, you're not doing it hard enough. Your intensity is not there. You're not doing it. You're not actually activating and tapping into these fast-twitch muscle fibers if you're going over a minute and you're perceived... I'm sorry if this is offensive, I'm sorry, but we got to call a spade to spade. I don't know where that term came from, is that like from spades?

Shoutout to people who play spades, but... And we just got to talk about... It is what it is. That motor unit is not going to be able to... You should be breaking down, if you're doing a

stationary bike and peddling as fast as you can, maybe you don't have enough resistance on the bike, if you can go for more than a minute peddling at a relatively fast pace, after 20-30 seconds, you should be breaking down like it's getting very difficult to get your legs to turn over, that's the intensity, and it's just a short amount of time, right? That's the good news. It's not like I got to try to sustain this very difficult intensity for 30 minutes or 10 minutes or five minutes. 30 seconds. Because that sweet spot, if you can maintain it for, again, for more than 30 to 45 seconds, you're likely not truly tapping into those type-2B muscle fibers.

So that sweet spot is going to be in the ballpark anywhere from... I'd even say at the low end, even 15 seconds if all out. Intensity, upwards of 45 seconds, that would be my maximum. Just to keep it safe, you should be getting to a place where you are unable to proceed, but then you get to recover. So now that we've gone through some of the science on why high-intensity interval training is a tool for you to utilize in 2022 and beyond to become more strong, resilient, capable, fit, successful, happy. And again, when there's so much going on in the world, we want to be as resilient as we possibly can be. And so, tapping into this and utilizing the amazing biomechanics and this amazing endocrine system and metabolism overall that we have it's just like, you've got everything you need it within you already.

Now, let's actually put this into play. And we kicked it off, we kicked this episode off with one-third of the time of the conventional cardio, that was run, put upside by side with conventional cardio, four and a half hours a week, 10 minutes of real... Like, that's the time when you're actually doing intense exercise, same cardiovascular benefit, the same upgrade in mitochondria, which are the energy power plants of the cells, that are then popping out and making this ATP, and also same shift taking place in the ability to burn fat. So, shifting the metabolic rate, overall, with 10 minutes of intense exercise.

You can pick! And if you love long-distance, do it! It's not taken away from that, if that is your happy place, getting out and running for an hour or whatever the case may be, do it. But just make sure you sneak in a few sessions each week, at least one a week, of high-intensity interval trainings. Because we're trying to be the best that we can possibly be in 2022. So now let's talk about some of the ways we can actually utilize high-intensity interval training, what are some different specific exercises that we can employ here. Number one... And this is leaning into what's been utilized in clinical trials is utilizing a stationary bike or a recumbent bike. Now, this is an inclusive on-ramp for pretty much everybody, because you're in a controlled movement, you don't have a lot of mechanical parts that can go around all willy-nilly, so you're kind of in this controlled movement and you're able to demonstrate and express that speed, that velocity, in a controlled movement, in a controlled form.

So, this can be something that you utilize to do your high-intensity interval training. And this can look like, again, in the trial, they just had a couple of minutes of a warm-up, and this is what

I was doing prior to even meeting with and talking with Dr. Martin Gibala, this is what I was doing. It just seems logical. Let me warm-up for a couple of minutes... Boom, let me get into my first sprint. The first one, I usually go maybe 80%, but then after that, 95%, try to get to 100%, but it's the 100% is a mental thing, because as I'm going as fast as I can, I'm mentally checking in like, "Can I go faster? Can you turn this over faster? Are you holding back?" So, this can look like a 20-second sprint. Followed by... In the study, they had like four minutes of rest. So maybe it's three minutes of rest or two minutes of rest, but the rest is really valuable because it enables this cascade to get started, your metabolism start making some changes. And you get to a place where you can come back with a full-out sprint, a full-outburst again with that equal or even more intensity.

So sometimes... I have done somewhere I shorten the rest time to where I do a... We'll just say a pretty nice standard way to go about this as well, especially if you have a time constraint is a 30-second sprint on the bike and a minute and a half rest and then repeat. This could be four, or five, six rounds. Once we get into seven, eight rounds, that would be the maximum capacity there. It's probably not necessary, but we can get up there, especially if you're well-trained, well-conditioned, but one than that, you don't need to do anymore. There's so much metabolic beauty taking place, metabolic magic happening that it's not... Again, it's not about necessarily working harder, it's working smarter. It's blending. So first and foremost, stationary bike, very simple on-ramp. Now, we've got the assault bikes now as well.

So, we got the upper body movement as well. Now, I don't know about the fluidity of something like that, if that's going to be a viable option, but with the resistance that it can provide, for example, if you've got resistance... So the stationary bike that I have, I can turn up the resistance because I can pedal really, really quickly and be able to blast right through that 30-second threshold I want to get to, but if I turn up the resistance to a notable place where I can still really turn over those muscles and go as quickly as I can, but that resistance kicks in we'll just say 10 seconds in, 15 seconds in, where it's just like, "Ah, man. I don't know if I'm going to be able to get to 30."

So stationary bike, it's going to be number one. Number two, here is the thing that we've evolved doing, which is sprinting. Captain Caveman didn't have an assault bike. He didn't have a stationary bike. People just... You use your body. We evolve with this body. Your body has everything that it needs. So, if you can safely... If you have conditioned yourself to be able to do sprints, and again, it doesn't... It's not that if you are "out of shape" that you can't do sprints. It's just utilizing your body and doing it intelligently. Making sure that you're doing a good warm-up, maybe doing some sprint drills beforehand, and then maybe you're not going 100% trying to turn your body. You turn your legs over as fast as you can if you're just getting started.

Maybe you try and just get up there and do 75%, 85%, just get your body moving, turning those legs over quickly, but this can be one of the most remarkable tools because you can really utilize different intervals, and segments, and distances. So, you do a 100-meter sprint at a track and then just walk the rest of the track until you get back. So, walk that 300, and then once you get back, boom, do your next 100. Walk, take it back, boom. So that next 100, I know... I'm not... Usain might be listening right now, but generally, it's going to be 10 seconds to 20 seconds for that sprint for folks to get from their starting line to the finish line, right? So that's another very viable way for us to utilize high-intensity interval training.

Another really simple, low-cost, travel-easy way of doing some high-intensity interval training is a jump rope. You could do some quick movements, some sprints where you're moving really quickly with a jump rope. There's all kinds of different things you could do there. You know, I mean, you can get the Rocky vibes going...

You can get that whole thing going, Eye of the Tiger vibes, as many different things you can do with a jump rope. Again, super-low cost, but of course, you want to get a good one if you can. But a jump rope is another tool. Tabata, Tabata's another way to utilize high-intensity interval training. Very, very well-researched format where we got 20 seconds of exercise followed by 10 seconds of rest, 20 seconds of exercise followed by 10 seconds of rest for a total of four minutes.

Tabata can kick your bata. It can really kick your bottom, kick your butt. This can be maybe just you're doing burpees for 20 seconds, right? And then rest. Or they're also known as up-downs. To be inclusive. You can just do some air squats. You can do a squat press where you just hold some dumbbells and going down to a squat and then pressing. You can do just pretty much any exercise you can insert here with Tabata. So that's more of a concentrated thing. Tabata would be this is a different utilization of sequential recruitment. It's not the same as having that well-defined rest time that we've been talking about, but especially for a different stimulus and time constraint, Tabata is that deal.

Another one and in recent years, again, when I used to talk about this, this was not common at all, but utilizing a kettlebell. So, kettlebell swings and kettlebell circuits. So doing something where you've got a heavy enough kettlebell to where you can go for maybe 30 seconds and then you notice like, "This is really... This is difficult." And then you rest, and then go back and do it again. And one of my favorite things to do to utilize a tool is a steel mace. So, I could do all kinds of different movements. And I could do a... Kind of like a sprint circuit to where I'm going really hard, doing whatever the exercise might be, and then I rest.

So, there are many different tools that we utilize for our kind of sprint intervals, and again, we might just look through the lens of like just trying to use our legs quickly, but it can also be the

rest of our body. It can also be moving our arms quickly. That's why I love battle ropes as well like battle ropes are so cool. And another thing I've been talking about for such a long time, very beginning of The Model Health Show, I was talking about battle ropes. So many exercises you could do, and it's basically like sprints for your arms, you know what I mean? And you're getting the same amplification cascade, and I have all of these tools. I've just kind of got a piece at a time over the years. I've got a battle rope. I've got kettlebells. I've got steel clubs, steel maces. I didn't get all this stuff at one time.

It's just like I grab a piece here, grab a piece there, but I got them all from Onnit. They are in a league of their own. As far as getting these tools out to the public, steel clubs, steel maces, Onnit is the company that made this happen. They're the brand behind it. Their kettlebells even, they took it to another level creating the primal bells. They had a deal with Marvel for a while, a deal with Star Wars and they had these character designs on their kettlebells, and even their battle rope, they had a Spider-Man battle rope. Now, I don't know if they're still going to have these things in stock, but these are some really cool implements. And so, it's kind of just makes it fun to go over and grab the orangutan kettlebell, or the Chimpanzee. There's a little howler monkey as well that you could use for stuff.

Also, my youngest son who's 10 years old, he uses the howler monkey doing different exercises. And also, I had him paint them. They look so cool. So anyway, I absolutely love Onnit, and they are on the same mission as me, they have that same energy where they're devoted and looking at, "Hey, let's make 2022 the healthiest year of your life." Their motto for 2022 is New Year, All You. New Year, All You. And to kick things off, they've actually got, and this is just as of this recording, take advantage of this right now, because this is for a very, very short time to kick off the new year, they've got 20% off their supplements. Not 10%, usually 10%, 20% off their incredible supplements.

They do peer-reviewed trials on their supplements. Their Shroom TECH pre-workout, randomized controlled trial, Alpha Brain, randomized control trial demonstrating their efficacy. Other companies are not doing that, alright, so head over there, check them out. It's onnit.com/model That's O-N-N-I-T.com/model, and you also get 10% off all of their fitness equipment as well. 20% off foods. Their protein powder is in my cabinet all the time. Their MCT oil in my cabinet, all the time. Their snacks, bars, in my cabinet all the time. Get 20% off foods as well, and 50% off their digital workouts, like Onnit 6. I just sent this over to my guy, Pat Flynn. And Pat Flynn has been a guest on the Model Health Show. He's the guy behind Smart Passive Income, and he's just a superstar, just genuinely one of the coolest, best humans I know, and I actually sent him a gift.

I sent to him a couple of steel maces, and he sent me a message, he's just blown away. He's like, "Dude, I feel like a Viking." And he was like, "If I do this for the next 30 days," he's just like,

"My health and my body is going to be out of this world." But I sent him one of the Onnit 6 digital courses for the steel mace. There's so many great resources. Again, very, very special. Limited time onnit.com/model. That's O-N-N-I-T.com/model. New Year. All you. So, in addition to the battle ropes, steel clubs, steel maces, kettlebells, stationary bike, Tabata, sprints, jump rope, we also have another thing that's really become commonplace in a lot of gyms, medicine balls. So, we can do medicine ball slams for our rounds of sprints. We could throw that bad boy against a wall; we could throw that bad boy and then sprint over to it and throw it again... There's so many creative things we could do with medicine balls as well.

By the way, Onnit has ballistic medicine balls. It's made of the same bulletproof vest stuff that 50 Cent used to wear. It's incredible. But medicine ball work. We can also do... This sequential recruitment takes place with lifting heavy weights as well, let's not negate that. We cannot take that out of the equation but doing it in more of a "cardiovascular-driven format" is where we're getting this full effect that we're looking for here. But also again, lifting heavy weights is going to get to those fast-twitch fibers. And another way here, and I'm going to leave you with this because this one is the most human. Where's another modality, how can we take advantage of high-intensity interval training? Play, just getting out and playing. Whether that's basketball, whether that's ultimate frisbee, whether it's flag football, whether it's tennis, whether it's freeze tag.

I don't know if you remember freeze tag. You sprint running away, somebody's... They got... They're it, they're "it." And if they touch you, you got to stay in place. And you got to tell your friend, they got to come touch you to unfreeze you. But it's like... It's play, play, have fun. A lot of sports that people participate in, whether it's just for recreation or even if we're playing some club stuff or even some pros or semi-pros, whatever the case might be, but these things incite this pattern of sprint, we have periods of rest and recovery. We go full out, rest and recovery. So many things are geared towards that. So, give yourself permission to play. Get together with some friends. Get your family together. Play more often. Utilize this sequential recruitment, this amplification cascade, the power of high-intensity interval training.

I appreciate you so much for tuning into this show today. I hope you got a lot of value out of this. If you did, please share this out with your friends and family on social media. I'm @ShawnModel on Instagram and Twitter. That's @S-H-A-W-N-M-O-D-E-L and @The Model Health Show on Facebook. And of course, you can send this directly from the podcast app that you're listening on, send it right to somebody that you love, tell them to check this out, "Hey, these benefits from high-intensity Interval Training is something we've got to take advantage of this year. Let's go."

I appreciate you so much for tuning into the show today, and listen, the goal, be stronger, more resilient, more capable than you've ever been. Let's get it. Take care. Have an amazing day, and I'll talk with you soon.

And for more after the show, make sure to head over to themodelhealthshow.com, that's where you can find all of the show notes, you can find transcriptions, videos for each episode, and if you got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that the show is awesome, and I appreciate that so much and take care. I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.