

Announcer:

Bulletproof Radio, a State of High Performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. Today's guest is a filmmaker, a health and science journalist and the New York Times bestselling author named Max Lugavere. He's a son who watched his mother make all the right choices in life, and still get early onset dementia and other health problems, decided he's going to go out and hack his mom. So he wrote a book called Genius Foods, and has been a longtime Bulletproof follower and friend. And Max, welcome to the show to talk about your new book, The Genius Life.

Max Lugavere:

Thanks so much, Dave, for having me. I think the last time I was on was about five years ago, when I was up in Vancouver at your lab and I filmed you, remember, for VICE?

Dave:

That was a real-

Max:

That was a blast. So it's great, it feels like a homecoming in a way to be back.

Dave:

It's hard to believe it's been five years, so it's about time to have you back on. That was Episode 229, where we talked about dementia, aerobic exercise and Bread Head, which was a documentary you were working on. But you've come back and you've spent five years doing research and all, looking at areas where we both have a lot of interest and listeners, I think have heard a lot about this. But you looked at circadian biology, and psychology and dementia, and making brains work better which we both care about and you put it through the lens of, how do we prevent dementia?

Dave:

So people who've read my book, Head Strong, know that I covered some of the topics that you covered in a different way, but you've gone deeper on psychology and deeper on circadian. So I think there's some new findings here and some areas where we disagree, and I'm hoping to find somewhere we disagree so we can have a spirited debate about how you actually should be eating popcorn to fix Alzheimer's or something. That's your argument, not mine. Anyhow, welcome to the show, my friend.

Max:

Thanks for having me. Yeah, it's good to be back. I think it's, whenever you're talking to somebody who's as well versed as you are, it's always great to have disagreements, because I think it ends up strengthening the science and you end up coming out ahead because you actually learn something. And that's ultimately, what I'm in this for. It's to learn, it's to continue to expand my knowledge base so that I can live a healthier life, and hopefully not have to contend with some of the conditions that my mom developed early in her life. Yeah, it's good to be here and I'm excited to talk to you about my new book, The Genius Life.

Dave:

It's amazing what that enlightened quest for self-preservation can drive us to do. I mean, a lot of the Bulletproof learnings were, "Hey, I'm tired of being fat and tired, and in pain and all that." So you start to do it and when you're saying, "Hey, this happened to my mom, I don't want this. So how do I help my mom and how do I, by doing that help myself?" And that's a very noble and very highly motivating thing, that I think a lot of people don't recognize. It's okay to be selfish because look, not dying is the number one drive of humans. That's because all life forms of that.

Dave:

That said, we will choose to die if it's to protect our community or our children, or to make a self-sacrifice. And that's why we really, what's the word I'm looking for? ... award or just honor when someone decides that they're going to do that, because they overcame our most basic biological drive. So you and me, we harnessed our "I don't want to die and I don't want to suffer along the way," and then we're able to use that to help other people.

Max:

Yeah, so well said. I mean, I've been very lucky in that I've never dealt with any major medical concerns personally, but my mother who is the person who I love most in the world, when I was in my mid 20s, my mom who was about 58 at the time, began to show the earliest symptoms of what would ultimately be diagnosed as a form of dementia. Now I, like I think a lot of younger people, thought that dementia was something that happens inevitably as a natural aspect of aging, or it's an old person's disease or its genetic. So those three misconceptions that I harbored, I learned very early on were mistruths.

Max:

So my mom was not old. She had all of the pigments in her hair. She was a youthful, spirited woman from New York City, and I had no prior family history of any type of neurodegenerative condition. In fact dementia, when I thought about what dementia meant to me, I had seen an Addams Family movie in the early 90s, and dementia was the character that Uncle Fester actually had a crush on. When I thought about dementia at the time, that's what that word evoked in my head. And-

Dave:

That's fantastic.

Max:

Yeah, do you remember that movie?

Dave:

I forgot all about dementia and Uncle Fester, but yeah, I got you.

Max:

Yeah. I was just completely ignorant of the condition, and when my mom first began to show these symptoms, it caught me and my family completely off guard, to the point that we actually didn't believe her at first that she was actually struggling with her cognition, that her brain was actually in the middle of a crisis and we were impervious to it. So I ended up going with my mom to major medical institutions. We began the journey in New York City, which is where my mom was living at the time. And to see your

mom begin to stutter and slow down, almost as if she had had a brain transplant with somebody 40 to 50 years her senior. I mean, it is the most surreal thing to witness.

Max:

And so at a certain point, I realized that I had to step in and get involved, and I started going with my mom to these doctor's appointments and we began in New York. And in every doctor's office, what I experienced, I've come to call diagnose and adios. Essentially, a doctor would try to come up with some kind of label, that they would apply to the slew of symptoms that my mom was experiencing, but my mom had an atypical presentation of dementia. And so we actually didn't get a diagnosis until we went to the Cleveland Clinic in Ohio, and it was there for the first time that my mom was diagnosed with a neurodegenerative condition. And she was prescribed drugs for both Parkinson's disease and Alzheimer's disease.

Max:

And that was the line in the sand for me. It was the first time in my life that I'd ever had a panic attack. And from that point on, I became dedicated to investigating why this would have happened to my mom at such a young age, and what could be done, if anything, to prevent it from happening to myself and others that I care about. And I didn't have a background in medicine, I didn't have a background as an academic scientist. I was a lay person, but I did have a background in journalism. And so I used the tools that I had harnessed working for six years for a news and information network, to begin to look into the medical literature. And although it was tricky at first, I then began to exploit my media credentials, to then reach out to researchers and experts all around the world.

Max:

And so at this point, I've had a tremendous amount of exposure to the topic. I've been able to obviously write extensively on the topic. I wrote my first book, *Genius Foods*, which is now published in eight languages, and my second book *The Genius Life*. But even aside from literature aimed at lay people, I've also been able to publish peer-reviewed literature. I was able to co-author a chapter in a textbook actually, geared towards psychologists on how to manage people, who are at risk for developing cognitive decline and dementia. So it's been a painful journey, but at least I've been able to sort of funnel some of the pain and frustration that I experienced with my mom, into something that I feel is meaningful and ultimately able to help others.

Dave:

Do you still get panic attacks?

Max:

I have not really had a panic attack like the one that I had, in that hotel room with my mom. And the best way that I could describe it, because I had never had one previously, when you have one, it's like that scene in the movie *Saving Private Ryan* on the beach, within the first 10 minutes of the movie where all of a sudden, all of the noise, all of the dramatic music fades out and all you hear is this high pitched tone, and you see the guy holding his shoulder looking for his arm on the beach. And you just hear that tone. You don't hear anything else. It's basically like just, "Where's my arm? What happened?" It's like it doesn't even process that the guy has lost his arm. And that's what it feels like. And I haven't had one since, thankfully, but that really was the motivating ... I mean, that was it for me.

Dave:

It's one of those things, because in your book you talk about psychology of all this stuff and all, and there's a deep seated thing that happens with panic attacks, where it's pushing old, automatic buttons in the system. And the definition of biohacking, that's you're now out in the world is you change the environment inside and outside of your body, so that you have full control of your own biology, and part of that control is the psychological control. In *The Genius Life*, and you talk about psychology of that. I'm wondering, what have you learned around the psychological side of your environment, and what that does to reduce panic attacks or just anxiety and stress?

Max:

Yeah, that's such a good question. I mean, one of the major topics that I advanced in *The Genius Life* that I think is really cool, and I haven't seen it really mentioned by other health writers, I mean, certainly not in other books, but this notion of cross-adaptation. And I'll tell you why I think this is so important. There are certain stressors that are inevitable, and we all talk about how we should minimize chronic stress and things like that. But there are certain stimuli that are just inevitable part of daily life. I mean, think about what we're going through now all collectively with the COVID-19 pandemic, right? Certain things you just can't wish away. And so I think in those instances, what can really help you cope with stress is to become more resilient.

Max:

So those are the two ways that you can deal with stress. You can either remove them the stressful stimuli, or you can become more resilient to that stimuli so that it actually doesn't have the same effect, so that it doesn't actually stress you out. And I think that what I've worked hard to do over the past couple of years, is to really boost my resilience to stress, and I've done that using a number of different modalities. But the reason that I've really focused on the resilience aspect of things, is because my mom had a chronic degenerative condition, and ultimately, she passed away about a year and a half ago to another terminal illness. She was diagnosed with pancreatic cancer.

Max:

So my life over the past couple of years has been incredibly traumatic and stressful, and the only way that I could really deal with that is not to remove the stress, because the stress was always there. And I think a lot of people deal with stress, they deal with sick loved ones, they deal with financial stress and things like that. What I did was I decided to boost my resilience, and that's where cross-adaptation comes in. So with modalities like physical exercise, with cold immersion or cryotherapy, or even heat stress with saunas for example, what you can do is you can boost your resilience to and your acclimation to these physical stressors which then has a spillover effect, and that spillover effect is called cross-adaptation.

Max:

So by adapting to the stresses imposed with exercise or with heat stress, you actually become more psychologically resilient, which I think is a very powerful and empowering idea. And this is one of the reasons why they're doing research now, and I think that they're seeing modalities like cold therapy or heat stress, associated with dramatic reductions in symptoms of depression. Now, where would that connection lie? What would the mechanism there be? And I think the mechanisms that you're strengthening your brain and you're fortifying your mental health, while you're fortifying your physical health, which is something that, it's not super intuitive but I think [inaudible] nonetheless.

Dave:

The idea of using heat stress and cold stress, and even hypoxia, lack of oxygen stress, those are things that we do at Upgrade Labs kind of core biohacking techniques. And we know that they make your mitochondria work better. We know that they can make your cells clean themselves out and things like that. What research did you find specifically around the psychology of those things, or around what they're doing to those mental states? I mean, are there studies that say, "Depressed people take cold showers, they get better"?

Max:

Yeah. There's a researcher named Charles Raison. I forget what university he's out of. It's R-A-I-S-O-N. And he's done a number of studies with sauna therapy, and he's showing that just using a sauna can have an effect on symptoms of depression that is, I believe, something like twofold higher. It's twofold more effective compared to standard of care treatment, so pharmaceutical treatment. And the beautiful thing about that is that pharmaceutical treatment, although it is effective the more severe the depression, these treatments are not without side effects. There have also been a number of case reports coming out showing that cold water swimming, so like winter swimming, is powerful as a therapeutic for depression as well.

Max:

So both of these modalities, I think the story is just being written and it's continually evolving. But there is a signal in the literature that I think is beginning to emerge where, by exposing our bodies to physical stress, sitting in a sauna, cryotherapy, that it seems to really fortify mental health and to reduce symptoms of depression. Now, physical exercise, this has been well documented. So there have been a number of meta-analysis published over the past year, showing us that whatever your exercise modality of choice is, whether it's aerobic exercise or resistance training, that it all seems to be effective in terms of reducing symptoms of depression, reducing symptoms of anxiety for patients with just run-of-the-mill, mood swings, but then also with clinical depression as well.

Max:

And I think that the same mechanism applies. I mean, exercise floods your brain with BDNF. It makes your brain more plastic. And we know that neuroplasticity, it's an important means of helping your brain rewire. And so sometimes boosting BDNF, which is the brain's Miracle Gro protein, has been suggested as one of the mechanisms by which actually some of these pharmaceutical drugs do work in some patients. Drugs like ... Yeah.

Dave:

It's interesting because most of the psychedelics increase BDNF. Lion's Mane mushroom is in some studies reported to ... I couldn't feel any difference from it, and I found an Australian variety, I've talked about it on the show before from Life Cykel, that really seems to make a difference. Electrical stimulation over the brain raises BDNF. So there's all these different things, and all of them seem to help with nerve growth factor and BDNF which is fantastic. In fact, there's a supplement that does four times more BDNF than exercise. But what I've never been able to find even from the study about that, this is an extract of the fruit around coffee. It's called NeuroMaster, one that I manufacturer or the Bulletproof manufacturers that I helped to create.

Dave:

The question though is, in those studies with those claims, I don't know what kind of exercise they're comparing it to. And when you say exercise, what the hell do you mean? Because does this mean like, "Hey, I'm going to lift heavy today"? Or is this like, "I'm going to go run 500 miles," and all the things jazzercise? What does exercise mean in the context of BDNF? Because I honestly feel like there's a lot of kale, "Kale is good for you." Actually no, it's not. Maybe a little bit, whatever. But what really is exercise, in the context of the way you think about it for The Genius Life? I mean, I have my answer, but I want your answer.

Max:

Yeah, so I'm actually not a fan of doing cardio. I don't really do cardio. I try to be more active in my day to day life. So one of the types of physical activity that I talk about in The Genius Life, is non-exercise physical activity which I think is crucially important. So this is actually not exercise, but this is just ranging from chasing your kid or your cat around the house to doing chores, doing laundry, even typing to some degree, just staying active. Anything other than sitting on the couch and watching Curb Your Enthusiasm reruns, is going to be good for the brain because just moving, simple, daily spontaneous movements create micro-vasculations in your blood pressure, that push fresh blood and nutrients, and oxygen up to the brain.

Max:

That's like the base of the pyramid of physical awesomeness, let's just call it, so these non-exercise physical activities. When it comes to exercise, if you're doing a lot of non-exercise physical activity, then I don't think that you need to do cardio if you're not training for endurance purposes. If you are sedentary all day, and there's a significant portion of the population that are essentially desk jockeys, then I think to give your cardiovascular system a workout once in a while, I don't think that that's necessarily a bad thing. I just think that there's probably diminishing returns. And at a certain point, excess cardio can lead to scarring of the cardiac tissue, it can negatively affect your joints.

Max:

And I personally find that running is compressive on my lower back, so I have lower back issues. I don't actually like to run, but I will occasionally do an elliptical. To be honest, as much as I dislike doing cardio, speaking anecdotally, when I spend an extended period of time being sedentary, which by the way we know that being sedentary literally drains blood from your brain, I actually tend to find myself that I develop headaches when I'm sedentary for an extended period of time. And for me, going to the gym and doing a little bit of cardio 10 to 20 minutes, again this is an anecdote, can actually make my brain feel a lot better.

Max:

Now, where I really put emphasis is resistance training. And I might have a bias for resistance training, because I just grew up very interested in bodybuilding. This was something that as a teen, I became interested in. But I think that the research really seems to be coming up by the day, validating that resistance training not only has been underappreciated in the literature, especially where the brand is concerned, but I mean growing stronger, bigger muscles, one of the best things that you can do for metabolic health to reduce inflammation, to continue to be mobile as you age. And we know that age related sarcopenia is a real thing.

Max:

I think having more muscle, more strength on your body, it really can't be underrated. I mean, if you think about just the mere fact that having more muscle means a greater ability to dispose of glucose, I think right there makes it worth getting to the gym just for that reason alone. Your body has a very limited capacity to store sugar. In terms of its ability to store sugar, your body is like in New York City apartment. There's just not a lot of places to cram the glucose, that most of us are consuming with every meal. So your liver can store about 100 grams, your musculature can store 300 to 400, 450 depending on how big you are, how much muscle you have.

Max:

But for your average American who's consuming 300 grams of carbohydrates every single day, I think it's important to take note of the fact that that is where we are able to store sugar. And so to have those banks, and then to use the sugar regularly with resistance training or high intensity interval training, it's going to I think, be a reasonable way for most people to kind of make room for the sugar, and the glucose and the starch that inevitably is going to find its way onto people's plates.

Dave:

All right. So the Bulletproof recommendations totally line up by it. So extensive cardio is just not good for you. There's a couple studies that show extensive cardio may lengthen telomeres, but there's other ways to do it. Super Human I read about a peptide, it's 50 bucks. You can inject, there's supplements, there's sleep, there's all kinds of things. So unnecessary and comes at a great cost. In Game Changers, I talk about 80% of people who start running end up injured in the first year anyway. And there's another law in Game Changers, about how chronic pain and injury sucks energy all the time until you deal with it. So it just seems like the ROI is low.

Dave:

If you say, "I'm going to get healthy," and there's a little bit of emotion for me in this because when I weighed 300 pounds, I went on a low fat, low calorie diet and I started exercising an hour and a half a day. And lo and behold, 18 months later, I still weighed 300 pounds. I could max out all the machines at the gym, but my joints were worse and I had actually done harm to my health from this. So this idea that, "I'm going to get healthy so I'm going to go plant based, and I'm going to go run all the time," it's actually like slapping yourself in the face. It isn't the way that your body responds. So we fully agree on that perspective of chronic cardio isn't going to do it. We agree on high intensity interval training. We agree on some amount of weight training. What's the right amount of weight training? How many days a week?

Max:

Well, I mean, I think it's ... I definitely have an ear to the ground when it comes to fitness and what the research on just fitness, like what we get from some of our top exercise scientists, and I think it really depends on each person. But the more adapted you are to resistance training, I think the more you can do, like the higher the intensity that you can stand and in fact, the higher intensity you need to continue to grow and to get stronger. So it's this concept of progressive overload. So whether it's volume or intensity, I think with increasing fitness, I think you have an increasing work capacity and I think you've got to build your workout routine around that, where you are in terms of your own personal fitness.

Max:

For me personally, I've been hitting the weights for a decade at this point, if not more, almost two decades. And so I feel that I can go to the gym five, six days a week, and so long as I'm sleeping properly, I'm not consuming alcohol, I'm consuming enough calories, enough protein, I feel like my body is pretty amenable to that level of work. And it allows me to maintain a good body composition, a body composition that I'm happy with, and all of my blood work is near optimal for at least what I can remember over the past couple of times I've done blood draws, and it allows for this without me having to obsess over macros and calories, and things like that.

Max:

Now, I think if you're first starting out, then you want to build an aerobic base, and you don't have to do cardio to do that. I think you can do that doing resistance training. You also want to establish muscular control, stability and things like that, because as you mentioned, people who just jump right into these workout routines and especially running, they end up hurting themselves within the first year. So I think it's going to be different for every single person. But generally, the recommendation at least from the American Academy of Neurology which recently updated the guidelines, because they determined that exercise can be a powerful disease modifying treatment for mild cognitive impairment. It's about 150 minutes a week. So that's the general guideline, try to get 150 minutes a week of some kind of exercise.

Dave:

All right. My recommendations there were 20 minutes of movement a day, and then twice a week high intensity interval training is the minimum necessary. It's just less than 150 but not that far off, because 20 minutes times seven is 140 minutes. It's just, is it really exercise if you're going for a walk? I don't know.

Max:

No.

Dave:

It isn't?

Max:

Yeah, I think-

Dave:

However, for that 150 number, I think it counts. It's that idea of movement versus true exercise. Do you have to be on a treadmill going fast or is just a walk okay? Seems like a walk is okay.

Max:

Well, yeah, there's different like ... I mean, I think that that's where you really ought to do kind of all of the things, because you're working out different energy systems for one. So when you're doing high intensity glycolytic HIIT training, you're working out your phosphagen energy system which utilizes creatine, you're working out your glycolytic pathways. But then the more low and slow movements which I really love, like walking as you said, you're oxidizing primarily fat. It's not necessarily a cardio workout. It's not resistance training but it's great for your cardiovascular system, it's great for mobilizing

lymph fluid around the body and for pushing blood up to the brain. So that's why I think it's important too.

Max:

The non-physical activity is a crucial, that's like the base of the pyramid. I think resistance training is crucial. High intensity interval training is crucial, and you can do them in a way where your resistance training could have a cardio aspect to it. Like your heart rate is definitely going to increase, but it depends on your goals. There was a great ... I was listening to a lecture recently by Pavel Tsatsouline, who's this world renowned strength coach. And he was saying that if your goals are to put on purely strength, then you can stand to have longer rest periods in between your sets. But that's not necessarily going to give you the cardio workout, that you're going to get with a more circuit like routine.

Max:

So I think kind of balancing all of those teachings for your goals is important. But at the end of the day, ultimately, over the course of the week you want to get a little bit of cardio, you want to get the resistance training, you want to do some high intensity interval training and just generally you want to be sedentary as little as possible.

Dave:

It's time for a tough question now. It's easy to talk about exercise and all that stuff. Are you actively dating someone now?

Dave:

It's time for a tough question now. It's easy to talk about exercise and all that stuff. Are you actively dating someone now?

Max:

I'm not actually, but I'm looking.

Dave:

All right. You just put the word out there, there's only like a half a million of you listening right now. Just want to post your phone number. I'm kidding. But I mean you are apparently, I've heard from a few women, an attractive man mostly because of the tussled hair that you've got there, Max. So you've nailed it. But I do find that single guys are like, "Yeah, five days a week in the gym is good." And this also I'm guessing, I already know this because we're friends, you don't have kids.

Max:

Don't have kids. I do have a cat that I share with my little brother and she's a fur baby, but no, I don't have kids. I don't have a girlfriend.

Dave:

Yeah, it starts ... So I would have had similar answers when I was single, even heck when I was dating, right? It's pretty easy if you have two adults and you're like, "We share a place. I'm going to go hit the gym, you want to come with me honey?" And it works but then all of a sudden, "Hey, do you want to watch our offspring while I go to the gym?" And it's like, "Actually, no, I'm too tired to watch them and

I'm too tired go to the gym." So I find that in phases of life, it goes from this "Yeah, five days a week", I see very few people who are raising families and have careers, who can go to the gym five days a week.

Dave:

I mean, Tim Chang from Mayfield, who I've been friends with for like 25 years now I think, something like that, he's actually pulled that off. But he's still spending, I think it's around 90 minutes a day on that stuff, but he's general partnered a big VC and somehow he's managed his life. So he has kids and portfolio companies and enough time. But I mean, I work on that. I live in the middle of nowhere, I don't workout 90 minutes a day. I don't think it even would be good for me if I did. Maybe 45 minutes a day if I'm lucky of some biohacking. What else do you do on a daily basis? How much time do you spend between all these things? Saunas, there's 30 minutes of your lifetime, got to take a shower, make that 45 minutes, some red light therapy, there's another 25 minutes. How many hours a day do you really spend on being youthful?

Max:

That I'm so glad that you asked. And you're right, that I'm pretty privileged that I don't have a ton of personal commitments, that I can really focus on this. But I will say that, and this is going to sound a little cliché, but you know when they say in an airplane, "You got to put your mask on first before you should offer help to those around you"? I truly believe having gone through something that is as stressful, if not more than something that anybody will ever experience over the past year, that what kept me sane throughout what I experienced with my mom, was the fact that I was able to and that I forced myself ultimately, to take at least a half an hour every day to do some kind of exercise.

Max:

Now, you don't have to go to the gym to do this, you can do bodyweight exercises. I actually, just before things got really crazy with the COVID-19 thing, I went and I got some workout equipment for my house, and it's not an extensive amount of equipment. All I bought, I bought two kettlebells and you'd be surprised with what you can do with two kettlebells.

Dave:

Did you get the pink ones?

Max:

I didn't get the pink ones.

Dave:

Oh man. I've been looking at some of those pink ones, man. Those are the best ones. Kidding. [crosstalk 00:33:27]. I always laugh. For some reason if they're five pounds, they're always pink. And it turns out five pound kettlebells are really useful for a lot of exercises, especially if you're using blood flow restriction. I always just laughing. I just wanted a normal looking one. I didn't want it to look like some sort of way overpriced zombie face or something. I just wanted a kettlebell and just like a plain old metal one. I guess I'm too plain. All right. So you got a couple of kettlebells, what do you do with them?

Max:

Yeah. Well, let me ... So just to close the loop, a lot of the pathways that get stimulated when you're sitting in a sauna for example, also get activated during exercise, so heat-shock proteins. I'm sure you've talked about heat shock proteins. I talk about it in my book and the fact that they have this ability to act like a buttress against other proteins in your body, that may have a tendency to misfold, and clump, and aggregate and form plaques like amyloid- β or tau, which are the two proteins that kind of characterize the pathologies that we see in the brains of patients with Alzheimer's disease.

Max:

When you're doing physical exercise, high intensity interval training, resistance training, you're basically and you're elevating your core body temperature, you're activating those same proteins. So you don't have to do it all. I think it's important to take a triage approach, and at the very top of that hierarchy, I would say that just in terms of the level of evidence, physical exercise really should be the one thing. Of course prioritizing sleep, that is crucially important as well. But everybody generally blocks off a third of their day around to sleep every night, and we can go into ways of improving your sleep, which is another topic that I cover in *The Genius Life*.

Max:

But generally in terms of the things that you can will yourself to do every day, that are going to have an entourage effect, a spillover effect, where it's going to be the tide that lifts all the boats in your harbor, I think that doing physical exercise, committing to half an hour a day is going to really give you the most bang for your buck that you can wish for, and it's going to improve all of the other aspects of your life. So it's going to improve what you're able to give to your loved ones, to your job. I wouldn't be where I am professionally or personally without exercise. I do it primarily for my mental health and for that cross-adaptation effect.

Max:

And with the kettlebells, what I do is I have a really simple routine. So I just have two kettlebells. They're not even very heavy. They're about 18 pounds each. And I'll do a circuit because of course I'm working out at home now, where I'll alternate shoulder presses, with some bent over rows, with some pushups using the handles of the kettlebells, and then I'll do some lunges and some squats. I'm not a big kettlebell like enthusiast, so I don't know the appropriate names for all of the different moves. But you can get a legitimate full body workout with kettlebells, and they don't even have to be that heavy. You just do as many reps as you can.

Dave:

Yeah, they're solid and the stuff you're doing there, that works and it hits all the core muscles. Probably the kettlebell swing, you probably know that one.

Max:

Yeah.

Dave:

It's good for your dating life if nothing else, because seriously, there's a hip thrust there that's probably useful. But you're standing, you swing the kettlebell between But what it does for your butt and for just your whole back, I definitely am a fan of the kettlebell swing just for core stability and strength, as well as some shoulders. And then do you know the Turkish get-up?

Max:

I don't know how to do that, actually. I've never done one. I have low back problems, so it's kind of like-

Dave:

Yeah. You can't swing then. Yeah.

Max:

Yeah, it's a little bit ... Sometimes I'm comfortable swinging, but it's not always predictable. My form I think is very good. But sometimes I can't predict, and sometimes I'll be doing it with great form and there's just a little bit of pain. But the Turkish get-up looks very interesting-

Dave:

Check it out.

Max:

... I haven't tried that yet.

Dave:

Yeah, hit that up on YouTube and there's all kinds of videos for it. But that one's, I don't do it regularly but I got into it a few years ago, just as I was looking at the most efficient, effective kinds of exercise. And by the way, newsflash, it's blood flow restriction or electrical stimulation, or using non gravity based feedback are the ones that give me the most returns on investment. But the Turkish get-up, you probably could do with your bad back. But you're basically like starting out on the floor, and holding in a certain position as you get up off the floor, and man, that pushes buttons in the body. Nothing else does. I got to say, for anyone listening, if you have a kettlebell, you're stuck at home because of the whole virus thing, man, maybe that's your way to do what Max is talking about here and get your exercise in.

Max:

Yeah, home workouts, they're important especially these days. And the link between exercise and mental health really, it can't be overstated. And when I'm home for an extended period of time, it really is a challenge mentally, and I think this is a lot of people. I think this is actually one of the topics that is being under covered in terms of the media, what this social distancing collectively is doing for our mental health. I mean, I have a younger brother who works from home, and he is used to being in isolation and working from home, and having all of his relationships and his work contacts communicate with him digitally. But for some people who are not used to that, I think it could be a challenge from a mental health standpoint. So anything that we can do to fortify our mental health during this time is crucial.

Dave:

I've been seeing people do like workouts together over video conferencing systems, which is kind of funny. It's, "Okay, 10 friends together, let's all do whatever." But it does do something pretty cool. And I did with some of my really close friends, we did a virtual dance party like we would do at New Year's Eve, or at Burning Man or something. And it was actually kind of fun and also ridiculous, because we're all at home by ourselves, whatever. But it does something good psychologically, I would say. So there's

something there and having just adequate exercise. I can't imagine staying locked in a place for two weeks, sitting on the couch and not moving. You're just going to feel like garbage when you're done.

Max:

Yeah, couldn't agree more.

Dave:

Let's move on to another topic. And this one it's super near and dear to my heart. One of the reasons that Bulletproof made collagen a thing, is that it's very high in glycine and the amino acid that's there. And in Super Human I go into a ton of detail about how aging cysteine and methionine are, and one of the reasons that you restrict protein at certain times of life is that, it's not necessarily all protein, it's protein that has too many of certain amino acids. What did you learn during the course of The Genius Life about methionine and glycine, and ratios? And what are your recommendations there from the book?

Max:

Yeah. I think people don't tend not to talk about glycine, because it's not technically an essential amino acid. It's conditionally essential though, and research calculations estimate that we need about 15 grams of glycine daily for good health, and glycine makes up one third of collagen protein. And I have no affiliation with any collagen manufacturer, but I'm actually a big fan of collagen, and I try to get it from bone broth, from collagenous tissue. I try to practice nose to tail animal consumption. But if I'm not-

Dave:

Have you ever eaten an animal nose? Have you ever actually eaten a nose?

Max:

I've never. No, nor have I eaten a tail. But-

Dave:

The nose is pretty tough to get down, man. The little nostrils like that because I actually, I run a farm. I get the whole animal, and I got to say, you should make that one into sausage. I just got to tell you. Okay, keep going. I was wondering.

Max:

Wow, that's amazing.

Dave:

Most people [crosstalk 00:41:22] nose. I'm like, "No, I have and I only did it once."

Max:

Wow. Yeah. I've never-

Dave:

I feel like [crosstalk 00:41:30] open my mouth right now.

Max:

Well, I do think ... I'm interested in that whole, there's this belief that like benefits like. So if you eat parts of an animal like say cow brain, that it's going to be good for your brain. And it would make sense that cow brain would be full of DHA fat, phospholipids and things like that. I don't know so much about nose, like how eating nose would benefit your nose, but I don't know.

Dave:

It's just the collagen cartilage tissue. I mean, the cow brain thing, it actually is profoundly good for your brain, except it has all sorts of weird viruses, and prions and things like that.

Max:

Prions, yeah.

Dave:

Yeah. Historically, I wouldn't-

Max:

Tricky.

Dave:

Yeah, I don't eat cow neurological tissue or any animal neurological tissue right now, other than maybe fish, or shrimp or something.

Max:

Yeah, that makes sense. Maybe because they're mammals, like avoid the mammal brain. Yeah. I mean, there is a suggestion in the literature. It's been primarily performed in animal studies with rats, but that rats went on methionine and rich diets, they have a shortening of their lifespans, and that shortening seems to be abolished when they add glycine into the mix. In tandem with that, there have been studies have shown that mice on normal diets, so not necessarily methionine and rich diets, but they're able to live significantly longer by four to 6%. So it's not a huge amount, but it's something. It's an amount that achieved significant statistical significance, when given glycine as well.

Max:

So it seems that glycine has sort of this longevity imparting effect, and mechanistically, glycine is there to buffer methionine. And when we consume too much methionine, like the person who for example is ... Take the omnivore who eats only lean chicken breast, like the omnivore who is only eating lean chicken on their salads, and that's the bulk of the meat that they're consuming.

Dave:

Man, they're screwed up.

Max:

Yeah. I mean, that person ... And by the way, that's how my mom consumed. My mom, she was a reluctant omnivore. She primarily was vegetarian, but she would only eat muscle meat occasionally,

because it would give her protein and so that's what you would eat. Generally, it was always lean chicken breasts. What that person is doing is they're maximally raising their needs for glycine, while getting very little of it. Your average omnivore consumes about two grams of glycine every day, they synthesize another two grams. But as I mentioned, we might need about 15 grams for good health.

Max:

And the other issue is that an omnivore who is primarily eating muscle meat and not getting adequate glycine, and then is able to balance their glycine with either free form glycine amino acid supplement or collagen protein, they're basically achieving what a vegan is able to achieve. So a vegan is actually ... There are many problems with the vegan diet, and I would never endorse it from a health standpoint, but the one thing that a vegan diet probably does have going for it, is that it's fairly balanced in terms of methionine and glycine. So if you're an omnivore, I recommend-

Dave:

Isn't it low? It's low in both, isn't it though? Just like minimizing glycine, where are they getting ... Or minimizing methionine, but were they getting glycine as a vegan?

Max:

You can find small amounts in ... I mean, but they're also getting very low methionine.

Dave:

I think it's that they cranked their methionine way down but they're also, I would say, then deficient in glycine, which is why you see so many vegans get injured within a year of going vegan. I mean, one of our family friends, "I'm going to go plant based for my health." I'm like, "It ain't going to work." Three months later, both knees blown out skiing for the first time in 20 years of skiing. "What do you know? You didn't feed your connective tissues now, did you?" That kind of stuff does happen, and it actually happened to me too when I went vegan, all this crazy joint pain. And you hear this all the time from vegan athletes. "I spend so much time rolling because I'm in pain." I'm like, "Yeah, try some glycine, i.e. collagen."

Dave:

And that's why for me to restore myself, I went heavy on the collagen and I still do. I do 20 grams of collagen a day. I mean, we're one of the largest manufacturers of it now, because it's such an important thing. So when people go on the vegan recovery diet, after they've caused the damage from that, it's like you got to get some saturated fat to build your cell membranes. You got to get some glycine and just some collagen to rebuild your connective tissues, that I think get exhausted from this because your body needs glycine for anti-depression, right?

Max:

Yeah. Glycine is also a neurotransmitter and it's also ... So I have a theory. It's also rate limiting in the synthesis of glutathione, which is the body's master antioxidant. My hypothesis is that you're also accelerating aging by not getting adequate glycine, and you're also not giving your body the proper ingredients that are required to effectively detox. So a lot of people are spending lots and lots of money on detox teas and things like that, but actually collagen, glycine might be one of the most effective detoxifying foods or supplements that you take, especially if you are an omnivore and you're consuming maximal methionine without balancing it with glycine.

Dave:

In fact-

Max:

Yeah, from an anti-aging standpoint.

Dave:

In fact, one of the things that most people have never heard of, is something called methyl glycine or methylated glycine. And you can get this stuff through, it's called sarcosine, and it's been trialed for depression. It's one of those quasi drugs. It's a natural compound, but you can take it and it lasts in the body way longer than normal glycine does in the brain.

Dave:

So you can prop up your glycine levels using this stuff. It's fascinating, and if you dig into the research on it, you just feel this, "Wow, glycine is doing something in the brain." But your book, you're talking more specifically around, "Hey, methionine is making you ..." Or sorry. "Yeah, methionine and maybe cysteine are making you old, and glycine is the way to balance that out. Plus you need it for your brain anyway." What's the difference in your mind between a glycine amino acid supplement, and just taking collagen?

Max:

That's a good question. I actually do have both, and I was taking free form glycine prior to bed, because there have been a few randomized control trials that show that about four to five grams of glycine prior to bed, can actually boost sleep quality and efficiency. And so I couple that sometimes with magnesium, which has also been shown about 500 milligrams every day, can boost sleep as well. And so, I feel like both of those two together, it's like a sleep boosting, anti-aging super powerful combination.

Max:

And I would just do the free form glycine, in part because glycine, actually if you've never had free form glycine is very sweet. It literally has a mouthfeel and tastes almost like sugar, not quite sugar, but I would just do that prior to bed. And the reason for that is that you need to consume, in one teaspoon of pure glycine you're getting, I believe, four or five grams of glycine and you would need to take 15 grams of collagen protein to get that. So it's just a more efficient way of jacking your glycine.

Dave:

It is. In fact, the original "Hey, take collagen before bed sleep pack," I wrote that almost 10 years ago and it's just been echoed across the internet so much. It's pretty crazy. Bulletproof just came out actually with the specific collagen sleep drink that you put before bed, and you can take straight glycine as amino acid. I just feel like the collagen dye and try peptides, these are little tiny bits of pre-digested collagen with enzymes. I think they have other benefits in the body, which is why I still go down the collagen route. But the mechanism of action, that's likely there is partially glycine and it may have something to do with serotonin, according to Steve Fowkes who's been on the show to talk about it. So there's merit to that.

Dave:

And then magnesium is interesting, because I've also had that in the originally Sleep Packing post everywhere online and all over the place, even the Reader's Digest like "Magnesium for relaxing." But I came across this intriguing research about the circadian nature of magnesium, and so I still take magnesium before I go to bed, and my numbers are a little higher. I think people need at least a gram of magnesium a day, but you can't take it all at once. But it turns out you have the highest magnesium at noon. So because you use it in your mitochondria to make energy, well, okay, that means I moved at least half and a little bit more than half of my consumption magnesium to the morning.

Dave:

So I take that when I first wake up, and along with all the other stuff I take on an empty stomach, and then I take it again at night for sleep. And I found I got much better results by having it twice a day, so I could hit that intraday peak for energy and metabolism, and then I could get it again at night for relaxation the way you're talking about. And it's fascinating because timing and all these things matters. There's almost no research on the circadian nature of when you should take glycine or any other supplement, but we know glycine before bed or collagen before bed, that seems to work.

Max:

Yeah, and I think from a psychological standpoint as well, people like to kind of build their supplement regimens around various time points in the day. We like to ritualize our utilization of these tools. So the morning ritual, the pre-bed ritual, and that's why I think it can be very effective actually, anchoring our usage of these supplementations to a specific time point, so that we don't forget. And we all wake up in our homes, right? We all have access to our kitchens in our homes, in the morning and before you go to bed. I feel like it makes it easier from that standpoint. Although I'm sure there are some people out there like you, who carry around 45 supplements in their pockets with them wherever they go, which is [crosstalk 00:52:11].

Dave:

I just carry 45 supplements at least per meal, to get a total of 150 a day. But there's nothing wrong with that.

Max:

Nothing wrong with that.

Dave:

In fact, except that it's expensive and you have to manage all that stuff. For me, the benefits are absolutely worth it. But I also have weird goals and weird biology, just going back in time having been obese and all that stuff. So I'm willing to do it because I don't know how to be CEO of Bulletproof, and write books and do the podcast. And actually, I should say be chairman of Bulletproof. I hired a CEO, finally. But all of those things just take so much time and energy. If I didn't take my supplements, I didn't get my focused quality sleep, and all the things that are part of managing what we're calling a genius life in this interview, but just managing your biology, I don't know how to show up as a dad and do all the other stuff. And as a husband, I don't think I'd have the biological energy to do it. So I appreciate you getting the word out in your book, about the stuff that really matters and the stuff that you found that works for you, and looking at the research which is also really important.

Max:

Yeah. I mean, the benefit of having written books, I think for me, just speaking personally, I'm not a clinician. So I don't have the ability to iterate in people's diets, and then to see them in six months and to see how my recommendations have fared, but because I have the benefit of having had some time passed between now and my first book, Genius Foods, I can tell you I've gotten thousands of letters from people all around the world, telling them that my recommendations have helped them sleep better, they've achieved healthier body compositions without having to obsess over the scale, or ruin their relationship with food. And now in The Genius Life, I've taken the same approach but towards all the different areas in people's lifestyles, where they're going to be able to make small tweaks that cumulatively are going to add up to big health wins.

Max:

And I've tested them on myself and I don't want people to believe that because it works for me, it's going to necessarily work from them. But I've taken an approach that I think is pretty evidence based, but is not necessarily evidence bound. I think that circadian biology is like, "We're just writing the first chapter now of how our biologies interact with light, how they interact with food, how food timing and how light timing can affect our health in pretty profound ways." And that being said, even though the story continues to evolve, and does so at a breakneck pace, I think that we have enough data where we don't necessarily have to sit idly on our hands.

Max:

We can take action today that in accordance with the available evidence, is going to help reduce our risk for some of the kinds of conditions that are really burdening modern society, and where our tools from the standpoint of medicine are pretty limited. And so that's where I think it's great to be able to have a research-based perspective. Yeah, and to be able to put this information out there for people, because I mean, if you look statistically, people are just not well. I mean, we're now on track by the year 2030, one half of the nation are going to be obese. I mean, you've dealt with problems related to your weight. It's a hard pill to swallow, but I think all it takes for most people are a few simple insights and a few simple tips, to really turn things around in a powerful way.

Dave:

Well, I appreciate writing the book, and doing the work and just living the lifestyle because it really does change things. And when you can lead by example, it just adds a level of credibility to your work that a lot of people are striving for. So thanks for being on the show again, Max. I look forward to seeing you in person the next time we're allowed to travel.