

Square One: A Simple Guide to a Balanced Life: A Special Interview With Dr. Joseph Maroon

By Dr. Joseph Mercola

JM: Dr. Joseph Mercola

DM: Dr. Joseph Maroon

JM: Burnout: a problem that so many of us face. What can we do? Hi, this is Dr. Mercola, helping you take control of your health. Today we are joined by Dr. Maroon, who is a professor of neurosurgery at the University of Pittsburgh Medical Center. He also happens to be the team neurosurgeon of the Pittsburgh Steelers.

The way I was introduced to him is he's written papers with one of my heroes, Dr. Thomas Seyfried, who is the world-renowned pioneer in mitochondrial metabolic therapy and the use of diet to treat cancer. Welcome and thank you for joining us today, Dr. Maroon.

DM: Hi. [It's a] great pleasure, Dr. Mercola.

JM: You have an interesting history, to say the least. You've been around for a while. You are quite renowned and treat many celebrities. Why don't you walk us through your journey, which is quite interesting? You've written the book [Burnout].

DM: *Square One*.

JM: I'm sorry? Oh, *Square One: A Simple Guide to a Balanced Life*, which is about burnout. Sorry. It's *Square One*, which focuses on burnout and some practical simple strategies that aren't necessarily rocket science, but it's very inspiring to see them all in one place. Why don't you start by sharing your journey with us, so that we have an understanding of the framework from your perspective?

DM: Absolutely. I've had rather impressive success, cataclysmic failure personally and then the lessons learned. I first finished my training many years ago. I was intent on becoming the very best that I could, in terms of my profession, neurosurgery. I worked extremely diligently. I found out that it became an all-encompassing pursuit for me in my life, what with success, societal approval, writing papers, going to national meetings, talking about the great things we were doing.

After being the chief of neurosurgery at a major university hospital, within one week period of time, I nearly broke up. My father died. I had to quit my profession as a neurosurgeon [in the] university. The next week, I ended up helping my mother run a rather dilapidated truck stop left to her by my father in Wheeling, West Virginia area, living on a farm. One day I was doing brain surgery and [the next] literally filling up 18-wheelers and flipping hamburgers in a rundown truck stop.

It was a great fall. It was kind of like an Icarian metaphor of flying too near the sun. I got scorched and I literally plummeted into the sea. It was a sea of depression.

I went through all of the symptoms of burnout that we see in 50 percent of physicians these days. I was emotionally and physically exhausted. I lost a sense of perspective. I was depressed. I had no real connection with the work that I have gone through seven years of residency and fellowships and 10 years of practice to get to.

It was at that point that I picked up the book by William H. Danforth, *I Dare You*. It was given to me as a high school prize, actually. Basically what Danforth emphasized was that balance is the most important thing to attain in life. To attain balance, you had to really take into consideration what you speak and write about almost daily in some way or another, Dr. Mercola. You have to take into consideration the social side of your life, the spiritual side of your life, the physical side of your life in terms of diet and the epigenetic factors that we both write about, in perspective, with your work.

He emphasizes that to lead a balanced life, one needs to draw a square. On the top of the square, you literally write “work.” On the other side, you write “family/social.” You write “spiritual” on the other side, physical. Then you draw a line to how much time you spend on each one of these sides. When I drew my square, it looked like a single line electrocardiogram (EKG). There was no family, spirituality, and there was no physical.

Serendipitously at that time, the banker who held the mortgage on the truck stop – I think he wanted to see if I could survive to pay off the truck stop. [inaudible 05:29 – 05:30] run. I said I can’t do it. I haven’t run for 10 years. I’m 20 pounds overweight. I [tried to run track]. I made it around the track once and said never again – four times, a quarter of a mile. It was the first time that I slept in about four months. I found and did it myself. Around and around. Two miles, three miles. Pretty soon, my neurotransmitters, if you would, were in the balance. I began to lose weight. It was the physical and then subsequently the spiritual aspect to a semblance of balance. And then eventually, I’m back in my profession a year later.

I literally was a dropout, a burned out dropout of surgery. It was the incredibly powerful aspect, the dopamine, the BDNF that we both speak about, the brain-derived neurotropic factor, that makes new brain cells, new synaptic connections and neuroplasticity, that really got me back into my profession and life, and back into a balanced place. That’s the quick overview of [inaudible 06:53] to a new way of life.

JM: Sure. Yeah. Exercise is a profoundly effective treatment to all of those. No question. I’ve been doing that probably just coming up short on 50 years now. I’ve embraced it for a long time. The challenge is how to integrate it optimally. I certainly made my share of mistakes in overdoing it. Finding the right balance is so key. But it does stimulate some really important metabolic pathways, like BDNF, as you mentioned, the brain-derived neurotropic factor, but also PGC-1 α , which is a pathway responsible for increasing the number of mitochondria that produce energy in your body. One of the most effective ways to do this is through exercise.

I’m intrigued and wondering if you could expand on how you connected with Dr. Seyfried. Was it through sharing patients with him who had brain cancer and he was connected with and you were the neurosurgeon for that cancer? Because you wound up writing up some fairly impressive articles with him.

DM: Thank you. As a neurosurgeon, I take care of patients with [inaudible 08:05] on a weekly and monthly basis. In my 35 years or so of neurosurgical practice, virtually no significant improvement in the treatment of malignant brain tumors. Patients had three to five months or so. There are no advances that I could recommend to my patient with this. I read Tom’s papers and subsequently contacted him and Miriam Kalamian, who you also know and write about, who is an expert in the ketogenic diet. I went on a ketogenic diet myself. I found that the 4: 1 ratio that they talk about in terms of the – It’s a very difficult diet.

I think, in reading your recent book, *Fat for Fuel*, I think you’ve done a tremendous service [for those] who want to go on the mitochondrial metabolic diet, clearly and essentially a ketogenic diet. You have guidelines in there and explanations that are absolutely beautifully outlined and absolutely needed, not only for brain tumor but for any patient with a malignant tumor that depends on glucose for its metabolic substrate. Anyway, I got to know Tom that way. I had him here at the University of Pittsburgh as a

visiting professor. We co-authored a couple of papers together now. I'm an incredible proponent of what he's teaching, lecturing and recommending to get it right.

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JM: Good. Thank you for your kind words. I was indirectly motivated to write the book through Dr. Seyfried. I've interviewed him, actually, a few years previously. But then I read Travis Christofferson's book, *Tripping Over the Truth*. Travis is just a brilliant author. He put it together in such an eloquent way that finally, the lights clicked on and I had this epiphany and I understood the potential of the application of this intervention. I was motivated to write a practical guide. I actually applied it to myself, like you, and made some serious mistakes that I think many people do, because they think, "If burning fat for fuel is so good, let's do it all the time."

DM: Yeah.

JM: What I learned is that's a prescription for disaster. I really placed a strong emphasis on the book on cycling in and out of it once you transition to burning fat as your primary fuel. Because I made the mistake and I just went too long and I started losing muscle mass and looking way too thin and like I was coming out of starvation camp. I realized that's not good strategy because that's not the way nature works. You're supposed to cycle in and out and eat lots of good healthy carbs and fruits, but do it in a sensible fashion where you can still maintain the ability and the metabolic flexibility to burn fat. I'm wondering if you went through the same process yourself and understood the cycling was the key.

DM: Yeah. Absolutely. Actually, I had the identical experience of what you did. I became weaker. I didn't have the stamina, the strength. I continued to participate in triathlons. I found myself not having enough fuel to do that. I kind of evolved, as you outline in your book, and really not blowing smoke. I really mean it. When I read your outline of how to approach this, [inaudible 11:59] it did so well for patients. Understandable, doable and it's basically what I evolved to on my own. You've been able to beautifully elucidate it.

JM: Thank you again for those kind words. I wasn't expecting that. I didn't even know that you had a copy of the book, truthfully. This is not like we organized this beforehand for you to say those things, but I thank you for the words.

Interestingly, looking at some of the feedback on some of the Amazon reviews, there's a significant number of people that think it's too complicated, too complex, that they actually have to measure their food. Well, the book was written for people who are ready to die, okay? They don't really have another choice or they really want to change their lives. Yes. I mean it is extreme. To some extent, you have to invest a few hours, maybe buy a 10-dollar kitchen scale and measure your food and enter it into a database to figure things out, but not forever. It's just short-term.

I just am challenged by individuals who think that everything should be handed on a silver platter that says, "This is what you should do." But the book outlines the principles and you customize it to your own needs, because individual variability is profound. What works for someone is not going to work for the other. But the key is the principles.

I'm glad you enjoyed them. But you're a little bit biased because you've got a tremendous amount of knowledge. You're coming from a different perspective than the average individual. I just want to emphasize that although it may seem intimidating for some if you have limited insights, you don't have to do it if you're not suffering from any diseases. If you're healthy and you've got normal weight, you do not have to do this.

You may be fine already, especially if you're like a vegetarian. [They are] indirectly doing this, because they have such small amount of protein and they tend to have low amounts of net carbs and high amounts of fiber. They probably have the metabolic capacity to burn fat for fuel. They don't need it.

But if you're sick, as the vast majority of people watching this are – 70 percent of people are overweight and another 20 percent on top of it has some sort of chronic disease they're struggling with – this is something to consider.

DM: There's no question. I think the various diseases that it's good for, that you again outline, everything from fibromyalgia to arthritis, cancer, neurodegenerative diseases of the brain, I clearly have recommended that as a thing that people can do hopefully to prevent amyloid and neurofibrillary tangles (NFT), to slow down the neurodegenerative process.

JM: The book isn't just about a diet. It's MMT, mitochondrial metabolic therapy. Therapy and other essential biohacks you can use to improve your mitochondrial function, like intermittent fasting, regular fasting, cold thermogenesis, the use of tools like very specific frequencies of near-infrared light that is profoundly effective for actually reversing some of the challenges that we see with Alzheimer's, dementia and other neurodegenerative diseases.

I don't know if you're using those now. An investigator who I've interviewed previously, a PhD researcher, Dr. Michael Hamblin, out of Harvard and Massachusetts Institute of Technology (MIT), has been using them and published studies showing it works pretty well. I mean that's a really simple intervention. These lights are not expensive. They're typically well under 100 dollars.

DM: As you mentioned, the biological and physical aspect of stressing the body actually activates various genes, the sirtuin genes and others, that lead to very positive metabolic factors. My book kind of is along those lines in the sense that it's about adversity. It teaches resilience. It teaches creativity and survival. You know what Nietzsche said, "What does not kill me makes me stronger." It's kind of like that way to some extent with fasting, but it's also with the emotional problems [inaudible 16:20] experience, and then found a way to get back to the most productive time of my life by balancing my life, which is basically what I talk about – A simple guide to a balanced life.

As you said, it's not a profound discovery. It's not something that's that unique. But when you look at it in the shape of a square, and every day, I get up I say, "Where am I going to get my physical exercise an hour a day? I know my work is going to be taken care of. What am I going to do to touch the lives of my kids and my family?" The spirituality, I think, is an incredibly important part of you and [me] relating to patients. One of the most important things I do is that with my patients.

JM: Let's go into that a bit. I've interviewed another author previously, Scott Carney, who wrote the book *What Doesn't Kill Us*, or something to that effect. He outlines Wim Hof's cold thermogenesis primarily and some deep breathing approaches. But I'm using that as an example of a metabolic adversity, which can radically improve your health.

I'm wondering if you could draw a similar analogy to the examples that you illustrated in your book of having this life adversity that superficially appears to be taking you out. Depression, let's not kid ourselves, depression does kill tens of thousands of people every year. It kills by a disease called suicide. It can take you out. Why don't you walk us through the sequence that you identified and the lessons you learned in life adversities?

DM: We all know that you can't avoid stress in this world – divorce, our jobs. Forty percent of most people have difficulty with job relationships. A Mayo Clinic study recently [said] 50 percent of doctors have burnout symptoms of physical or emotional exhaustion: overworked, overwhelmed, over-everything, overcommitted. What happens, as you describe in your newsletters all the time, you get an elevated cortisol level in your blood. What does cortisol do to the brain? It kills brain cells. What does it do to your memory? It reduces memory, our tissues and everything else.

JM: That would be excess cortisol, because you need some.

DM: Exactly.

JM: If you take cortisol down to zero, like ketogenesis, it's a bad thing. You need some, but not excess cortisol.

DM: Right. That's what excess chronic unremitting stress [causes], which is what I personally went through. It's incredible depression. Most doctors think that depression is [treatable] with SSRIs, if they give SSRIs and antidepressants. Clearly, I have no doubt that physical activity is the most effective antidepressant that we can use. [inaudible 19:34] somebody who's depressed to motivate to walk 30 minutes or one hour or do the kind of exercises, the high-intensity interval training (HIIT) exercises that you [recommend]. [inaudible 19:42] levels down, gets all the neurotransmitters back into order – your dopamine, your serotonin and your acetylcholine.

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The point is that we can't escape adversity. We can't escape stress. But what happened to me is I didn't recognize how bad off I was in a unidimensional life. I didn't recognize it until I was working at a truck stop as a pump jockey. I realized I had to come back.

JM: From your experience, what would you caution others as warning signs and signals so that they don't have to go through the life struggle and adversity that you went through? Although sometimes there's really no other choice because you've got to hit the bottom before you wake up.

DM: Unfortunately, that is true. That is true. Sometimes, that's when suicide occurs. That's when alcoholism, opioids and everything else can take over. Two roads, two paths diverged in the woods. I think the most important thing that I missed was mindfulness. I didn't have insight into where I was. Insight on how I got there, when everything was lost. Then you have to really reassess what is the importance of nutrition.

In our book, we discuss the epigenetic factors and the nutrigenomic factors, how our food activates various inflammatory or anti-inflammatory cytokines and peptides. We have to understand that we choose how we control our genes. We do it. We make our choice every day when we go to the cafeteria, whether we're going to activate our genes for good or bad, inflammation or anti-inflammation. Inflammation is the common cause of arthritis, cancer, to some extent neurodegenerative diseases.

Recognize, again, it's mindfulness of where you are to the importance of physical activity. Absolutely essential, healthy things that we describe in the book of what physical activity does to the brain, heart and the organs. Then, [it's] incredibly important to avoid environmental toxins. That's alcohol, our water, our pollution, the glyphosates that we hear about daily, again that you're so eloquent about. But also that we must control stress.

How do you control stress? If you look at the people who live to be centenarians more than any place else, where are they? Okinawa, Sardinia, Seventh-day Adventists in Loma Linda, California. They all have in common a healthy diet and work. They work hard, which is their physical activity. They live in [areas low] in environmental toxins. They control stress with usually a very strong family unit, spirituality, religion or church. All those things are mindfulness. All reduce stress, the excess cortisol, and try to keep our bodies in balance.

JM: Yes. Those are good strategies. Exercise can work incredible results in many people, like it did for you, but it doesn't work for everyone. I can certainly recall many instances in my clinical practice where I had some very competitive athletes who were exercising probably even too much and were suffering some severe episodes of depression.

There are other strategies, of course. This isn't going to be all about how to recover from that, but I found tools like energetic psychology. EFT or Emotional Freedom Techniques has been a very useful tool, not necessarily done by yourself but with a skilled therapist, because it does take quite a bit of clinical training to develop expertise on how to apply and use this effectively – not that you can't use it yourself, it's just I wouldn't expect life-changing events with it. I'm wondering if you sought out any strategies for that, a lot like that, in your process of resolving the challenges you were engaged in your life challenge.

DM: I haven't used that specific strategy. I found I know what I need to do to [have] balance in my own life, mentally, physically and spiritually. I find that, for me, to be the most effective. I kind of recommend the same thing, but I think you're exactly right. It's whatever strategy works. It's just like when we're speaking of spirituality. Is it this specific religion? Not necessarily. Is it mindfulness? I think that's incredibly important. Yoga? Is it other kinds of disciplines? It's whatever results in our ability to focus at that time, phenomena, the [inaudible 25:11] writes about, a total proponent about that.

JM: How long did it take you to understand this process, implement it and achieve the improvement that you're seeking?

DM: It took about I would say three to six months. But remarkably, I noticed that four times around the high school track was the first night I slept in months. I tried all sorts of medical approaches for that. It's the same with antidepressants. But I caught on. It was over the course of six to eight weeks. Going down, I realized I was putting terrible fuel into my body, truck stop food. And then when I started getting my serotonin levels up a little bit, I started feeling better.

And then the spirituality. I grew up and [inaudible 26:07] for 12 years. You fall back on, I think, the bed rock, which you were raised on sometimes. That helped me very much. I got back into the principles of Christianity – helping and reaching out to others. I think that's a key portion. We give but little when we give up our possessions. It's when we give up ourselves that we truly give. It's getting out of yourself. It's not me, me, me, me all the time. It's reaching out to others.

We're incredibly blessed to do what we do. Every day, I'm seeing patients and I'm drawing on whatever expertise I have to try to manipulate their biochemistry and their biology to millions of people on a daily basis. I'm kind of still [inaudible 27:02] one patient at a time. One patient at a time is incredibly gratifying and exhilarating. There's no greater profession in my mind.

JM: There's no question about that. It's one of the things that I miss after having made the transition to being a full-time editor and helping run the site at Mercola.com. I couldn't agree more with you that ultimately it all comes down to that one-on-one interaction. I don't care if you're treating millions or billions of people and helping them. If you don't communicate in some way, shape or form directly, preferably personally and eye to eye, you won't get the emotional benefit. I do get it.

That's one of the reasons why I go to lectures and teach, usually to a few thousand people at each one. Invariably, people would come up and share their story. I'd just break down in tears almost when I'm listening to it. Because that's where you get your reward. Many of these people were previous patients, because it's been a while now, but their stories go back 10, 15, even 20 years. Literally life-changing.

You say, "Wow. I cannot believe the impact we're having." Because you sit at home and do your work and you just have no idea of the influence. But I couldn't agree more [that] it's the one-on-one connection with individuals. Otherwise, it's all in the nebulous, mysterious ether. You just never get the feedback. You get no emotional impact on that.

DM: Yeah. This morning, I saw 20 patients with back, neck and head problems. I see the medications that are used by the tons. I see the side effects of these things. I think, again, that's why I'm so attracted to what you lecture and what you talk about. The natural approach to complicated medical problems, when it can be utilized appropriately, is still the best.

JM: I'm wondering what your colleagues' view of your position and your approach [is]. Have you been ridiculed? Has that impacted your ability to practice in any way? Because typically it does.

DM: You remember the quotation from Schopenhauer: all new ideas initially are ridiculed, violently opposed, and then they are accepted as self-evident. I started talking about omega-3 fatty acids 10 years ago after hearing a lecture by our mutual friend, Dr. David Perlmutter. I came back. My associate, Jeffrey Bost, and I wrote a book on omega-3 fatty acids in fish oil. People thought, "Maroon lost it. He's a neurosurgeon talking about fish oil. Come on. You've got to be kidding me."

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Then we did a survey of 250 patients who came into our office with neck pain on non-steroidals that kill 15,000 people a year and hospitalize another 100,000. I put them on omega-3s. Sixty percent were able to get off the non-steroidals. It actually won first prize at the National Neurosurgical Meeting, which was unheard of. But since then, there has been grudging acknowledgment that, "Hey, maybe there is something to this," and on and on that way.

Clearly, like you – I've done eight Ironman Triathlons. I'm competing in two weeks in an Ironman Triathlon in Maryland. I'm still active. I try to live. I live what I taught, just like you.

JM: Well, you are. In some ways, I see you following a pattern that I did earlier in my life. I know you're older than I am now, but you didn't start the process until much later than I did. I made the mistakes of engaging in excessive cardiovascular activity and seriously regret it. But, you know, I embrace it and still love myself despite doing that. But I suffered some health consequences as a result.

I don't recommend or encourage anyone to engage in that type of activity, because the body doesn't need it. You don't need that much exercise to stay healthy. You need relatively small amounts and you need to target it. It's like a rifle, like a neurosurgeon. You don't go in there and blast out the whole brain. You target them specifically.

DM: Yeah.

JM: Targeted high-intensity training. My new version is the Zach Bush Nitric Oxide Dump, which only takes three minutes. Do that two or three times a day, maybe not even every day. Then these mobility exercises and walking, simple things that don't cost anything.

I mean it's okay to do triathlons, but you've got to be careful as you get older. I would caution and encourage you to consider. You're probably still doing some, but it's so much more important to do strength training when you get older, because of the sarcopenia and the progressive loss of muscle. You'd want to retain as much muscle mass as you can as you grow older, because otherwise, you'd be disabled or crippled. You know you can always turn your body around, but the older you get, the harder it is. There's no question.

DM: Yeah. There's no question. I think it's the incremental overload of the body that, again, makes you stronger. It has to be incremental. You just don't go from zero to this. You have to do it incrementally. You increasingly stress your body. But I like your targeted way. The shorter high-intensity exercise is really all that's needed.

JM: Yeah. To get the general fitness you need and then combine it with – I see it in so many of us. I fell into that trap. I was exercising an hour a day for like 30 or 40 years, and frequently much more than an hour a day, sometimes two or three hours a day. Then I would sit down for like 12 hours or 15 hours. I destroyed my health by doing that. I really did.

It's this engagement and movement throughout the entire day that is so much more important. Not just moving around, but in all types of different positions. That's why people who have physical labor as part of their job requirement stay healthier, because they maintain this flexibility that they were designed to have and that we were really exposed to for millennia. All our ancestors were and we were designed to have that. It's an important component.

DM: Again, everything in moderation and balance.

JM: Yeah.

DM: You need exercise. You need a degree of meditation and spirituality. You need to avoid the environmental toxins.

JM: My new passion, [which] probably is going to be the result of my next book – not the result, but the topic or the focus – is one of the most dangerous toxins. It's the microwave radiation we're experiencing from our cellphones, cellphone towers and Wi-Fi routers. Not that we should abandon them – it's virtually impossible to do that in the 21st Century – but to use them wisely and to guard against excessive exposure. You have to be hyper-diligent to do that.

You could have the best diet, the best exercise, the best meditation and spiritual practice and the best sleeping habits, but if you're blasting your body with this radiation you can't see, hear or feel – at least most people can't, some of the electro-sensitive can, but most of us can't – you're going to be damaged and you're going to die prematurely. There's just no way around it. I mean it's really clear when you study the literature.

DM: Correct. I totally agree.

JM: Yeah. Even in the paleo or the nutritional ketosis community, it's something that's not typically appreciated. It is more in the health communities. But it's a big, big issue. There are some simple strategies that one can use.

DM: I agree.

JM: Now, I'm curious. Let's delve a little bit into something I alluded to earlier. You really are a physician to many celebrities. I was really surprised when I read the list of endorsements for your book. I've written a number of books. I know you can't pay celebrities to write an endorsement. You've got to know them personally. I suspect many of them were your patients. I'm wondering if you can tell us how you arrived to the point where you were treating so many celebrities – sports celebrities, movie stars and all of those individuals. How did that happen?

DM: It happens as the unintended side effect, if you would, of doing what I did on a daily basis well [inaudible 35:59]. I've used [to be with] the local Pittsburgh Steelers Sports Team, which I've been a team neurosurgeon for over 25 years. It kind of is a laboratory. A laboratory in the sense we made observations about neck problems, low-back pain and ruptured lumbar discs. We wrote about the diagnosis, its treatment and the success with minimally invasive surgery, that we were able to get athletes back to playing professional sports – basketball, football and baseball – in terms of herniated discs in the neck, lumbar area.

With two publications, you develop a certain degree of notoriety. When you operate on quite a few athletes [inaudible 36:52] relatively small community, the word gets out. Again, it's about caring, empathy, doing the very best job on every patient you can.

Greg Norman, for instance, is a close friend now, who endorsed the book. He's just one of the greatest athletes ever. Troy Polamalu, who was the pro-linebacker for the Pittsburgh Steelers for many years, we developed a personal relationship, as well as a professional relationship. Sanjay Gupta, CNN commentator, is a neurosurgeon at Emory University in Atlanta. He used to operate, as well as do his job. As you saw from his commentary, it made a significant difference on how he perceived the importance of various things in his own life, because, again, it's uncomplicated. It's simple. It's by doing the right thing every day that good things happen.

JM: Great. I'm wondering, with your advanced knowledge, at least relative to the conventional medical community, and your position with the Pittsburgh Steelers, one of the common challenges that many footballers professionally go through is TBI, traumatic brain injury. It seems there are some really very powerfully effective simple interventions after the injury occurs. Of course, obviously the best one is prevention, and there's a lot being done to address that now. But I'm wondering if you developed any specialized protocols and achieved any interesting results as a result of those interventions.

DM: Dr. Mercola, you mentioned your next book. Next paper.

JM: Okay.

DM: I've given a lot of thought to this. As you know, chronic traumatic encephalopathy has many similarities to Alzheimer's disease, in terms of the neuropathology of neurofibrillary tangles, which is a hallmark of Alzheimer's, as well as the beta-amyloid plaque deposition. This is so obvious to you.

But what do you do about a neurodegenerative disease that is progressive? Well, you don't eat a Western diet. You don't stop exercising. You don't overload with toxins like alcohol, opioids, smoke and drugs, and you control stress. It's the four epigenetic factors that need to be emphasized to these individuals who have had multiple hits to the head. I won't say concussions or sub-concussion blows. It's what it's referred to.

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Again, what you outline in *Fat for Fuel* are kinds of things that I think athletes who have been subjected to TBI could benefit from extremely well.

JM: Have you had the opportunity to implement them clinically and see any results?

DM: I have not. Honestly, my agenda this year is to [launch] a program for individuals who have had TBI [to apply] diets that we're both talking about. As you said, it's not rocket science. It's not brain surgery.

JM: No, it's not.

DM: It is not unique. But it's something that I think has physiological and biochemical basis.

JM: This could be one of the most important reasons that we're doing this interview, because I'm convinced from a whole variety of different perspectives, that this is a big issue. It's a big issue for not only TBI, but also obviously for Alzheimer's and other neurodegenerative diseases. I would encourage you, especially with your influence. You have the ability to do this, to implement a protocol like this.

But the key that's going to be missed by almost every other researcher – almost everyone's going to miss this – is to use near-infrared light. At about 830 nanometers would be ideal, although you can go up to 850. Anywhere from 810 to 850 will work. But integrate that as soon as possible, as soon as possible. The intervention is high-dose curcumin, a micro-active form that's highly absorbable, to radically reduce the inflammation, swelling and the pressure so the nerves don't get damaged. But the infrared light, that's going to recharge the batteries in those mitochondria. It will stop mitochondrial dysfunction secondary to the inflammation and the trauma. It's so simple to do. There are virtually no side effects. It's not toxic in any way, shape or form.

We could talk off the line about some strategies that do it, because the equipment is under 100 dollars to do it. They can buy one themselves. I just recommend to get it online on Amazon. I think that if you could start a protocol like that, establish some results, I mean you could change the whole professional treatment of this condition and help not only professionals, but people who play at the non-professional [level], even all the way down to high school and even junior high.

DM: Dr. Mercola, there's no professional treatment of this now. There's none, really. I mean what's your opinion on hyperbaric oxygen therapy?

JM: I think it's a great tool. It certainly is useful. It's an integral part of many important cancer protocols. I think there's probably a safer and less expensive way to treat it. I like EWOT or exercise with oxygen therapy. You can buy a whole system for 6,000 dollars. It essentially replicates many of the same metabolic benefits as hyperbaric oxygen at a radical reduction in the cost. Certainly, compliance is easier because you can put this in your home. You don't have to go to a treatment center or take large portions of your time every day. I think it's useful. I just think there are maybe simpler potentially even more effective strategies.

DM: I think the high-dose curcumin, the highly bio-absorbable curcumin, the omega-3 fatty acids, fish oil, high-dose fish oil, resveratrol, L-carnitine, α -lipoic acid, these are all agents that enhance mitochondrial function –

JM: Infrared light.

DM: Infrared light, okay.

JM: Near-infrared, 850.

DM: Near-infrared. Yeah. I appreciate that. I like that. There's no program for these guys. I see them. I've got it. What am I supposed to do? Wait until it kills me? I just don't agree with that.

JM: No, no, no. You got it. If you need some help, I'd be glad to assist you to develop a protocol that's implemented for the teams professionally. Because as we're recording this, I think it's off-season. Yeah. Super Bowl's in January, so they haven't started yet. There's plenty of time to develop a protocol that when these guys get injured, this is what they do. Boom, boom, boom, boom, boom. There's no thought. They just do it. They follow the TBI protocol. Then you can compile the data and get the studies published and hopefully spread this throughout the league.

DM: Yeah. I know Dr. Amen.

JM: Yes. Daniel Amen from Texas. Sure.

DM: Daniel Amen has actually done a study with NFL players using many of the things that you and I are talking back and forth about. But it's not widely known.

JM: He's not a team physician for professional football. You are.

DM: Yeah.

JM: You've been doing it for 25 years. You have the reputation and the professional respect, the ability to actually implement something. With someone like me, they would just laugh and say, "Hit the door, buddy. Who do you think you are?" You've got the credentials to do this. I mean this could help lots of people. It really could. I mean this could change the whole face of this injury.

DM: I appreciate that. Here at the University of Pittsburgh, we worked on prevention. We developed the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) test. I don't know if you're familiar with that.

JM: Never heard of it.

DM: It's a cognitive test. A 20-minute test that baselines – The athlete takes a baseline test – memory orientation, ability to process information – a basic neuropsychological evaluation. If there's a concussion, it then is tested again. It's a standard of care virtually in most professional sports.

[We've tested] over 13 million kids with this test to prevent the second injury, which is critical. If you have a concussion, you don't go back until you meet certain criteria. They are very strict, and they have to be followed. We've been in the prevention mode for the last 50 years. Treatment mode or prevention with the kind of methods you were suggesting, I think, clearly is needed.

JM: Yes. Very few people would disagree that prevention is a far more effective approach than the treatment strategy. Let me know if you need any assistance on this, because I think that is a worthwhile endeavor. It's a simple thing and probably wouldn't take more than a few minutes of my time. But if it takes more, it's fine too, because this is an important project.

DM: We'll put something together and pass it by you.

JM: Yeah. That's great. Alright. Any other words of wisdom you'd like to share with the audience?

DM: I think the book, *Square One: A Simple Guide to a Balanced Life*, is a good basic primer to burnout. Also, if you are burned out, overwhelmed, overworked or overcommitted, you need to get your life back in order.

JM: This is a good strategy. It's an easy read. This is not complex text. This is not written like a neurosurgery textbook, I can assure you, it isn't. It's an easy read and easy to understand and not complex principles. I think there's some good wisdom. Those of you who feel that you're suffering from a professional challenge and life-burdening consequences like Dr. Maroon went through, then this is something to consider.

DM: Thank you very much.

JM: Alright. It was good having you on today.

DM: My pleasure.

[END]