

3/17/24 Episode 9: with Michael Joyner, M.D. and Nick Sterling, M.D., PhD “Exercise and Longevity”

Speaker WSYR** ((00:00:30)) - - Following a debate program by Karl Sterling. The content of the show is that of Karl Sterling and does not represent the views of the station or iHeartMedia. Some of the information contained in this program has not been approved by the FDA, nor is it intended to diagnose, prevent, treat, or cure any diseases. Information hereafter is for general information only, and before considering anything discussed, you should contact your doctor or primary care physician.

Speaker WSYR** ((00:00:59)) - - Your Health Matters with Karl Sterling on News Radio 570 on 106.9 FM and Live Everywhere on the iHeart radio app.

Speaker WSYR** ((00:01:16)) - - We bring you the latest in health and wellness so you can get to the other things that matter. Here is your host, Karl Sterling.

Speaker Sterling** ((00:01:28)) - - Hello, everyone. Good afternoon, good morning, good evening. Wherever you are, wherever you're listening from. It's great to be back here for another broadcast of Your Health Matters. Thank you, Producer Anna, for all you do to help me. You make things so easy here. And my name is Karl Sterling and as always, I am absolutely thrilled to be your host as we explore the journey towards living a longer, healthier life together. That's another shoutout I have here. It's for Hunter Hillers, Hunter Hillers at iHeart radio. Thank you, Hunter, for your help. Without you, I'd be completely lost in this journey.

Speaker Sterling** ((00:02:09)) - - You make everything so easy for me, so thank you. Okay, quick housekeeping because we have a show that I've been anticipating here today. I want to get right into it ASAP. Before this, though, last week, we were going to have doctor Ray Dorsey, a prominent figure in the neurology world, out of the University of Rochester. Unfortunately, he was not able to make it. But I have good news. Doctor Dorsey and I, connected on Tuesday of this week. We pre-recorded a complete show, and all I'm going to tell you is it's really, really amazing what he's doing and his perspectives on everything, on helping to prevent Parkinson's disease and even end Parkinson's disease. This is something you're going to want to tune into. So mark your calendars for April 14th. That's the date it will air. I also caught up with Doctor Terry Wahls. We spoke on Thursday this week. We had a blast. Doctor Wahls is a physician and a

Speaker Sterling** ((00:03:12)) - - clinical professor at the University of Iowa. She lives with Secondary Progressive Multiple Sclerosis, which is not a common form of Multiple Sclerosis.

She's the creator of the Wahls Protocol, the author of The Wahls Protocol book series. The book, the cookbooks and everything. So we have that one pre-recorded. It's going to air on April 28th. You definitely want to check that one out. Now, we know this show is largely about longevity. I'm here to share truths with you. I'm here with some bit of shock factor. I mentioned that in the first episode on January 21st. Every week I really want to hit you between the eyes with a few tidbits of information so we can explore this journey of rewriting, actually rewrite the narrative on health care through self-care. What can we do to help ourselves live a longer, healthier, better quality life? We bring world renowned researchers, thought leaders, experts as guests who share their knowledge with us.

Speaker Sterling** ((00:04:26)) - - Next week, Jason Paul, an expert in unlocking funding for health services, including things like personal training sessions, gym memberships, therapies for bone density, which we have at my clinic, the Bio Density machine. We are having people come in with improved DEXA scans going from osteoporosis to osteopenia. So it's going to be called Your Health Insurance Matters next week with Jason Paul. One more thing to mention before we get into the show today is Doctor Perry Nicholson, also known as the lymph doc, all things lymphatic system. We're going to have him on live April 7th. Today I have two very special guests with me, both who I've been following for a long time. Doctor Michael Joyner, an athlete. He is also a practicing anesthesiologist, a physician, researcher, and one of the world's leading experts on human performance and exercise physiology. Using humans as his model system, he has made major contributions to understanding things like muscle, skin, blood flow, blood pressure regulation, human athletic performance.

Speaker Sterling** ((00:05:47)) - - His broad interests include helping members of the general public. That's us folks, understand the real world implications of research policy debates and related ideas covered in popular press. So, Doctor Joyner, welcome and thank you. My second guest is somebody who I happen to be related to, Nick Sterling, MD, PhD, also an athlete and a practicing emergency medicine physician and a researcher specializing in AI. Welcome, gentlemen.

Dr Michael Joyner** ((00:06:28)) - - Very glad to be here. Thank you.

Speaker Sterling** ((00:06:31)) - - Yep. I hear both of you. Thank you very much. Well, welcome to the show. Let's get right into it because the first break comes fast. Then we'll really get into it after the first break. So, Doctor Joyner, I want to start with the first question, and it's probably the only one I'm going to ask today, maybe, we'll see what happens. There is a I don't know if it was a study or a story.

Speaker Sterling** ((00:06:53)) - - The London bus driver, Bus conductor story. Can we talk about this and kind of open up the subject on how movement helps us to live healthier and probably longer?

Dr Michael Joyner** ((00:07:04)) - - Sure, Karl, it's kind of an interesting story. Before World War two, the epidemiologists, the people who study health and populations were focused mostly on infectious disease, you know, people dying of pneumonia, tuberculosis,, various pandemics and that sort of thing. But as infectious and disease started to decline due to sanitation, vaccination and antibiotics, they started to notice an uptick in heart disease and cancers. And so a very famous epidemiologist named Jeremy Morris. Professor Jeremy Morris wondered what physical activity, occupational physical activity does to the risk of heart attack. So what Professor Morris did is he used the double decker buses in London as his, what we call, experiment of nature. There were bus drivers who drove the bus and sat all day, and there were conductors, people who walked around the buses up and down the stairs taking tickets.

Dr Michael Joyner** ((00:08:05)) - - They showed over a couple of years that the people who were the bus conductors, the people who were moving all day long, had lower rates of heart disease than the people who were driving the buses. They then repeated that when they compared sedentary clerks versus postal postal workers. All these people were men. All were middle aged and all living in London. So it's not a perfect study, but it was one of the first statistical hints that physical activity was protective against heart disease. And really, that started the ball rolling in the late 1940s and early 1950s to this whole line of research related to physical activity and exercise and heart disease and specifically health more generally.

Speaker Sterling** ((00:08:51)) - - Fascinating. Nick, you have a bunch of questions. I want to turn it over to you, if you don't mind.

Dr Michael Joyner** ((00:09:05)) - - Okay, Doctor Joyner,

Nick Sterling MD,PhD** ((00:09:06)) - - thank you so much. It's really an honor to be talking with you.

Nick Sterling MD,PhD** ((00:09:09)) - - I've been following you for quite a while. Maybe you can give us an overview on why exercise is so important. We usually view this and we hear about it in the media through the lens of weight loss or maintaining body weight. But, recently we found that this is much more important to our general health than we ever thought before. What are we really missing in the messaging around exercise?

Dr Michael Joyner** ((00:09:31)) - - Well, I think exercise is good for us for a number of reasons. I think the first thing you just mentioned is it does help people control body weight, and it is an excellent adjunct for diet for people who want to lose weight. So we do focus on those things. But what does exercise do? Well, we know exercise is a potent antidepressant. A bunch of studies have shown that especially for mild, sort of garden variety depression exercise can be almost as effective or as effective as a medication. That's the first thing. The second thing is exercise helps the blood vessels in our body stay.

Dr Michael Joyner** ((00:10:12)) - - open, wide open and dilated and stops or helps prevent clots from forming and blockages from forming in those blood vessels. So it's good against cardiovascular and vascular disease everywhere. The third thing is it has powerful antidiabetic effects, powerful anti-diabetic effects. And then I think the other thing is that it keeps the interior of your blood vessels nice and smooth and that's also helpful. It also helps the nerves that control your blood pressure and tends to lower your blood pressure, 5 or 10mm of mercury. So you get a whole lot of benefits really in every body system via exercise. By the way, there's pretty good evidence that chronic levels of physical activity and exercise prevent against cognitive decline as you get older. So it really covers the bases and gets almost every organ system.

Speaker Sterling** ((00:11:09)) - - Gotta love that. Gentlemen, we have to head out to a break already, but we'll be back in just a couple of minutes to continue this conversation.

Speaker Sterling** ((00:11:15)) - - You're listening to Your Health Matters here. My name is Karl Sterling here on News Radio 570 WSYR. We'll be back in a couple of minutes.

Speaker Sterling** ((00:11:33)) - - All right. We're back. We have Doctor Michael Joyner of the Mayo Clinic and Doctor Nick Sterling MD, PhD. down in Greenville, South Carolina. I have one quick thing I want to jump in here with for folks who were asking about the Naboso insoles, they're here. They're in my clinic in Camillus, NY. They're a special textured insole. When you put them in your shoes, they wake up those sleepy nerves on the bottom of your feet on that planter skin. It's going to give you more sensory input to your brain through your peripheral and central nervous systems. In other words, more sensory input to the brain, which will cause your brain to send out an immediate and more optimal response to help you stabilize better. I've used them for many, many years. We've had hundreds of people use them and the results are, not only helpful for circulation in the feet diminishing neuropathy, but really helping to move better.

Speaker Sterling** ((00:12:25)) - - Increased stride length, stride symmetry, posture, and overall feel better. All right. So they're \$55 a pair in my clinic or \$80 online. You can buy them there too. Bu if you get a hold of me if you want them. Come by the clinic. (315) 935-7488 is my number. Text me, call me or go to Karlsterling.com. That's Karl with a K and shoot me a note through there in the email. All right. So I'm going to turn it back over to Doctor Nick here. I know you have quite a few questions and we have some time now. So let's keep going, gentlemen. Nick, what are you thinking right now?

Nick Sterling MD,PhD** ((00:13:05)) - - Perfect. Well, thank you, Doctor Joyner, you've actually touched on some really fascinating mechanisms of how exercise is protective across a variety of organ systems and variety of processes in our bodies. I actually, I specifically would love for you to to circle back around in a moment here, maybe talk a little bit about what you have spoken about before and the effects on the heart arteries or the coronary arteries, which are just fascinating .Some studies, but kind of taking a step back for a moment,

Nick Sterling MD,PhD** ((00:13:37)) - - I am always struck by some recent data that has come out over the last few years, particularly in 2018. There was a study published in JAMA, and I'm sure you're familiar with this study that is just incredibly striking and revealing. The relationship between exercise capacity or the ability to do exercise or sustained work and the relationship between that and risk of death. And what we essentially found was that,, exercise capacity is as important and perhaps in some cases more important than traditional risk factors. And I would like to hear you talk about that, your thoughts on that? Especially how are we quantifying exercise? There are some metrics that are popular, using what we would call a gas exchange. There are other ones too. I would love to hear you talk about that and the relationship between how much exercise someone can do and their overall health.

Dr Michael Joyner** ((00:14:34)) - - Right., Nick, that's a kind of a multi-part question. So let's just start with the first part.

Dr Michael Joyner** ((00:14:41)) - - You know, exercise capacity and the risk of death. There's a lot of ways to measure exercise capacity. We can do it on a treadmill. We can hook people up to a breathing apparatus. We can do it on a bike again, hook people up to breathing apparatus. Or we can just ask people, can you run a mile in six minutes? How fast can you walk? We can even do things as simple as grip strength, how fast people get up off the floor and and other markers of what's called functional capacity. So in other words, a test in the real world versus a lab. And what those show us is that people that are routinely in the highest 10 or 20% of fitness have a reduced risk of, of all causes of mortality, somewhere between typically 30 and 50%. Now the good news is, most people, if they're very diligent about their exercise program and watching their weight, can get into that top, say 20%. There's also benefit just being in the top 50%.

Dr Michael Joyner** ((00:15:43)) - - So you shouldn't lose heart if you can't become, you know, in the top 10 or 20%. So there's a lot of markers for this, a lot of standards. There's age graded standards and there's a host of literature about it, but it appears as if people that are in that fittest category, the highest category of fitness, really have a very, very low risk of death in the next ten years. The other interesting thing is, even if you have some risk factors like high blood pressure or other known risk factors, in general, that high level of fitness attenuates the effect of those risk factors on the causes of death. So really exercise is just broadly protective against all sorts of things. And it shows up via the mechanisms we talked about before the break. And also it shows up in the mortality statistics.

Speaker Sterling** ((00:16:39)) - - I love that.

Nick Sterling MD,PhD** ((00:16:40)) - - Now, does that change in function as we age? Do these effects persist or are they more important, less important as we age?

Dr Michael Joyner** ((00:16:51)) - - Well, actually they're more observable as we age because the risk of, if you're 30 years old, the risk of dying in the next ten years, no matter what you do, is quite low.

Dr Michael Joyner** ((00:16:59)) - - So you really start to see these things diverge as people get into middle age, 50, 60 and so forth. You see the the big impact as people get into those age bands where unfortunately, they start to die. That's where you see the biggest impact of fitness in terms of a statistical reduction in relative risk among the middle aged and older cohorts. Just not because there's anything special about exercise in that age group. It's just because those are the age groups where people, unfortunately start to die. And now the good news is that when people shift from low fitness to high fitness in middle age, they begin to accrue those benefits. But unfortunately, if people shift from high fitness to low fitness in middle age, they lose those benefits over time. But so it's never too late, I think is the take home message to go out, increase your physical activity, start an exercise program, increase your fitness, and reduce your chances of of dying in the next few years.

Speaker Sterling** ((00:18:05)) - - I'd like to jump in for one second, Doctors, I have a question. This has to do with muscle mass throughout the lifetime, right? When I talk about this with certain people, they look at me like I have three heads or something. Why is it so important? Well, geez, we have metabolism, we have bone health. We have even mobility, stability, balance,

staying upright. Would you mind sharing your thoughts about. I love your idea of going into your 80s with a high baseline, the highest baseline muscle mass possible.

Dr Michael Joyner** ((00:18:39)) - - Well, I think, Karl, you know, there was a huge focus of exercise and physical activity on cardiovascular health because cardiovascular disease is such a major killer. And because the benefits of aerobic exercise and physical activity at work were so apparent from a variety of sources. But I think as we think more about healthy aging, we know a lot of things. We know that things like self-selected walking speed, we know about your ability to get up out of a chair.

Dr Michael Joyner** ((00:19:08)) - - We know that 70% of 70 year olds can't get up off the floor. We know that people have issues with falling. We know that there are huge issues with frailty. So as people get older and older and older,, cardiovascular is still important. But just as important is your ability to have the strength to do your activities of daily living, to go up the stairs, to walk briskly and to avoid slips and falls becomes more and more important. Sure, everybody loses muscle mass, probably after the age of 65, but what you want to do is you want to start with a high level of muscle mass, and you want to make sure that you lose it at the slowest possible rate. That's why strength training has been added to many of the physical activity guidelines. So 20 years ago it was all cardiovascular. But over the last 20 years, people have started to add strength training to the guidelines to make sure people start with a high muscle mass and they lose that muscle mass at the slowest possible rate.

Dr Michael Joyner** ((00:20:13)) - - And what's again, interesting about this is there have been remarkable studies of strength training in nursing homes that have helped people literally get up out of the wheelchair. And these are people in their 80s and 90s. So again, strength training is essential.

Speaker Sterling** ((00:20:29)) - - Oh, absolutely. Nick, what else do you have that you'd like to talk about?

Nick Sterling MD,PhD** ((00:20:39)) - - So we've talked about exercise as a general concept. We've talked about functional capacity. What are some metrics to measure cardiovascular capacity. There's two in particular that I'm thinking about that maybe the audience may be interested in learning about VO2 Max and lactate threshold. I'm wondering how you see them. Maybe we can talk about them and maybe how they're similar or different.

Dr Michael Joyner** ((00:21:07)) - - Right. So VO2 Max. V means volume, O2, meaning oxygen, max is the maximum volume of oxygen a person can use in a minute during heavy exercise and at rest. The average person uses about 250 or maybe 300 mls of oxygen per minute.

Dr Michael Joyner** ((00:21:30)) - - That's basically, you know, the equivalent of about an 8 or 12 ounce soft drink. So not much oxygen. Now, most healthy young people can increase their oxygen consumption about ten fold. Now, if you take elite athletes, I mean elite athletes can increase it 20 fold. They can increase it 20 fold because they have some natural ability and because they've trained really, really hard. So there's a huge increase in metabolism that happens when people exercise and it's reflected in their maximal oxygen uptake as sort of the peak marker. If we thought, Nick, about a car, this would be similar to how big the engine is in the car. Do you have a sports cylinder car, six cylinder car, an eight cylinder car, or like some of the elite athletes, a 12 cylinder car? Now that's really, really interesting. And that tells us about what you can do at maximum. But we don't live our life at maximum. With very few exceptions, you know, most endurance sports are done sub maximally.

Dr Michael Joyner** ((00:22:37)) - - Now, if people are going to run a mile or maybe two miles or do something that takes 5 or 10 minutes long, all out, that would require maximal oxygen uptake. But if you're running a marathon or a half marathon, or you're out in the garden gardening. If you're just doing your activities of daily living or recreational activities, there's some maximum and sub maximum going on.

Speaker Sterling** ((00:23:01)) - - Yes, I'm very sorry, I have to interrupt. We have to go to the bottom of the hour news break, but we'll go to the break and we'll come back.

Speaker Sterling** ((00:23:10)) - - All right. This is Your Health Matters News radio 570. We're also on 106.9 FM. Will be back in a couple of minutes. Okay, we are back. And before we continue with the conversation about sub max of VO2. I want to just talk about that for one second, at my clinic we use the PNOE Services for breath analytics.

Speaker Sterling** ((00:23:48)) - - We can do resting metabolic testing. We can do VO2, technically we could do a max, but we usually do sub max.. On the other other end of this product, it's amazing, it just interprets and predicts what you would do if you had gone all out Max. So with that said, if you're interested in setting up a VO2 Max test and we've done a couple of hundred tests in my clinic since last June, call me 315-935-7488. You're going to get data that you won't get any other way. That helps me to help you stage the best intervention for taking where you're at, with all of your health data that it measures and takes you, with the help of AI,

can design a plan to get you to where you want to go with your goals. So let's continue with the sub max and Doctor Joyner.

Dr Michael Joyner** ((00:24:45)) - - Karl and Nick, we were talking about first maximal oxygen uptake and describe what that consists of, but then had shifted before the break to the idea that most of what we do, whether we're playing sports or involved in some recreational activity or something else, is sub maximal.

Dr Michael Joyner** ((00:25:01)) - - Now, we likened maximum to how big the engines were. So the question is what percentage of maximum can people sustain. What happens is that as you start to exercise harder and harder and harder, the lactic acid levels in your blood go from barely measurable, and then they start to increase kind of exponentially., normally at about 60% of maximum for an untrained, just regular person, kind of off the street. Remember the general public. But what happens in athletes? Athletes can go 70, 80, some even 90% of their max before they start to have this rise in lactic acid in their blood. So when you look at the fact that through training, your maximal oxygen uptake goes up, but also the percent of your maximum that you can use via what's called your lactate threshold, you get a huge increase in sub maximal work capacity. So, somebody who gets an increase in their maximum capacity has a higher top end, but they can use a much higher fraction of that higher top end for minutes and hours as their lactate threshold goes up.

Dr Michael Joyner** ((00:26:18)) - - Now, most of what we talk about, Nick, when we talk about maximal oxygen consumption is about how much blood your heart can pump and how the lungs get oxygen to that blood, and then how the muscle uses the oxygen. But one of the things that happens to make your lactic acid or lactate threshold higher is that when you train the little energy powerhouses in your muscle called mitochondria, that's where the action is used. The carbohydrates and fats are burned. The mitochondria increased in number and become really more efficient. So one of the things that happens when you train is in addition to making your heart and lungs stronger, you make the mitochondria in your muscle better. And it turns out the mitochondria are really critical for metabolic health. And that's one of the reasons that exercise and physical activity has such a profound effect on things like diabetes.

Nick Sterling MD,PhD** ((00:27:20)) - - Thanks Doctor Joyner, we hear a lot about, you kind of alluded to this, this modality of exercise called zone two training.

Nick Sterling MD,PhD** ((00:27:29)) - - Frequently I find that it's communicated to the public, but the rationale, the reasons why it is important are not as clearly communicated in particular.

What is different about that area? What is that area of training and what is different about that area of training than, say, medium or moderate hard intensity exercise?

Dr Michael Joyner** ((00:27:55)) - - Well, Nick, there's a there's a lot of discussion about exercise intensity and there's a number of scales used to describe exercise intensity. That's become more in the news or greater interest to the general public and the scientific community because of the recent focus on high intensity training, even for average citizens. And there's again, a lot of nomenclature schemes. But one of the things I find interesting is how they all sort of overlap. When we first started to think about aerobic exercise with the terrific book by Doctor Kenneth Cooper in the late 1960s, people talked about taking the talk tests. At that time, people were mostly out either walking fast or jogging.

Dr Michael Joyner** ((00:28:41)) - - And the question is, could you take the talk test? Could you have a conversation with the person you were jogging with without becoming completely short of breath and so forth? And really, the talk test and zone two, which is more than just light exercise, more than a brisk walk, but just kind of a mild jog. Is really what zone two is and what people have found out when they look at elite athletes. These are people sometimes training a couple of hours a day or more. Some of the runners are running 100 miles per week, if you can imagine that. And what you find is that even among elite athletes, they spend 40, 50, 60, 70% of their time doing what's called zone two training. So they're out, but they're not pushing it. And now why is that important? First of all, it stops a big psychological barrier for the average citizen. You don't have to go out and go nuts and really push, push, push, to get a training effect and to get some benefit.

Dr Michael Joyner** ((00:29:41)) - - That's the first thing. The second thing is the mitochondria respond to that sort of training. The things I just talked about in your skeletal muscle. And the third thing is over time you accumulate a lot of cardiovascular benefit as well. So I think it's kind of a threefold story here. One is, zone two training is not intimidating. It's something that most people can find a physical activity that they enjoy, that they can participate in, that they can execute at the zone two level. Zone two also improves your cardiovascular function and it's especially good for the function of your skeletal muscle. And low and behold, it's what the athletes do. What they've learned over time is critical is what they call base training. So zone two really is where we get you to to adopt a word from the athletes, base training. It's something we all participate in. I did an hour on the bike this morning in the hotel, and basically I was probably in zone two for 45 of the 50 minutes or 60 minutes.

Speaker Sterling** ((00:30:46)) - - That's great.

Nick Sterling MD,PhD** ((00:30:47)) - - Now, if I recall, you have said in past interviews, that you'll use what's called perceived exertion to gauge whether you're in zone two, a lot of athletes these days are using heart rate. Could you talk a little bit about different ways to approximate what would be the upper limit of zone two. You know, you've had incredible athletic performance, particularly in your marathon times in the past. Is there an advantage to using one over the other or how should people think about this?

Dr Michael Joyner** ((00:31:23)) - - So I think, Nick, first of all, you always have to recognize, that was a long time ago. And as I told your dad, the older I get, the better I was. So that's the first thing everybody, you need to recognize. But the other interesting thing is, that there are all sorts of monitors.

Dr Michael Joyner** ((00:31:38)) - - I started participating in endurance activity in the 1970s, and I've done it almost daily for the last, you know, I think I started when I was 16. I'm 65 now, so for 49 years. In those days if you wanted to take your heart rate, you had to take your pulse. There weren't the sort of metrics and monitors we had really, except watches and those were very primitive. So you had to learn, to work on what's called perceived exertion, which is a scale that ranges from 6 to 20. You can look it up and see the metrics and the descriptors that go with number six, number seven, number eight, all the way up to 20. And it was thought at one time that six equal the heart rate is 60. And 20 equal the heart rate at 215 of heart rate of 150, and so forth. That turns out to not be so true. But this scale does give you all sorts of descriptive gradations.

Dr Michael Joyner** ((00:32:35)) - - And, you know, zone two would be about 11 or 12, maybe. Somewhere in there and it's a great way to train and you get next to the philosophy of monitoring. Some people want all the technology. They can get all the feedback, they can get all the metrics they want. Other people like me are comfortable,, thinking, you know, hey, I'll just use perceived exertion. I have enough technology in my life, and I have enough metrics and enough feedback. And when I go exercise, my goal is to, maybe get a break from that. So I think you have everybody in between, every imaginable flavor in between. So I think there's a lot of ways to get, find an area that's above light but below hard exercise. And that's where zone two is and really make a lot of progress doing exercise at that level.

Speaker Sterling** ((00:33:30)) - - I love it.

Speaker Sterling** ((00:33:30)) - - Gentlemen, we're going to head out for a break in a few seconds, and then we'll come back for the last quarter to continue this awesome conversation.

Speaker Sterling** ((00:33:39)) - - For those who are listening, who are curious about the Play on Relief pain spray, we have it. It's in my clinic. There's no pharma. There are no drugs. We have it in my clinic. You can buy bottles from me. Go to playonrelief.co . We'll talk more about it when we come back in a couple of minutes. Thanks for listening. Okay, we're back for the last quarter hour here. This has been a blast. My brain is spinning here with lots of questions. We could go on for months with shows every Sunday with these two gentlemen. After one more thing I want to say about the Play on Relief. It is all organic. There are no chemicals. This is a spray where there's no pharma. There's no drugs. All natural ingredients. They cannot hurt you. It'll help you. It's been a very, very highly effective product that we now have in our clinic. Or you can go to playonrelief.com just how it sounds.

Speaker Sterling** ((00:34:51)) - - Check it out. Enter STERLING15 at checkout. You get 15% off. We're back to our guest, Doctor Michael Joyner from the Mayo Clinic and Doctor Nick Sterling. Nick, let's move forward with another question.

Nick Sterling MD,PhD** ((00:35:10)) - - All right, Thank you. Doctor Joyner, one thing that I get asked on occasion, by patients and people in my own life have raised concerns about, is the idea that doing too much exercise is potentially harmful. Obviously, you need to make sure that you're healthy enough for exercise and various different kinds of exercise with your doctor. Right. But, you always hear things like, you're going to destroy your knees with running or someone knows someone who ran marathons and something bad happened to that person. These usually are one of a kind cases. I think the data are very clear that the further you go up in your exercise capacity, generally the better. However, I'd really love to get your thoughts on the validity of of that concern.

Nick Sterling MD,PhD** ((00:36:00)) - - Is there what we would call a J shaped curve meaning for the audience, that as you go from a low fitness to a pretty good level of fitness, as you do a little bit of exercise to even more exercise, that your overall risk of death or disease goes down. But then as you accumulate more and more exercise and do it more and more volume per week. That your risk actually starts to pick up a bit. So maybe you could comment on that for us.

Dr Michael Joyner** ((00:36:34)) - - First of all, the studies tend to show people who are physically active have much lower rates of osteoarthritis and that includes running. So I think that can be dispelled for a variety of reasons. And in fact, it may be that, physical inactivity is a bigger risk factor for us to arthritis in physical activity. Now, the J curve question is one of my favorite questions.

Dr Michael Joyner** ((00:36:58)) - - And what you find is you're exactly right as people go from inactive to progressively more active for half an hour of exercise a day. An hour of exercise a day or a couple of hours exercise. Today you see a reduction in their all cause mortality reduction, cardiovascular disease and reduction in some cancers. But that benefit levels off probably after about an hour a day. Now the question is, does it start to rise when you get to two, three, four hours a day? The people that are doing ultramarathons and so forth, and there's occasional, you know, things you see in the media about some disaster and so on and so forth. But when you look at all of the data, there's no evidence for a J shaped curve. And the best evidence comes from Sweden, where they looked at 50,000 cross-country skiers who had finished a 90 kilometer. That's a 55 miles cross-country ski race called the Vasa Lopez. And they found that the people who had finished more races and finished the races faster over time had a large reduction in their all cause mortality, about 50%.

Dr Michael Joyner** ((00:38:08)) - - And they didn't see any uptick as people had done more and more races or done the races faster. The assumption being that those people would have trained the most and trained the hardest. Pretty fair assumptions. Now, they did see a slight increase in the risk of atrial fibrillation, and that's probably known, but it's not life threatening. And there are ways to treat that. So to the extent that there's data out there, the idea that there's too much exercise, a risk of too much exercise is, is just not accurate. There's no data for it. And it's been refuted by multiple studies. And also Nick, I think this is the important thing, it distracts from the fact that that most people are not at anything close to getting these huge amounts of exercise and that you don't want to do anything that dissuades people or send any messages that dissuade people from getting out and getting that 30 or 45 minutes of exercise per day. So the bigger issue is the fact that we have so many inactive people.

Dr Michael Joyner** ((00:39:06)) - - And then finally, and I think, Nick, you probably and Karl, you probably know some too, people that are exercising 2 or 3 hours a day are doing it for reasons other than their health. They want to do some incredible goal. They want to finish an ultramarathon or whatever. But but they're not doing it strictly for their health. They're doing it for other reasons as well.

Nick Sterling MD,PhD** ((00:39:28)) - - I 100% agree. I love the idea that, you know, the bigger problem is that for many people, given time constraints of life, really just starting into exercise and achieving a moderate amount of exercise volume on a weekly basis, that is really the much larger problem to tackle. Why do you think it is that we have this increase in a-fib at the extreme end? Do you think it's just that these athletes are feeling this more, or do you think they're just more in tune with their bodies.

Dr Michael Joyner** ((00:40:01)) - - It's unclear whether it's just the fact that they notice it or the fact that because a lot of a-fib kind of starts silently, or the fact that they're actually an increased risk.

Dr Michael Joyner** ((00:40:10)) - - You could argue either case. You can also argue that that the part of your heart where a-fib occurs is called your left atria and you can argue that just like the rest of your heart, the blood vessels and the pumping chambers gets a little bit bigger. With exercise training, the left atria can get enlarged in people that that chronically exercise and exercise can be associated with low resting heart rates, and low resting heart rates sometimes can be associated under some conditions with a risk for atrial fibrillation. So there's a lot of different arguments here. But again hard to pin that down. And again we've got to remember that people who are getting the the amounts of exercise we're talking about are very unusual compared to the people who are doing nothing. And Nick, I think it's also important for people to realize that benefits of exercise start to be seen with as little as ten minutes per day, ten minutes per day.

Speaker Sterling** ((00:41:10)) - - Yeah, that's that's really something.

Speaker Sterling** ((00:41:13)) - - Nick, let's go on with another question. We have some time.

Nick Sterling MD,PhD** ((00:41:17)) - - So so we're talking about the heart right now. So I want to stay on that topic. You talked in some previous interviews about something that I just find mind blowing, which is, exercise has some limited effects on markers like cholesterol. We know that it's cardioprotective. It brings down risk of heart attack.

Nick Sterling MD,PhD** ((00:41:43)) - - So we know that exercise brings down heart attack risk, but you talked about some anatomical data from the heart, the blood vessels that go and feed into the heart, called the coronary arteries. Can you tell us more about that data there?

Dr Michael Joyner** ((00:42:02)) - - Yeah. So there's a couple of things. One is if you look at how much exercise reduces your risk of heart disease, and then you add up the effects on cholesterol, blood pressure, diabetes. The total risk reduction is greater than you would predict based on the changes in those traditional risk factors.

Dr Michael Joyner** ((00:42:19)) - - So why do you get this extra protection? One reason is that the blood vessels in the heart can become bigger and they can become wider and they can become harder to clot off or have a blockage in. Even if you do have a blockage of a certain size,

if the total diameter of the vessel is greater, its impact on blood flow to the heart is less. There are all sorts of data showing that there's data from animal models that have been exercise trained. There are data from humans who've been studied. One group was a trained group. The other group was untrained. Then there's a classic study in a man named Clarence DeMar, who won the Boston Marathon seven times and was one of the first really great runners in the United States. DeMar was born in 1890 and died in 1960, of cancer, but he had continued to run his whole life and was literally the first Masters runner on some level. They did an autopsy on him at death and found out that he had some blockage in his arteries, but his arteries were about twice the size as normal.

Dr Michael Joyner** ((00:43:23)) - - These are called the coronary arteries that feed the heart. Yeah. So that's really an interesting story about DeMar. And some of the first evidence, that the blood vessels get bigger, wider and more capable of high flows as a result of exercise training.

Speaker Sterling** ((00:43:40)) - - That's amazing. Doctor Joyner, I want to ask the final question. Do you have any takeaway message for our listeners regarding longevity?

Dr Michael Joyner** ((00:44:01)) - - Yeah. Find a form of physical activity that you enjoy and try to do it on a daily basis.

Speaker Sterling** ((00:44:09)) - - You know I love that.

Dr Michael Joyner** ((00:44:12)) - - Never skip two days in a row.

Speaker Sterling** ((00:44:17)) - - I love that so much, Doctor. It's one of the things, if you're listening and you know me, you know, I preach this. Find an exercise you like that you actually will do, and then go do it.

Speaker Sterling** ((00:44:28)) - - We all need to start somewhere with five minutes. Ten minutes. Whatever. We work our way up. We're going to feel better psychologically. Emotionally. We'll probably feel better. We'll probably get more energy from it. We'll probably sleep better. We're probably going to live longer. Doctor Joyner, thank you so much. It's been an absolute honor to have you with me. Thank you.

Dr Michael Joyner** ((00:44:50)) - - Great pleasure to talk to you, Karl. Also nice to meet Nick. Thank you so much for having me.

Speaker Sterling** ((00:44:55)) - - Nick, I'm honored to have you on. And thank you both, both of you, for joining me. You're listening to News Radio 570, also on 106.9FM. My name is Karl Sterling. This is Your Health Matters. Join me next week to unlock funding for your health services. Have a fantastic week everybody. Thanks for listening.

Speaker WSYR** ((00:45:20)) - - The preceding was a paid program by Karl Sterling. The content of the show is that of Karl Sterling and does not represent the views of the station or iHeartMedia.

Speaker WSYR** ((00:45:27)) - - Some of the information contained to this program has not been approved by the FDA, nor is it intended to diagnose, prevent, treat, or cure any diseases. Information has been for general information only, and before considering anything discussed, you should contact your doctor or primary care physician.