

The Effects of Being “Deskbound”

A Special Interview with Kelly Starrett

By Dr. Joseph Mercola

JM: Dr. Joseph Mercola

KS: Kelly Starrett

JM: You probably know I read between 100 and 150 books a year. Would you like to know the best book I’ve read this year so far? I’ll bet you would. I want to introduce you to the author in a moment. His name happens to be Kelly Starrett. He’s a PhD physical therapist, and his most recent book is *Deskbound* and it really was just enormously eye-opening for me and really helps address some of my ongoing movement issues.

It’s the book I think everyone needs to pick up, unless you have a day job or you’re moving around a lot. But even then, it would still benefit – Like, if you’re cutting grass or you’re working all day outside, probably not as important. But if you have a desk job almost like everyone watching this, this is a book you need to get. Welcome and thank you for joining us today, Kelly.

KS: Thank you so much. It’s such a pleasure.

JM: Alright. Well, you just did a magnificent job on this. This is not your first book. I think your first book, which I also read, was *Supple Leopard*. But I enjoyed this one much more, because it addresses such a pernicious challenge that almost everyone watching this has. And that is because we are indoors and bound to the desk, as the title of your book implies.

We’re just having a massive challenge to our structure – I’ve interviewed a lot of people and I’ve read a lot of books on this, but I’ve just never seen any better text to address it in simple strategies that can really radically transform your health. Congratulations on doing it. Why don’t you share with us how you put it together and what motivated you to write this?

KS: What’s interesting is that if you – Take a young man; he’s like 13 or 14. You’re like, what do you want to do with your life? The last thing that that young man is going to say is I want to lecture adults about posture.

KS: The worst life ambition. But it turns out, as a physical therapist and as a strength coach, I always came back around. We have this concept called the biocycle social model, and that means how do we integrate someone’s injuries or wellbeing with their environment, with their sense of self? How do you create sort of a complete ecosystem around that integrates all of these different pieces? It turns out that organizing your spine and putting your body in a good position really lies at the foundation of all the conversations around human performance and a lot of the things around injury resolution and injury prevention.

When we came to this need, we were seeing that, as I was addressing football teams and soldiers, we were seeing the same sequel of problems, a lot of forward head or neck, stiff upper back, and

inability to put my arms over my head, and a lot of things that smelled or looked like a lower back dysfunction and short hips and over striding. What we realized, when we started having sort of taking a 30,000-foot view, we looked at the fact that most of us were engaged in an activity that went against physiology. I'm not going to try to say or be romantic about cavemen and cavewomen. That's not what we're saying. But if we take this big view, this is what I like to do. What are we supposed to do? How are we supposed to move?

Static non-moving shapes are difficult for the human being to withstand, given lots and lots of time. [Inaudible 03:36] everyone what's happening today because of the changing environment. We're sitting a lot more. We have a lot more technology. We're consuming a lot more on the TV. We travel more. We commute more. We see as if we're making this very basic adaptation error and that is we're not moving enough. What's interesting about the sitting versus standing conversation is it's really the wrong conversation.

The right conversation is moving versus not moving. When we find that we look at sedentariness as defined as anytime I drop below kind of burning one and a half metabolic equivalence of energy, and that's really the clinical definition of sedentary lifestyle. Well, turns out that sitting, when we sit, we fall below that one and a half metabolic threshold. When we stand up, [inaudible 4:27-4:28] we shoot right up the scale of the up-regulation in the whole physical being. That really ends up being the most important conversations, bringing the consciousness to the fact that, as modern humans, we may not be able to move the way we were designed.

JM: Thank you for sharing that. In your book, you referenced Dr. James Levine, who is a researcher in the Mayo Clinic, who really was a major catalyst for helping us understand the consciousness about the dangers of sitting. I think you even have a quote in your book about the dangers where the viewer's life expectancy decreases – Every hour of television watch decreases life expectancy by 21 minutes, and every cigarette smoked reduces life expectancy by 11 minutes.

Dr. Levine claims that for every hour we sit, we lose two hours of life, which is a profound epiphany to bring that to consciousness, and you helped share that even more. In my case, I was sitting for 15 years and developed severe low back pain. I tried so many different strategies, even some of your strategies in *Supple Leopard*. And none of them worked until I stopped sitting down. But as you say in your book, you just can't replace standing for sitting or sitting for standing. Address those issues because you're going to go on a roll, I know.

KS: In full disclosure, Dr. James Levine is one of our board members, and his work is so seminal to us beginning to have a more enlightened conversation. In fact, sometimes people take him to task for being a little hyperbolic about sitting is the new smoking. If you sit, your head is going to fall off and your spine will explode. But it's important to understand is that he had to raise this consciousness because this is such a large epidemic and people don't realize that his research is around obesity. He was finding that we can't eat our way out of this, we couldn't exercise our way out of this. We had to change this underlying environmental load.

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What's important about framing the conversation with his work is that we want to be a little bit more nuanced between sitting is good, or sitting is bad and standing is good. What we can start with for people saying, "Hey, look. Sitting is fine in doses. Sit down, it feels great. Sit on the floor." We were designed to be taking our joints to these full ranges of motion, but hey, when we sit, let's put sitting into skill. Let's become a little bit more skilled when we sit.

Number two, let's go ahead and just clean up our sitting hygiene. That means that – One of the first things we ask people to do is say, "Hey look, look at your environmental load, look at your sitting time, and divide your life into optional sitting and non-optional sitting."

Just by making those choices, because what we don't realize is that human beings are creatures of habit. We put things on autopilot so that we freeze up our consciousness and freeze up our ability to function more highly in the day. I mean, you don't have to think about how you drive to work. It's on this back program. And one of the things that happens is that because the environment is set up in the way that it is – there are chairs everywhere I go into a meeting. All the cues and habits of decades of work are that I sit down, or we're engaged – I engage in this behavior, this pernicious behavior, unconsciously.

When we find that people begin to just having to stand up on the bus or I'll take this call and text standing, then suddenly you can clean up a lot of the junk food diet sitting that you're doing because – You may have to sit in a meeting or sit in your car, those things are non-optional. But the rest of it, you can really get a big upregulation and function just by ditching that optional sitting.

JM: Terrific. People may not realize that it looks like you're sitting on a couch behind you, but it's actually an optical illusion. You are sitting on the floor. Why don't you expand on that? Because that's some of the strategies that you have in the book to give this whole variety of – because this is all about movement. We sit 13 hours a day and the challenge is to replace sitting with, not standing, but movement.

KS: That's right. If anyone has ever had a job or they've had to stand for long periods of time statically, it is brutal. What I recommend is go to your local yoga class and ask for a good dose of tadasana, standing posture, standing pose, standing meditation, and you'll last two or three minutes before you start to burn and fatigue, and your feet are cramping. Yes, that's true. It takes skill in standing, but you're absolutely right. How do we create an environment that reflects the physiology instead of making the physiology of the body conform to the environment?

One of the things that we're always engaged in when we address or teach human beings about strength and conditioning or about behaviors or patterns is we try to make what we call blocked behaviors, blocked patterns, where I don't have to make a decision; the decision is made for me. For example, when I come back after lunch, and there's no chair. Instead I go up to my standing moving station at my desk, then I'm automatically going to do the right thing. I don't have to make a decision about raising my desk or getting out of the chair.

We see the same thing with kids. When we jump and land, we make sure that our feet are straight because that automatically protects us from knee injuries, foot injuries. When kids are

too weak to land like that, we force them to jump in the air with their feet together. That's a blocked behavior pattern.

We want to do the same thing with our environment, and one of the nice pieces about creating a movement-rich environment is that you automatically get these contextual signals and cues that say "I need to sit" or "I need to work." so I'm sitting at a table cross-legged. What that does is that that starts to give me more movement options. Now I'm taking my hips to a more full-range of motion, and it's a break from the standing that I was doing earlier. What's interesting is that as soon as we pan back again, always take this 30,000-foot view, we start to be able to plug in a lot of very interesting and seemingly desperate research.

You know – I know you've talked about this, that there was a really excellent, well-validated study that said that your ability to get up from off the ground with very few points of contact was an interesting predictor of early mortality. If you have to get up the ground and use all of your hands and knees and wobble and grab something, then chances are you may be weak or you may have poor range of motion. Those things are good indicators that correlate for the movement richness of your environment in your day to day. Sitting on the ground is something that we're supposed to do. We're supposed to be able to sit cross legged. We're supposed to be able to work on the ground. You know I can switch to a squat.

What I want people to recognize is that you don't have to set up an environment that makes you look like a stranger or weirdo. If the environment is set up in a way, then a lot of your working hours can actually be very productive in terms of improving your health and improving your wellbeing so that when you get out of the work environment, you're better set up to take advantage of that non-work activity. That your hips are open, you've been rolling on a ball, or you've been standing, your energy's ready. And when it's time to go be a human and not be a working human, you're better off.

JM: Yes, indeed. I just want to share some personal experiences I have by reading your book. I happen to have a bunion on my left great toe. I've had it for at least a dozen years, maybe longer, and it's gotten to the point where it's actually become asymptomatic, and of course I was never doing surgery for it. But I was always curious as to what caused it. I knew it was a structural issue. I thought it might have been a combination with weak muscles or tight muscles. I just never was smart enough to figure it out and I never knew why until I read your book.

The reason I mention this now is because you talked about external hip rotation and it's so crucial. It's really interesting too that when you externally rotate your hips, you have to have a better posture. Your chin goes back, your shoulders go up. It's just the hips and you can stand up now and try it. I never knew that. It's just so amazing. Now as a result of that, I realize that I had — I mean, you talked about all these sitting positions, like getting into the lotus and stuff, which is one of my goals.

I'm pretty far from it now, but I'm a lot closer than I was when I first started. I've got really pretty much significant more range of motion. Maybe a lot of people watching this have bunions, and I would guess – your guess would be more accurate – that probably the majority people have

limited external hip rotation movement. So why don't we talk about that because that's such an issue? There is a solution and you don't have to get surgery for your bunion.

KS: I think what's interesting is that often we fail to consider that the human being is so robust, that we can put thousands and thousands of duty cycles into something. If you're doing the right thing, if you're just even walking around for a little bit, you're probably getting 5,000 to 10,000 steps a day. We like people to be active and that 10,000 isn't a miracle number, but it's a nice baseline to say "hey, there's enough non-exercise activity in my day that I'm meeting some threshold."

Well, let's just say you take 10,000 steps. Okay. That's great. Now you're moving. Now you're not eating junk food. But now let's talk about eating better and more nutritious things. That means that we can have a conversation about skill. And if you're walking and your feet are turned out like ducks, what you're realizing is that you're taking 10,000 steps on the system, 5,000 loads a day, where the ankle isn't working like the ankle, the foot isn't working like the foot. You're asking those joints to work a little bit off-axis, the hinge to be a little unhinged.

Subsequently, your body will put up with that, but we have to remember that we have to come out unharmed in our movement practices and our skill. And we are designed to be 110 years old. I think maybe it was you who said "Hey, we're going to outlive our gonads," but the chances are the mechanics are robust enough to be able to withstand that. When we get our feet straighter, for example, just consciously "Hey, let's get the foot straight," then suddenly I can walk through the foot instead of walking around the foot and causing that big toe to take two to three times body weight.

I mean it's a large insidious load, 10,000 steps a day, 70,000 steps a week, a quarter million steps in a month, and in a few months you've taken a million steps. I don't think we're realizing sometimes that because it's not a problem today, it may not be a problem in the future. What we're asking people to do is take the leap with us. We come up these principles, these derived principles, from our well-established movement practices, principles like yoga, and Joseph Pilates and on his work, all the powerlifting and the weightlifting and running.

All of these movement practices have told us what the best expression of the human physiology is. And we need to be able to take those movement practices and scale them backwards. That we know that if you walk like a duck, you're not going to be able to run very fast like a duck. The fastest running is with your feet straight. Just watch the Olympics. It allows us to make a conversation about saying, "Hey, look. What skills do we have? What positions do we have?" Then, when we clean up some ideas of the motor control, the technique, the habit – One of the things we ask people is hey, just try to remind yourselves, look down when you're in the grocery store line and make your feet straight. Pretty soon, you've corrected that and you'll look down one day and your feet will be straight.

And certainly you can do that when you're walking, and certainly you can remind your children. But now, there's another conversation and that conversation is probably imperfect because we live modern lives. That means that we're just not sitting around the campfire and squatting and climbing and expressing full-range of motion in our body.

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It's useful to have what we call as a mobility practice where we spend 10 minutes a day just like we're brushing our teeth, taking care of our tissues, taking care of our muscular stiffness, taking care of our joints. And part of that happens in a physical practice, that's a component to a physical practice. If you're a walker, then we want you also to spend, you know, 10 minutes maybe today you're going to work on your feet, and tomorrow you'll work on your hips.

What we've tried to do in the back of the book is give people some very simple templates to begin a conversation about some simple myofascial pain, simple structural issues so that it becomes part of their lexicon. This is not some domain of an elite physical therapist or full-profit medicine. This is what human beings should be able to do; we should be able to take care of ourselves. What you're saying is "Hey, sitting lotus isn't just an act of will. Certainly if I move more during the day that will help, but there are some things that I can do that will really improve my mechanics. Ultimately, what we're talking about is about function."

JM: Yes, indeed. I'd like to share my personal experience with this. I was indeed walking like a duck, and I thought it felt good. It felt normal. I was doing this for close to five decades. I did the calculations once and I've walked about a quarter of a billion steps the wrong way. No wonder I got a bunion. But I do now – I'm walking, I stopped running about seven to eight years ago, and now I just walk about six miles a day, at least 10,000, sometimes 20,000 steps.

I walk on the beach which has a lot of other benefits, you get ultraviolet radiation, you get ionized and you get grounded. But other benefits that your heart—unless you are familiar with your work that you get—is that you can see your foot prints. You've got a little sort of an imprint of where you walked, if the sand is right, and you can see and confirm that you're walking the right way.

In my personal experience, actually the foot that had the bunion was easier to correct and the other one was harder. I have to consciously do that, but after a while, a few weeks or a month or two, then it becomes ingrained. It just happened, and you don't have to worry about it. You're just walking the right way. But it's worth the effort. It totally is. I can't thank you enough for the encouragement. That's just one example of many in the book. That's why I think that everyone needs to pick this up because there's something in there that you have.

What I want to talk about next, and to me, as I'm getting older, this is one of the most important points for so many people, is we age. We want to age gracefully, we want to age with full movement and motion and pain-free, and the prescriptions or the recommendations you offer in your book will help facilitate that. You just expound on that very articulately, let's hear your perspective on it.

KS: One of the nice things that we're finding is that people are becoming a little bit more conscious of their diet. They're realizing that they need to drink some water and absorb the water they're drinking. They're getting more direct sunlight. They're trying to destress. I really feel like people are generally trying to do the right thing, that there's an emerging tide change about reconciling that the low side of control of my health and wellness starts with me and it starts with

daily practice in small non-heroic events, right? Do you take a probiotic or do you eat a probiotic food? Yes or no? It's very simple.

One of the greatest elite performance pieces that we tell people is like, "Did you eat six to eight fixes of vegetables today? Yes or no?" It's pretty simple. And so what we see is that people are striving in this direction and that sets our condition where we start to see healthier tissues, tissues that are hydrated, tissues that are more resilient, right? People are getting their omega-3s and collagen, and we're starting to eat the whole animal again, and put our money where our mouth is on eggs.

But behind that is that the body is a neurobiological mechanical system. One of the first things that we always talk about is a lot of the stiffness or myofascial problems that we have, or pain syndromes that we have, are simple because it may not be pathological, it may not be catastrophic. I didn't get hit by a car and sprain my ankle and I don't have elbow cancer, so then what is going on? And what's going on is that we're probably moving inefficiently, or moving incompletely.

When we start to improve the ecosystem, one of the ways to do that is by sitting up straight, by sitting tall. If you're listening to this sitting down, our best cue that we have, probably our the most efficient elite cue that we can give to any human being, is pretend that you're looking over a fence. As you sit there, you're going to look up over a fence, notice how much taller you got standing, and your head realigns.

So instead of saying "put your ribcage down," how do we get people into these better positions and mechanics? Because when you function more efficiently, the body has to work less hard at buffering your compensation. And so if you turn your feet out, then one of the things that happens, for example, when you walk is that your calves aren't really working completely like calves. Some of them are really short, some of them are a lot long, and some of the musculature that supports your arch is working overtime.

What we have is a body that's really, really good at supporting ourselves and maintaining these compensations because it's really useful for us to make sure that we can always walk, we can always feed ourselves, and we can always pick something up.

But that means that this movement variability we confuse for good expression of the body mechanics. And when we ask, when we tell people that you can begin to have a conversation about improving your tissue efficiency and your shapes and adjust your myofascial pain, one of the first things that we tell people is "look, any tissue in your body should be painless to moderate compression." Most people don't know that. If you take a foam roller or some kind of ball and you lay it on your leg, your glutes, your back, or your shoulders and it's painful to compression? You found stiffness in the body.

You have found down-regulated tissues, tissues that aren't behaving like normal tissues. And you don't have to be much more sophisticated than that. Then to say, "Hey, I found the problem. Let me begin to address that problem." Why? Because I found a tissue or an area that's a little bit painful to compression. What we have people do is we have them begin by saying, "Hey, look,

you can do this at home. You can get a wine bottle. You can get a foam roller. You can get a rolling pin. Lay some part of your body on it and when you find something painful, stop. Contract into the implement you're lying on for about five seconds and then release. Continue that contract and relax cycle until you feel those tissues start to make change."

That is the entrée into beginning a conversation about improving your whole body. And you know, the problem with your calves, for example, is that they don't really bark at you very often until your Achilles' really hurts or until you get a strain or a problem in the knee. By then, we're so many duty cycles in to the movement problem that what we're doing is that we're solving symptoms of maybe a tissue that was just inefficient or over stiff or had become — because we ran that marathon and then sat back down at our desk, or we travelled and we didn't move very much, tissues became stiff because of the "use it or lose it" phenomenon.

By getting people to begin this conversation about even addressing local pain, then we can start a conversation applying that principle to the rest of the body. What's great now is that we have this beautiful neurologic measurement system built in. It's called breathing. How do I know that I'm going too deep if I address my pain? If I can't take a full breath in and a full breath out, I'm going too deep. And my brain will tell me through my breathing if I'm giving too much input. So if you stop breathing while you're rolling, then you're working too deep. That's a miraculous way of keeping ourselves from doing too much harm to ourselves and integrating the brain back in.

I think it was B.K.S. Iyengar who a long time ago said "the breath is king of the brain and the nerves are the king of the breath." So once we even just take that out of context and apply it to the fact that when I roll on my quads and I stop breathing, wait I'm going too deep.

JM: Great. And you have a whole variety of different workout recommendations – I think it's 14 or so – that you put together. You advise people to do one or – I forget what the recommendation is but you can expound on it. But this brings you through the whole range of mobility practices that you've really developed. And I think that really is a good word to define what you're doing because this mobility work, which you're known for. Actually, your blog is MobilityWOD?

KS: That's right. Workout of the Day. With the idea that all of us can really stand to do a little bit of soft tissue work. One of the things that we try to help people conceptualize is we don't want to add another thing to your life because what's happening right now, as you know, is that people get a little spun out on the details. If I take this turmeric and I eat this cinnamon and do these eight air squats, it's like a bunch of hacks that people are trying to memorize.

One of the things that's amazing about doing soft tissue work is that it has a big parasympathetic response on the body. Basically, it gets us out of our sympathetic fight or flight, go go go, and tells us into recovery, down-regulation relaxing time.

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If you have ever gotten a massage, how did you feel when you got up off of the massage table? You felt very relaxed, your voice was deeper. You didn't want to fight and run a marathon; you wanted to just relax. Well we can realize that if we can get people to roll or do their soft tissue

maintenance before they go to bed, 10 or 15 minutes before they go to bed -- that's not a very productive time for people, they're either texting or reading. But you can do more than one thing at one time.

Get 10 or 15 minutes of soft tissue before you go to bed, and it will improve your sleep quality. It will help you to turn that monkey brain off. And now, we've developed practice. I get something done that's important. I've discovered a conversation with my body and I [inaudible 30:45-30:47] physical practice.

JM: Yes, indeed. And I'm wondering if you have any thoughts on -- You mentioned massage and it's a great thing to get. There's hundreds of thousands of the most excellent massage therapists out there. But unfortunately, I think a large percentage of the population just aren't able to afford that luxury. I'm wondering if you -- Ideally, it would be the best to do both, but how close does the mobility practice that you advised in your book come close to generating the benefits of a skilled massage therapist?

KS: Well, I think what we can do is say any time you're working one on one with a trained professional person, musician, teacher, I mean that is really the pinnacle of human interaction. That's great. But if you can have 90 percent of effectiveness by working yourself, that's far, far more effective. And it's important to recognize that if you got a massage -- I hear people say "I get a massage every two weeks," and what happens on the other 13 days? Well I eat salads on Sunday. I'm good to go. You should see how much salad I eat on Sunday.

We'd rather have much smaller inputs consistently and we find that that really starts to set up a positive feedback loop. One of the things that's a little bit overwhelming for people because we're not sort of given agency about controlling our bodies or thinking about our bodies, we just wait until it breaks and then we go see our physician and we're like "help me out with this." It's that you're responsible for the whole machine, but you don't have to fix the whole machine every single day.

Just walk on one area, because tomorrow you'll get the rest of it. And then the next day you'll work on something else. If you did 10 minutes a day, that's 70 minutes a week. I mean that's 280 minutes in a month. It starts to aggregate into an astounding amount of time where you work on your chest or you worked on your forearms and the bottom of your feet, which you've never talked to in the history of the world. You rolled on those and they improved and they became more supple.

I think what we'd much rather have people do is prioritize the non-exercise activity, like walking, the basic, sleep and a mobility practice, then add on top difficult training, add on top professional massage or rolfing, or anything else that you want to keep the body going. But we have to democratize these practices and we have to be able to give people solutions that scale, because I'm not going to bring my daughters to a massage therapist. That's prohibitively expensive. But when we're hanging out in the night, rolling our calves out, because that's what our family does, that's a really sustainable idea.

JM: Terrific. Let's shift back to movement a bit because I believe in your book you had a really interesting concept, which was how you're moving around, which is good, because you can't stay in the same position.

In attention deficit disorder (ADD), which is pervasive, the children in this country are being – I mean I can't remember the stats off hand but it's a large percentage – it's as high as 10 percent, are on medication for this disorder. It's a non-disorder because it's just a collection of symptoms that aren't affective of all the things, which is primarily lack of movement. Sitting down, forcing kids to sit down is one of the most incomprehensively stupid recommendations you were given. They are not designed to sit down for eight hours.

But then you give them bad food, too, on top of that, and you got this collection of symptoms that requires medication. But I think you are in the process of changing your local community to get them out of the sitting desk. It's a very inspiring story, and I'm wondering if you could share the details of that because every community needs some type of effort like this to help rescue our kids.

KS: Absolutely. If we take this idea that we have to take our best principles of strength conditioning, best practice of humans and apply it across all strata of human function or human experience. That means what's good for the goose is good for the gander, and it's good for the ducklings.

In this situation, what you're referring to is the fact that last year was the first full year where our daughters were at the first all-standing moving school in the world. We got rid of every desk and every desk now is a standing desk that's appropriately adjusted for every child so the environment fits the child, and it has a fidget bar on the bottom of the bar that swings back and forth so that kids can be in constant motion.

What's interesting, once again, is that all of these systems and all of these thinking, it accommodates. It's mutually accommodating. What we know is that there's a large genetic drive and genetic component to movement. Some people have a very large movement drive. I can guarantee you that you have a large genetic movement drive. You've been fidgeting your whole life.

What we think is we've probably been medicating some of our best most driving movers because they moved and fidgeted and got into trouble. In fact, there's a wonderful book called *Raising Cain* which really looks at the educational divides between boys and girls. Right now, boys are getting crushed in every metric that's important on achievement from grad school, to high school graduation, to becoming professionals.

What we think is one of the underlying factors of that is that boys have a larger genetic drive to move than girls. Not that girls don't need to move too, but then the boys get in trouble, developing negative association with school and the cycle starts to enforce itself. What we realized was that childhood obesity is unchecked in America. Right now, for the first time in the history of our planet and certainly our nation, there are more obese Americans than non-obese Americans.

What we're seeing is that even diabetes is up 400 percent in the last 10 years. We're seeing a whole kind of constellation of issues that come back to this one drive, which is we're not moving enough. We're not being human beings. We're morphing or using the machine wrong. We're keeping the car stuck in first gear and running it down the freeway.

What's been interesting about our experience is that in that school, we have 450 kids standing and moving. Remember that they could sit on the ground, they could move, and all the metrics that are coming out of chiefly the researcher named Dr. Mark Benden out of Texas A&M University has seen achievement going up, has seen attention going up, has seen decreases in body mass index across kid populations. I mean, anything that's sort of important to you as a parent. Certainly if you're thinking that, "hey, these children are our work force, our culture, we have to take care of this." A standing, non-sitting intervention is a no-brainer.

To date, we've partnered with some amazing corporations, amazing companies like DonorsChoose. We have about 30,000 kids standing as a function of our very early initiative called Standup Kids. I just want to spend a second saying that my wife is a brilliant CEO-Attorney, and this driving the agency around this has been amazing. We're partnering with University of California Berkeley, we're partnering with our local county public health department to try to get more research. But what we found is that if people know a student, you can probably have a conversation with that classroom. This classroom is really the functional unit of change.

What's interesting for me – because I worked in so many professional sports, at the Olympic level, and every branch of the elite military – is that when I talk to the high level coaches, they say, "Oh yeah, the problem for us is that our kids from college are all broken." They're just carrying this dysfunction in and the best athletes are the ones who can buffer their dysfunction the longest. Then you go to college and you say, "Well you know, how's it going?" and they're like, "It's great except that 22 out of our 24 All-Americans had knee pain with squatting. And all these kids are broken."

Then you go on to high school and the high school coaches say, "These kids from middle school, man, they can't even touch their toes or run a mile." So at some point, we have to start the intervention somewhere. And what we've realized is that what we've probably been doing is passing the buck along, in terms of orthopedic dysfunction compensation for, literally, decades until it becomes a problem. Our experience with this standing school intervention is that it's been a miraculous change.

JM: I want to thank you for all your work in that area. I have a few questions. One is – I believe that's in some place in California where you've implemented this, right?

KS: It's our daughter's school. It's in Vallecito, right here in San Rafael California. A public school.

JM: Okay. Terrific. And then you've developed this template, I guess, that can actually be replicated. I'm wondering if you could describe more about that, because this is really something

that needs to spread like wildfire across the country. If we have any hope of rescuing our kids for the future to prevent this.

[----- 40:00 -----]

Because an ounce of prevention is worth the pound of cure, that's tried and true. We know that. Can you discuss your challenges and your process and by sharing that, hopefully inspire others in their local community to start something like you did in your local area.

KS: Absolutely. You know James Levine came out and was part of a broadcast around this intervention because our daughter's school was the first school of its kind. You know there are standing desks, but not an entire school. And he said it best, this is the future. What you're seeing in these classrooms is the 21st century classroom that the classroom is reconfigurable. It's egalitarian. There's no front and back room. The classroom is dynamic. Kids function better, their test scores are better, etc.

What we realize is that the problem is when we take these top down health initiative approaches, it's very bureaucratic and very difficult. And that's the wrong approach. Ultimately, we would love the state and national government, the federal government, to be able to come down and support bottom-up initiatives. What we realized was that that it was on us, ultimately, to start with our own daughter's classroom. What we thought was when we originally made this pitch to our principal three years ago – because we did a little pilot classroom, we did a few more – is that we were going to have to just make the case.

My wife is an attorney, she had prepared a brief to go before the Supreme Court and in two seconds, our principal was like, “Yes. Totally. This makes perfect sense.” There was no resistance. The resistance primarily comes from our inability to raise funds fast enough to meet the already current demand. Because the teachers understand and are already dealing with having to manage children who are kept in. These are like little nervous dogs who've been drinking espresso trapped in a small room. They're going to tear all the pillows apart. This is what happens, right?

We've seen—you know, Finland, the country of Finland, just put out a study that said their recommendation for kids is to get three hours of exercise a day, three hours, plus sunlight, plus all these other things. We've seen recess get hacked, most schools don't have PE. So we're making this big, big, big error, especially on time that it's federally funding. And what we found was if we just talk to one teacher, so if you're interested in this idea because you know you have a cousin or a niece, or a child involved, go talk to that teacher and then through StandUp Kids.org, there are templates and resources for you to be able to initiate a conversation about changing that single classroom.

What we realized is that we have set 10 years for ourselves to get the kids in American public schools standing within this timeframe. But it's going to take that long. This is a grassroots movement and we don't have to shout and beat our chests but one classroom at a time is enough. If we had a business, for example, one business adopt one classroom, it's about 5,000 dollars to flip a classroom. That's a structural change that lasts for a decade unless these desks last forever. It doesn't take anyone to administer it.

You know we're seeing the research that just came out last month was that kids who tend to sit track the national average of adding 2 body mass index (BMI) percentage points as they get older. So every year, we go up 2 percentage points. But with kids that were standing, over two years dropped almost 3 percentage points. What we've seen is that's a delta over 5. We can actually dig into areas and populations that don't have the support or the nutritional support or there's a food wastelands and you can have a positive intervention just by doing the thing you're going to do anyway, which is go to school. It's been profound. If one business can take one classroom at a time, we'd solve this problem.

JM: Has anyone looked at or studied this and reported on the decrease on the use of medications for ADHD?

KS: We haven't seen directly around the large classroom interventions and tracking that, but that's one of the things – but we were absolutely right that people have looked at movement, you know, the principle. Literally, the new data is saying kids with ADHD or who are even on the spectrum of attention problems cannot learn without moving. You'll see they have gadgets to fidget, but because they're standing and the foot is pumping away like a duck underneath the water, they're like a little rat on the skinner bar.

What we're seeing is that these kids can focus and we can tell you anecdotally, from the dozens and dozens of local parents we know of kids who were getting in trouble with fidgeting and were caught initiating conversations about drugs, that standing up has changed their entire ecosystem. It has changed the world order.

JM: Okay, great. And that resource again is StandUpDesks.org?

KS: StandUpKids.org.

JM: StandUpKids.org. Okay. Great. We'll put a link to that and I'd encourage anyone who has kids to really take the initiative and start a process like Kelly did and replicate it in your own local community, because you owe it to your kids and the community.

KS: You do. And even for yourself. I think it can be as easy as – you don't need fancy equipment, you can put an Amazon box on the table at home and begin that way. Have a conversation. You don't need – let me just be clear – you don't need a doctor's note to stand up at work. You need a doctor's note to convince your company to buy you a 10,000-dollar desk, which I think is a very reasonable thing. You really have to demonstrate to us that you need this 10,000-dollar desk because you're going to bankrupt us. But go in, put a crate up there, get an IKEA 8-dollar full lap tray, and you can completely convert your entire ecosystem.

The last thing I'll say for people beginning this is make sure that you put yourself on a shaping gradient. It's not one or zero. Think about standing an additional 20 minutes today. Just do that in just a week. Next week, get 40 minutes of additional standing. Then in the third week, bump it to an hour. Give your body a chance to accommodate to these new loads and demands the same way you would train for a marathon. You don't go up and run 26 miles; you run a little bit at a time. Give your body a chance.

You've been sitting for decades and as you know, the first time you stand up the whole day, you're going to be tired. Yes, congratulations, you just did what we call a non-exercise activity. You should be tired at the end of the day. And two, you might find that some of your tissues are barking at you a little bit. Become curious about what's going on. Put yourself in a little bit of a shaping gradient, give yourself a dose, give yourself a response, give yourself permission to sit down as you transition up.

The other last important thing is that we say that it's not a standing station type of place to put your foot. That putting your foot up, just like you are at a pub, where there's a rail at the bottom of the pub, takes a lot of the load, extension load, out of your lumbar spine and makes it easier for you to stand for long periods of time. That can be a stack of a couple of phone books, it can be another box. Whatever you have lying around. But the idea here is give yourself permission and time to get used to more movement and not sitting and make sure you have a place for your foot once you start to stand.

JM: You had great recommendations. You had a great chapter in your book that discusses that in really fine detail. As a company, we've purchased stand-up desks for all our employees and I can assure you most of them were not 10,000 dollars. I mean you can get a darn good stand-up desk, adjustable, motorized, for under 1,000 dollars. You don't have to spend an arm and a leg. But obviously that's not the situation for any company and if your company refuses to do that, there's one word that you can do, which is improvise, which you're going to have to do anyway.

I travel a lot. I'm sure you do. And I'm not going to be spending three or four hours on my computer and sitting at a desk in the hotel room. I usually take the wastebasket, turn it upside down, and put my computer on there. That usually works. Simple things like that you can do that aren't expensive at all, that are going to cost you hardly anything. You don't have any excuse that you can't do it, really.

KS: That's really true. What we want our employers to do is understand that the research really does support that the most dangerous job you can have is to be an office worker. We'll see more muscular and skeletal problems in our office workers than we do in people who run oil rigs and do construction. There's even a really interesting study that found that smokers at work were healthier than non-smokers at work. Because the smokers get up, walk 10 minutes to get outside, walk back. They were taking more breaks and actually doing more movement, even though they were smoking.

The bottom line here is these are simple interventions that really can improve the quality of your life. Just as you're saying, you don't need a lot of cost. If you're an employer and you change the work environment, not only is there a study that was done by Mark Benden of Texas A&M University that showed that there was a call center and they were able to track productivity. It's actually quite difficult to track productivity, but this call center was able to track it. If they made a call and made a sale, that was one. If they made a call and not make a sale, that was zero.

Just a six-month intervention made a 40 million-dollar change to the company. All they did was have their employees be at standing stations. Turns out, everyone works a little bit better when they stand up. If you want to make this about money, make it about money. If you want to make

it about healthcare, I talked to a lot of HR directors and we are spending more money as companies on muscular and skeletal problems and back pain and health.

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If you have been in an environment where you worked where your hands have gone numb or something tragic has happened, that is a life-altering and potentially life-destroying experience, and it is much easier to address that on the front half. If we can get people to understand that we can delay and potentially prevent all of these problems, why? All we have to do is to have people be human beings at work, and that means more movement.

JM: Yes, indeed. That is so true. I want to get back to you for a moment, though, and really talk about your credentials because we really didn't. We just kind of praised your book at the beginning, but I just want to make a comment on or an observation on your transition. You are pretty much an elite athlete. You're a PhD in Physical Therapy and you treat a lot of elite athletes, I mean Olympic caliber athletes and elite military units, which you referenced, like the SEALs, the Rangers, and all these guys. You're all over the world. You're a well-recognized expert.

But yet what I've observed is that you're transitioning into the basic fundamentals, preventive approach, which was exactly what I did. The more you study about a discipline, the more you realize and understand that it's all basic real simple stuff. Yes, you need the exotic detail professional to get a specific issue, we need that resource, but it just seems that you've made that transition in your new book.

KS: Well, I will take that as a compliment because it's absolutely the truth. That we're realizing that at some point we can either play catch up put out the fire, or we can begin to have real conversations about transformation of society and about solving what we call preventable disease. Sitting is not a disease but the dysfunction of human beings that is our own making, it is a disease. These are simple effects.

The pelvic floor dysfunction industry in America is a gigantic business. And if you know someone who has pelvic floor dysfunction or bladder incontinence, it's a devastating problem. I think that the adult diaper industry is a multi-billion dollar diet industry.

JM: Wow.

KS: And what we're finding, for example, is that when you sit in a disorganized position, your diaphragm is compromised, your breathing is compromised, and also your pelvic floor diaphragm is compromised. The only way to get correct tension and correct function in through that pelvic floor is to be weight-bearing through your hips. It's that endopelvic fascia winds up. Hip function is a crucial component to pelvic floor health. We can't just be sitting on our butts all the time in these turned-off, shut-down positions and not expect to see dysfunction down the chain.

Ultimately, I can either have a very complex conversation with you several years from now where you're a high-level Olympic lifter and I notice that you're peeing yourself on the platform,

or we can have this conversation about trying to improve the hygiene and the functionality of your human self. I think what we're realizing is that if we don't take what we're learning in sports and performance and actually apply the principles, like Formula 1, now we have disc brakes in our cars, if we don't apply those principles across our humanship, to my kids, to my parents, to my friends, then circus is what sport really is.

We should look at the Olympics as entertainment, and when those people are dead or broken, we'll just feed their bodies to the lions. But that's not what it is. Sports, the highest levels of function, are really our lab to understand and accelerate a stress test on the human being. We can really tell a contiguous cogent story from function here to function here and that's a straight line through.

The problem, I think, traditionally, as your experience has been, is that we have this medical experience, and then we have people functioning. Those things are really discordant and incongruent. I can wait around for people to break, or we can start to put my big boy pants on and say, "Hey, look. Maybe you're not running correctly. Let's make this about skill. Let's make this about sustainability." So we have to have these conversations, we have to.

JM: No question. We're getting close to the end. But I did want you to comment a little bit on posture, because it's so important, and get back to external hip rotations because I'm still continuously – even now, during the interview, when you externally rotate your hips, pushing your feet outwards, you wouldn't think that that would cause your feet to be anti-duck walking, but it does for some strange reason. Maybe you could go over that. But when you actually rotate your hips, you anteriorly tilt your pelvis in the correct direction, your shoulders go back, and your chin goes up. It's just like a miracle.

Why don't you talk about that whole chain of events and how you can integrate that into the standing posture? And look, here's the key thing, not only will it help you be healthier, but you will look better.

KS: That's right. The things that matter to us the most, right? And I don't care on what level we're having this conversation because the outcome is the same. But you know, the key here is that people don't realize that posture is like a sneaky word. Really, the Latin roots of posture is position. And so can you imagine bragging about your bad position? No. Everyone says, "I've got bad posture," but no one walks around and says, "I've got bad spinal position," because that makes you sound terrible like, "I drive my car drunk."

JM: And I text.

KS: That's right. I think what's useful is that the human being is designed to be – watch some modern dance, watch a gymnast, and you can see the movement variability and the capability and the lexicon of the spine. We shouldn't be afraid to bend or move or twist. But there is an organized position, which is most efficient for running or walking, most efficient for handling loads, right? Because what we tell people is like, "Yeah, you should probably keep your back flat all the time when you're lifting something heavy, but it doesn't matter if you round your back

when you're picking something up light," what point does that matter? It matters at some point and it certainly matters if you've ever had a back tweak.

One of the nice things is that the way we have come to understand the function of the trunk, the function of the body through strength and conditioning, is that we view from the hips to the spine like a chassis. It's the frame. If I have a bend in the chassis, not only do I see downregulation and downgraded function around the spine, because the spine is prioritized by the body very highly in the movement. I mean if you sprained your ankle, it's a pain in the butt. But if you've thrown out your back, it has your attention and it's very different from a sprained ankle, even though those things are equivalent, right?

It's because a threat to the nervous system is really a threat to the human being, because with that nervous system challenge, you may not be able to reproduce or feed yourself or run away from danger or do any other things that are important. In our language of human movement, we prioritize the spine, as does Pilates, as does yoga, as does any classic movement tradition. Ballet. I mean, everyone is looking at the spine or the position of the spine. That means that we can create a simple set of steps to reclaim position once I've been out of shape.

Number one, we say "Hey, squeeze your butt," and that will re-orientate your pelvis into a good shape in relationship to your lumbar. Keep your ribcage down so that you're not standing like a banana. All of a sudden now, you've created a situation and we're also going to see better function of the hips and shoulders. And so when you stand with your feet straight and screw your hips into the ground like they're on dinner plates, your right foot goes clockwise, your left foot goes counterclockwise, what you notice is that you've queued up the relationship between your femur and your pelvis. That relationship helps to make the pelvis more stable on the femur, which helps to make your lumbar more stable on your pelvis.

What you've done is integrated the trunk, instead of just balancing around on a couple balls on the hips, are suddenly integrated through a mechanical fascial muscular system to the ground. You'll notice that your arch stops collapsing, that you're creating the right amount of tension to support the structure. Suddenly, now you're talking about Thomas Myers and Anatomy Trains. You're talking about the wonderful work of fascia. You're integrating all of your systems, because we're not just a bone system, we're not just a muscular system, and we're not just a connective tissue fascia system. We are a system of systems.

Giving these principled technical understanding is really just giving a language to the things that we do automatically. If you stand with your feet straight, and your weight is balanced over your arch so that your weight isn't on your heels and it's not too much on your toes, and you're just weighted evenly through the front of the foot, what you're going to find is you automatically create this rotation. It's the same rotation that you can experience.

If you've ever been on the beach and you lay down, your legs want to unwind. They actually fall out to the side and you end up burning the inside of your thighs, it's very annoying. What you're seeing is that the natural structure of the body is set up to always create a passive external rotation tensionality in the system, so that when your feet are straight, you're automatically capturing this passive elastic winding of the body that supports the pelvis, supports the spine, and

organizes all the way up to the top. But what you experience when your feet are turned out, you basically short-circuit that system and you start doing this thing where you look for stability. So knee comes in, arch collapses, hip internally rotates, pelvis gimbles forward.

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We start to just see a stack of blocks that's trying to find its way in gravity instead of having a foundation and moving up from that foundation.

JM: Yes, indeed. And I see it. I walk on the beach every day and I see half the people just have the wrong walk. I don't have the time to stop and explain to them, and to take off their sunglasses, you don't need the sunglasses.

KS: I love that. We don't wear sunglasses. We totally follow you on that. That's so true. And what's interesting about these cues is that we're going to realize that for our generation I'm always like maybe it's too late for us. But it's not too late. It's never too late for anyone to turn their body around ever. But it's easy to remind your kids that when we walk, we walk with our feet straight. And it's easy for an adult to say, "Hey, look. Let's try to be barefoot around the house as much as we can, and when we go out, let's wear flat shoes. Let's wear shoes that reflect the organization of our bodies. Not some high heel, marketing genius, Nike thing that's tipping the foot forward."

Suddenly while you have kids who grew up in an ecosystem where they're moving more, they're walking with their feet straight because their mom and dad told them that we walk with feet straight and wearing shoes that reflect the actual function of the foot. That costs nothing. That's what every human being should know. It's their right.

JM: Yes, indeed. You've provided loads of that type of information in your book. We're about ready to close now. Are there any final closing comments you'd like to make or summary to emphasize any of the points you made previously so well?

KS: One of the things we feel is that people get overwhelmed – I have to go start this heavy duty movement practice, I need to start exercising. You don't. The first order of business is to get more movement during the course of the day. I don't wear an activity tracker because I think it's ugly, but my wife does and she loves that feedback about where she is in the day and how much she needs to move. You can get these activity trackers now for so little. What we're trying to do is bring consciousness to the human being.

If you can change – ultimately, these conversations about changing behavior and changing habits which is difficult, but a little bit at a time makes a massive difference, a little behavior change now, which reinforces and aggregates. The easiest analogy is that when you push on a tanker one degree, it doesn't seem like that tanker ship is going in a different direction until it runs for many hours and realizing that ultimately, it's going to be facing the other way, given enough time. That's how I want people to think about their physical carriage and their behaviors, and that all we have to do is change a little aspect of that one degree and give it enough time. You'll look like a different human being and experience your whole life as a different way. Just give it time.

JM: Well, thank you for participating in this interview. As I said earlier, I couldn't recommend your book more strongly. I really sincerely believe that virtually everyone watching this would benefit from picking up a copy and applying it and even beyond that. The holiday season is coming up. Get one for someone you know that would benefit from this. It's just one of the best gifts you can give. I just love books because, for a relatively inexpensive amount, you get all this wisdom.

I've written a lot of book so I know what it takes to compile that. It's a year or two years of work, of solid work, to put that together so you're getting it at an incredible value. And I'm not making any – we don't have an affiliate link for Kelly's book or anything, but it's a great book and you just need to get it in your library, because it's such a phenomenal research and it can change your life. It's changed my life. I mean I've had profound insights that I've been struggling with for decades to understand, simple basic principles. It's a book you need to get. It's called *Deskbound*.

Kelly also has a YouTube channel that I believe is MobilityWOD, Workout of the Day. Do you have any other resources, Kelly, that you want to mention now?

KS: No. The main thing is that these interventions are powerful but they're also inexpensive and free. We really have always believed that if you give people the right information, they'll make the right decisions. The reason many of us haven't changed these aspects of our lives is that we didn't realize they were important. And now because of the interconnected world that we live in and the fact that we're seeing data sets and deriving so much larger experiences of induction because we see so much more, it means we can derive the best practices much more efficiently and actually change our lives.

Unfortunately, I think people don't realize they are going to be a 110, and that you have a choice now about how you're going to arrive there. You can either end up really dysfunctional or as functional as you want to be at a 110. And these small practices day after day after day really are the basis for our experience.

JM: Yeah, you were just reminding me of a major motivation for me for pursuing this process. It's because I see my parents, my dad is approaching 90, my mom is 82. I can see them progressively come [inaudible 1:05:24] this forward flexion. I mean they're both in walkers. They don't walk very fast at all, they're basically handicapped, and that's the last thing I want to do in my life. I wanted to live to 110 with full-range of motion and no pain. To see your parents, I mean, thank God they're still alive, but so crippled and unable to live life to the fullest and enjoy it like they really should. It's a powerful motivation, and I encourage anyone with parents to look at them because I suspect that they're not too different from mine.

KS: Or my grandparents, I completely agree with that. We always say at what point you think in your evolution that you're not going to be able to squat down and take a poop? I mean full-range of motion is one of the very few things that I know that we can maintain because we have so many examples of capacity of doing that. We just about change our environment for a little bit, small tweaks, you don't have to throw the baby out with the bathwater. But if you start making

these little changes in your day to day experience, you'll be really shocked because it's changed our lives.

JM: And it has changed mine. Thank you for all your work, especially with the kids and getting them out of the chairs all day long. That's great. I couldn't encourage people more strongly to participate in that project. Keep up the good work, man. You're one of my heroes.

KS: Doctor, thank you so much. It's such a pleasure.

[END]