Jill Miller: Increase Flexibility & Relieve Pain with Breathwork & Myofascial Release

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Dr. Andy Galpin
The science and practice of enhancing human performance for sport, play, and life. Welcome to Perform. I'm Dr. Andy Galpin. I'm a professor and scientist and the executive director of the Human Performance Center at Parker University. Today, I'm speaking with Jill Miller. Jill is an expert in everything from mobility, to breathwork, to body work, and especially in what's called self myofascial release. Now, in this episode, you're gonna learn more about what these things actually are and how to use them best. There are many broad applications of these techniques that extend beyond just pain relief and range of motion and mobility. Jill will talk about things like the role of the fascia and some of the science that's emerging in how that's regulating everything from your digestive system, to your pain, to your physical performance, strength, and power output. And so I know that whether you are dealing with pain yourself, or you like yoga, you're into body work, breathwork, or anywhere in between, you're gonna find something in this episode that you may have not heard before or at least you find tremendous value in. So with that said, please enjoy today's conversation with Jill Miller. Jill Miller, thank you so much for coming and chatting today.

Jill Miller
Hey, Andy. So good to see you.

Dr. Andy Galpin
My introduction to your work, uh, was I think from Kelly Starrett.

Jill Miller
Probably.

Dr. Andy Galpin
15 years ago or more.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Brian McKenzie. Uh, but what really grabbed my attention was I had dabbled a lot and, and paid

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attention to the world of we'll call it yoga.

Jill Miller
Okay.

Dr. Andy Galpin
And for the most part, threw it all away, right? Just thought, like, "There's just nothing here for what I'm doing." I had gone through several experiences and didn't really appreciate it. And then I saw what you were doing, and I like thought, "This is the extraction."

Jill Miller
Mm.

Dr. Andy Galpin
"This is the stuff we should've... I wanted to get out of yoga," just me personally. And I thought, "This, this girl's nailed it. You're all over it." So my thoughts of you still to this day are that. It is the best parts of yoga that, you know, again, for me personally, what I was looking for in myself and clients in, in the scientific experience, as well as there's just so many other ways we can go about self-care.

Jill Miller
Mm.

Dr. Andy Galpin
The physical body, recovery. There's just... There's so many ways you can get to, and I've yet to see anybody put it together better than you. So as an introduction, there's no question there, but it was just letting you know framing when I think about the reasons why I was dying to get you in here for this conversation, it is all that stuff. And I have a, I have literally three pages of notes in front of me, as, as you can see, and, uh, I'm super excited to go into that stuff. So if it's okay with you, I would love to talk a ton about all those things, um, and a bunch of different areas as well.

Jill Miller
I'm down for all of it. That's great. I'm so glad that you connected with what I was offering because I think what I, um, did and do in the yoga space was very radical and frankly heretical back when I started-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... teaching it. And, um, not a lot of people got it, and it's really nice to see that it did finally, um, find those people that it was meant for and act as a bridge back and forth between, um, training, pain management, yoga, self-care, and all of those things.

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Dr. Andy Galpin
Great. I have, uh, both of your books. I have many of your products. I've been to your courses. I'm just, like, such a Jill Miller fan. It's ridiculous. All that to say, I thought maybe we could just start directly with this first idea.

Jill Miller
Okay.

Dr. Andy Galpin
When I traditionally had always thought of foam rolling, it was just compression. It was if your hamstring is tight, you smash it-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... and it gets untight. And I don't know if the science works, or I don't care how it works, the physiology. I just know if I smashed it on there, like, I felt a little bit better in those moments.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
What is the difference between that compression, is what I'll just keep calling it, and, and maybe that's the wrong term, but let me know, style of foam rolling versus other options? And, and maybe f- actually we'll just start right there. Like, what is the compression stuff doing? What do we know about it? How is it working? Is it working? And then from there, let's explore some of the other ideas and ways and strategies we can actually maybe do things better.

Jill Miller
Okay. So, um, foam rolling has become the de facto term that is now used, I think, in most places that refers to self myofascial release. So self myofascial release as a category in the self-treatment space or recovery space is where you use an implement, which technically is called a stress transfer medium. So we're talking about rolling sticks. Uh, we're talking about foam rollers. We're talking about different balls. Um, even pokey tools like, uh, just single things that have knobs on them. So anything like that is, is a implement that is trying to influence tissue in a variety of different ways. These implements are trying to mimic somebody's hands, right? So this is something that you can do on your own. You don't have to hire somebody. You don't have to go out of pocket. You can do it any time of day you want, wherever and whenever you need it. Um, so what are they doing? What are these implements doing? They are sometimes compressing tissue, like you said. They're, um, inducing local stretch. So if I just lay on a ball or lay on a foam roller, I'm really just, um, putting pressure into that local region. But what happens

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if I stroke that implement with my body weight, uh, either in a reclining position or up against a wall or in myriad other arrangements? What happens if I take that implement and I move it along the line of pull of a muscle or across the line of pull of a muscle? Or what happens if I do, um, a different type of compressive rolling? What happens if I, um, pivot the implement or pivot my body so that it creates traction and creates, like, a pinching sensation? What are all those things doing? They're, they're affecting different stretch receptors in different ways, and they're affecting differentlayers of your body in different ways, from skin to deep. And, um, one of my deep interests is in the fascial tissues that it annoys. Uh, what is it doing to those tissues? It's doing a lot of different things. Um, so I recently wrote a narrative review of the scientific research on self-myofascial release, and there are a lot of things that these implements are doing to your body. Um, one of the, I think, things that we can-- almost all the systematic reviews can agree on is it improves range of motion very quickly. So it's somehow dampening some of the sympathetic feedback into your body, so you can very quickly improve your sit and reach test or shoulder overhead or spinal movements or even, you know, jaw movements. Just depends on what is your target, what is your joint target, what's your tissue target, what's your intention. Um, so that range of motion improvement is really exciting. Um, but some of the other research that really excites me, especially, I know I'm on the podcast called Perform, and, um, people want to get more out of their workouts here, is that not only is the rolling improving this range of motion, but it's also improving force output. It's improving torque, and that's really helpful, especially if you want to be able to lift more over a range, right? So maybe you, you know, you're, you're deficient in your overhead, and you're overusing certain muscles again and again. But what the rolling does, it'll restore a range of motion, plus you'll be able to get more out of those muscle fibers. They'll be able to pull more or push more, um, depending on what it is, the, the movement that you're trying to do. Um, the rolling also happens to dampen sympathetic overflow, so the tools happen to increase parasympathetic reactivity. So that's really beneficial if you're trying to calm down, you're trying to gather your thoughts, um, you're trying to, uh, minimize your anxiety. Um, the balls and tools and foam rollers, I always say the balls 'cause I'm a ball dealer, uh, but I have to note that these things also happen with foam rollers or rolling implements. Um, they also improve your vascular flow. So when the rolling implements, um, interface with fascial tissues in specific ways, your fascia releases nitric oxide. So we get these local improvements of vascular stretch and nitric oxide release. Um, I could go on. There's many, many other benefits to rolling.

Dr. Andy Galpin

Today's episode is sponsored by Eight Sleep. Eight Sleep makes smart mattress covers with cooling, heating, sleep tracking, and more. I've personally been sleeping on an Eight Sleep mattress cover for years now, and it's absolutely glorious. I love it so much that I hate traveling away from home because it means I can't sleep on my Eight Sleep Pod 4 Ultra. As you'll hear me talk about endlessly on this podcast, there really is nothing you can do that makes more of

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an impact on your health and performance than getting tremendous sleep. And getting great sleep requires having your body temperature drop a couple of degrees at night, and that's hard to do on your own. The Eight Sleep has been a game changer for me because I run hot at night, or as my wife calls it, I'm a furnace. If I don't have something like an Eight Sleep helping me cool down, I'll wake up in the middle of the night overheating and not feeling great. This is something I've also found in many of the people that I coach, especially those who are really physically active. The Eight Sleep Pod 4 Ultra has two times more cooling power, yet is virtually silent, and it has high-fidelity sleep tracking and even has snoring detection that'll automatically lift your head a few degrees to improve airflow and stop your snoring. If you'd like to try Eight Sleep, go to eightsleep.com/perform to save $350 off your Pod 4 Ultra. Eight Sleep currently ships to the US, Canada, the UK, select countries in the EU, and even Australia. Again, that's eightsleep.com/perform. Today's episode is also sponsored by Momentous. Momentous makes the highest quality supplements on the market, period. Many of you know me, and you know that I do not trust the vast majority of supplement companies, and for good reason. Many studies have shown that anywhere between 10 to up to 40% of supplements have accidental contaminants, intentional alterations, mislabeling, or other serious issues. But Momentous is different. I literally spent years vetting the company, their products, and leadership team before personally officially partnering with them in 2023. Every single one of Momentous's products is third-party tested to ensure quality, and many are even NSF certified for sport. Now, while I love all of their products, the ones I use the most, both personally and with my clients, are what I call the big three, and these are the omega-3 fish oil, creatine, and newly improved whey protein formula. These three supplements have fantastic data supporting their benefits. Whey protein for lean muscle mass, omega-3s for brain health, and creatine for both muscle and brain support. And they have been shown to be very safe across basically all populations of people, young, old, men, women, etc. Now, nobody has to use supplements, and I hope you never feel pressured to do so. But if you're interested in supplements, it's important that you get them from the highest quality providers. You don't want mercury in your fish oil or lead in your whey protein or anything like that. So that's why I stick exclusively to Momentous. If you'd like to give Momentous a try, go to livemomentous.com/perform to get 20% off your order. Again, that's livemomentous.com/perform to get 20% off.

Jill Miller
I think if you were to ask most people, massage, foam roll, does it help range of motion? You'd probably say, "Oh, yeah. I kind of rolled on my hamstrings, and I stretched afterwards. I felt better." If you ask them about does it reduce pain, muscle soreness, again, you would maybe see some conflicting results, but a lot of people say, "Yeah, like I was really tight and sore."

Dr. Andy Galpin
I'm not as sore.

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Jill Miller
One of the best ways to use the rolling is to offset delayed onset muscle soreness. So what they found, what Jan Wilke in Germany has found, is that the inflammation of your delayed onset muscle soreness isn't in the muscle cells, but it's actually in the fascial fabric surrounding the muscle. This is called the epimysium. But what they found is people who did rolling prior to a workout had less of this inflammation in that 48-hour timeframe afterwards. So, and one of the other fascia jokes that the fascia researchers say is, "We shouldn't be calling this DOMS, we should be calling it DOFS"-

Dr. Andy Galpin
Great

Jill Miller
... because the, because the inflammation really is in this fascial envelope. Um, and that's also where these pain sensing neurons are picking up on that. So if you want to offset your delayed onset, you can roll afterwards, uh, you can roll the next day, but really it's, what the research is showing, it's better to roll prior to, to offset the DOMS.

Dr. Andy Galpin
Yep. Okay. So the data on muscle soreness specifically is probably the most pronounced in terms of the most studies in this area if we're talking all things fascial, if we're talking all things myofascial release, if we're talking all things kind of this whole area. When you get outside of muscle soreness, then the questions start arising. What other benefits am I getting from, again, we'll just collectively call all these things there. A lot of questions, a lot of different areas, but I wanna start at the very, very, very top, right? So we know that this compression stuff works. Let me start off with a couple of misconceptions.

Jill Miller
Okay.

Dr. Andy Galpin
Or I'm not, things I'm not sure on. When I'm doing a foam roll, when I'm doing a massage, what is actually happening right there? Am I breaking up scar tissue? Are my fibers misaligned and I'm rolling them back together? What is actually happening at the tissue level that explains any of those other benefits that we're gonna get to way, way later? What's the mechanism here?

Jill Miller
I think we have to start with describing some of the elements of fascia in general before we go into what is the tool doing to the fascia, because I think what a lot of people may not understand is how alive your fascia is. I mean, your whole body is alive.

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Dr. Andy Galpin
Mm-hmm.

Jill Miller
There's nothing really inert or fixed about your body in general. And your fascial tissues are comprised of so many different cell types, um, and so many different fibers. And even though it's, in general, a slow to change tissue, it is very active.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Fascia is your seam system.

Dr. Andy Galpin
Got it.

Jill Miller
Fascia connects everything in your body from foot to face, cell to skin, and everything in between. It suspends your structures, it interconnects them. But it's not just seams, it's also the stitches of the seams, but it's also not just stitches or seams because it's not just fibrous, it's also fluid and it's cell-filled. It is also invested with 250 million nerve endings.

Dr. Andy Galpin
Wow.

Jill Miller
So your fascial tissues are also a major sensory organ of your body.

Dr. Andy Galpin
I, I didn't realize the nervous system connection, or that actual nerve connection into fascia.

Jill Miller
It's mind-boggling.

Dr. Andy Galpin
So may- just I- I- I- I-

Jill Miller
But wait, there's more .

Dr. Andy Galpin
Oh, I, I'm sure. But you have your skin.

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Jill Miller
Yeah.

Dr. Andy Galpin
Your skin, and you have your muscle. When we think of these areas, again, stretching and massage, and I'm in pain, my muscles are sore. Before your work and before paying attention to all this stuff in fascia, my assumption was that, that these were muscle problems. My muscle is sore.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
People think that they've got micro damage in their muscles after workouts. What is this fascia stuff?

Jill Miller
So the fascia, yeah, um, in, in your original model, you could say the fascia is the in between all of it stuff.

Dr. Andy Galpin
It's the, that's the seams, that's the connection, right?

Jill Miller
Yes.

Dr. Andy Galpin
That's the, the way through. So if I'm looking at, like, your jean jacket right now-

Jill Miller
Yes

Dr. Andy Galpin
... like, the jacket is my skin, potentially.

Jill Miller
Yes.

Dr. Andy Galpin
Your body is underneath that, and the seams literally are the things connecting the muscle to the skin and well-

Jill Miller
Yes

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Dr. Andy Galpin
... from toe to h- toe to chin, right?

Jill Miller
Toe to chin a- everything within. So l- so we can think of fascia in a, in a few different ways, and there are many different, uh, f- fascia researchers that model it in different ways. Um, I like to think of it like a strata or like a lasagna. I think this is an easy-

Dr. Andy Galpin
Oh, perfect

Jill Miller
... model for people to grasp. So you have your, your skin, and then directly underneath your skin, you have... I mean, most people just think this is your, your fat, your fatty layer, but it's not. Within your fatty layer, you actually have a continuous membrane called the superficial fascia, and this superficial fascia actually subdivides your fatty layer into two different layers. Did you know that you have superficial adipose tissue and then you have deep adipose tissue underneath this, this membrane?

Dr. Andy Galpin
Yeah.

Jill Miller
You did.

Dr. Andy Galpin
Of course, yeah.

Jill Miller
That's great. Of course. Um, but the superficial fascia also spawns these really interesting poles called retinaculum cutis. So we have all these little tent poles between our skin, the superficial fascia, and between the superficial fascia and what's below that, which is called the deep fascia. And so these, these tent poles are part of what gives, um, our, our fluffiness, the buoyancy to our shape. So underneath this, these tent poles of the superficial fascia, we have sliding layers called loose fascia. This is a fascial interface, and you can find that right now. I'm covered with my jean jacket, but you can just pinch your forearm, and you could, you can actually move this right, left, up, down. You can even twist and you can even pull it away. So we have, um, an area called loose fascia that's between the superficial fascia stuff and what's known as the deep fascia. The deep fascia is the fascia that I think most people recognize as f-Fascia. And, uh, part of that is because this is a, a lot of the mechanical model of movement. Um, a lot of Tom Myers' anatomy trains, um, sort of, uh, pays homage to these continuities of these gigantic collagen strips that run from, you know, foot to face, and you can really see these in dissection. Um, so

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the deep fascial tissues, they are surrounding our muscles, but we don't just have one layer of deep fascia, we have multiple layers of deep fascia that glide upon each other. Um, and then we can get into the interior architecture of a muscle itself. Your-- each muscle you have is comprised of additional multiple layers of fascia, and these are subdivided. Like, each muscle cell is surrounded by an endomysium. Right? That's like if you have one little orange ju- you know, in the orange you have the little, tiny segment, and it's surrounded by that cellulose filament, and inside it's just juice. The same is an analog for your muscle and its endomysial fascia. Then when you have groups of these muscle fibers, um, you're wrapped in yet another layer called perimysium. But you must be able to have movement between these epimysial sliding filaments and the perimysium, and then the perimysium gathers together in lots of bundles, and then we have a, we have a real muscle, and that's wrapped in even more fascia. That's called the epimysium. Um, and these epimysial bundles is what we call a muscle. And that muscle and its epimysium must move. It must have differential movement amongst the other muscles that it's next to, and this is called glide. We have glide between all these different things. And so when you invest a tool into these tissues, we're stimulating cells called fibroblasts, which produce the collagen and elastin environment. Uh, we are stimulating cells called fascicites, which are chiefly responsible for keeping you slick inside. They produce an abundant amount of a substance called hyaluronan. Um, you're also, uh, manipulating fibers. You're creating tension with your compression. You're creating stretch, tension, pull on these different fibers that these fibroblasts are sensing. And when the fibroblasts start to sense activity, they will start to realign things or tear things apart de- depending on, um, depending on what you're trying to do. So for example, one of the, I guess, the old myths that people kick around all the time is, is massage or self-massage breaking up scar tissue?

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Well, yes and no. Scar tissue is comprised of very, very strong fibrils of collagen type one, and it is necessary to be there to stabilize an area that had been breached. The scar itself on the surface may look bumpy and weird and a little bit ugly, and there are some things we can do with friction that can adapt that tissue, that can maybe soften the scar a little bit, but the scar is necessary to act as a permanent suture for the rest of your life. Um, but typically what we're seeing on the surface of the body, the scar, is really the tip of the iceberg, depending on how far down that wound was into the body. Now, if we have a breach that goes all the way to the bone, like I'll use myself as an example, I had a total hip replacement, uh, almost eight years ago, and so, you know, they had to, they had to-

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Dr. Andy Galpin
Mm-hmm

Jill Miller
... saw that greater trochanter off, and there were many layers that were breached. So there's a scar path that goes from skin all the way to deep. Even though it was a very elegant surgery, you're left with a scar path, um, post-surgery. And ideally, you want to be able to do movements and massage that allow the fascial tissues to restore glide-

Dr. Andy Galpin
Mm.

Jill Miller
... so that the-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... muscles can return to their correct length-tension relationships. So when we are stimulating these tissues, we're doing, uh, many different categories of things. Um, one of my personal favorite reasons to do self myofascial release or to do foam rolling is to enhance one's proprioception, to enhance one's ability to know where they are in their own body and be able to know w- how to move forward or how to take the next step, to know where you are in space. That proprioceptive enhancement has been shown to also have an inverse relationship to pain perception. So when we exaggerate or tickle these proprioceptive nerve endings, like Ruffini endings or Pacini corpuscles or muscle spindle or even Golgi, it has an enhancement of improving our sensory and motor awareness, but dampening down our pain perception.

Dr. Andy Galpin
Mm.

Jill Miller
Which is great, 'cause we do-- we have this analgesic effect, and we have a window that we can train in in better coordination, offsetting or at least putting at a distance, um, some of these pain signals. And that means that when we train, we can then train in a better position and, and over time optimize our physical body so that the pain doesn't have a place to sit in our body, right? So when we... Hopefully, part of your, your, your pain management is having healthy muscles, having healthy, strong movement patterns, um, and that is one way that doing the foam rolling or self myofascial release or self massage can be a, a boon to pain reduction. And, and there I got to include all these different, uh, nerve endings as well.

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Dr. Andy Galpin
This is actually amazing. What you're saying is if you were to do that prior to your workouts, and this has some sort of a pain-dampening-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... effect, you could then train closer to that pain ceiling, but below itUm, is this deadening the nerves? Is this getting them... That the pain sep- receptors calm down more? Like, is this exactly what you were talking about as a way for your pain management strategy?

Jill Miller
When we're in pain, we are not at our best in terms of our movement coordination. And that poor movement coordination tends to beget even more movement coordination-

Dr. Andy Galpin
Sure, yeah

Jill Miller
... and leads to accidents. And so we can use the tools, like a self-myofascial release tool, to, um, essentially have a state change physically from the tissue, but also it helps to create this mental swipe.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
And the temporariness of that is, you know, in, in the research right now is showing that there are a lot of these acute changes, um, and that these things can also happen in long term, but you have to do them again and again. You can't just do it once and hope for the best and it's all good. You need to have a discipline about your approach to self-rolling, foam rolling, as well as the corrective work. The foam rolling in and of itself is not gonna take care of everything. You still have to change the body's behavior around why that pain set about in the first place, right? And so that is the physical management that comes along with proper exercise and whatever other things, nutrition-

Dr. Andy Galpin
Yeah, yeah

Jill Miller
... sleep, all of that.

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Dr. Andy Galpin
Right. If I, and I've seen people do this a, a thousand times, if I were to take a tennis ball-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... and put it underneath the bottom of my foot right now-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... uh, maybe a baseball, a harder one, and I were to roll on that for two minutes, I would probably stand up, and if I were to bend over and touch my toes, my range of motion would be greater. Right? This is the fascial connection, right? So I've undone some of the fascia, however you wanna think about this, in the bottom of my foot, and since they transferred all the way up to the back of my spine and then, or, well, the back of my head, hopefully that has created, uh, some change in ra- in range of motion. How long does that last? A few minutes? A few hours? What do we know about the length of a single acute session for that range of motion, and is that range of motion, if that's all I did, is that gonna have any chronic effect?

Jill Miller
So one of the things that rolling on an i- an, an area, like the foot, so is there a morphological change when I roll my foot? Probably not. The research is showing that you're probably not actually changing the fascial tissues in and of themselves, even though it, we can improve glide. We can improve, um, an, a, a relative glide amongst many different tissues, um, even in a, a pretty relatively short period of time, within 60 seconds to two minutes. Uh, but one of the things that the research is also saying is probably that the, one of the things the rolling is doing is it's adjusting your discomfort to stretch.

Dr. Andy Galpin
Hmm. Hmm.

Jill Miller
So it's adjusting your pain pressure threshold to stretch. So there are these, uh, fluid changes, there's heat changes, um, but in a way you're inoculating yourself to the discomfort of the forward bend, and so that is allowing for a little bit more movement. But there's also some of these neural changes such as the rolling is, um, enhancing parasympathetic features. So perhaps, um, there is less muscle bracing in your range of motion check afterwards. So there are, you know, there's a cascade of things that are happening. I don't think we can only say, "Oh, it's the fascia that's letting me get that extra range." It's a part of it, but I think there's a few other,

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uh, things going on neurologically and, um, in terms of fluid mechanics.

Dr. Andy Galpin
Yeah, and that makes a ton of sense. It would be pretty silly to think if I were to roll on a foam roller for two minutes, and then all of a sudden I get up and I have a structural change in the anatomy of my quad.

Jill Miller
It's a miracle.

Dr. Andy Galpin
Right? That would be pretty ridiculous to think, right? So how long is that typically going to last? A few minutes? A few hours? As you alluded to earlier, if your only strategy is foam rolling, or whatever the case is, it's probably not correcting it. So what other stuff do I have to do? What things can I tack on that give me a higher likelihood of this being a, a more permanent change?

Jill Miller
So I, I haven't seen any research that, like, they did the rolling, and then, you know, they check at five minutes, they check at 10-

Dr. Andy Galpin
No time sequence here.

Jill Miller
They check at 30 minutes.

Dr. Andy Galpin
Yeah.

Jill Miller
And then you're like, you're also wondering, well, I bet that stretch at five minutes helped with the stretch-

Dr. Andy Galpin
At 15

Jill Miller
... show up at thir-

Dr. Andy Galpin
Yeah

Jill Miller
... 30 minutes.

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Dr. Andy Galpin
Yeah, of course.

Jill Miller
But then they didn't say, "Okay, now go ahead and go to your classes and come back in six hours, and let's recheck you." So I haven't seen something like that, but I, I certainly know anecdotally with the clients that I work with, we usually are rolling for a considerable amount of time. We're not just doing a two-minute roll and then hoping that our range of motion has changed for the day. We're doing strategies that are really trying to affect certain conditions or certain systems of the body or certain pain patterns, and people will have hours and hours, if not days, of improvement after some of these very deep and, um, disciplined ways of decompressing certain areas of the body or fluffing tissues, as I like to say, offloading, um, compacted tissues.

Dr. Andy Galpin
I wanna know what a m- a sample model of that could look like. But before we do that, I got a couple of quick questions on this particular topic. We asked about duration. Uh, uh, my assumption is the harder you press, the more pain you're in, the better things get here, right? Like-

Jill Miller
Let's talk about that.

Dr. Andy Galpin
That's how I, that's how I really get these things changed, right? And I'm-

Jill Miller
Okay

Dr. Andy Galpin
... I'm not actually joking, because that was actually my strategy.

Jill Miller
Yeah.

Dr. Andy Galpin
Thank you, Kelly Starrett. Pain cave was, was my approach.

Jill Miller
Okay.

Dr. Andy Galpin
And I always thought the more pain I'm in, the more it's solving the problem, it's causing the

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release, whatever was working. So what do we know about-The dosage, the how long does it have to be? How hard do I have to press? More pain, less pain? Gi-give me the quick rub down on that part of it before we get into these more comprehensive strategies.

Jill Miller
Okay. So there's a few different things to talk about. One is tool hardness.

Dr. Andy Galpin
Okay. Yep.

Jill Miller
And another is it doesn't have to hurt to work.

Dr. Andy Galpin
Oh, damn.

Jill Miller
I am a soft tool champion, and-

Dr. Andy Galpin
I will tell you right now, the soft tools were 500 times more effective for me.

Jill Miller
Yes. So stress transfer mediums are what we call the tools. This is the, the mechanical term, the scientific term for self-massage tools or self myofascial release tools. So you have foam rollers, you have, um, balls of various hardness, you have, uh, roller sticks, you have little like, uh, pokey things. Um, and hardness matters to your body because you are a living being. You are an organism that has responses. Um, it doesn't feel good to get poked with something that's hard, uh, unless you can attenuate your response to that.

Dr. Andy Galpin
Yeah. Right.

Jill Miller
So that's, that's a, that's a-

Dr. Andy Galpin
Sure

Jill Miller
... that's a part of this conversation.

Dr. Andy Galpin
Desensitization strategy, right?

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Jill Miller
So what a hard tool will do is it will initiate a sympathetic nervous system response. This is called the muscle bracing response.

Dr. Andy Galpin
Mm.

Jill Miller
Because your body doesn't wanna be deformed by something that might cause pain, that might cause injury. This is a natural-

Dr. Andy Galpin
Protection

Jill Miller
... autonomic protective response.

Dr. Andy Galpin
Sure.

Jill Miller
And this is called the muscle bracing response. So there was... It's just crazy to me, but in the over 200 and something, um, published papers on self myofascial release, there was one paper that disclosed the hardness of the actual implements used-

Dr. Andy Galpin
Oh

Jill Miller
... in the rolling. Okay, just for perspective, you know, foam rollers are, they're dense foam. They are n- they're very hard.

Dr. Andy Galpin
Mm.

Jill Miller
Even though an individual foam cell, you can compress it, when all those foams are together, that's hard like wood. It's really hard. A lacrosse ball is the same hardness as a bowling ball. Did you know that?

Dr. Andy Galpin
Did not.

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Jill Miller
There is no difference in the material substrate of a bowling ball or a lacrosse ball. It is the same thing.

Dr. Andy Galpin
Mm.

Jill Miller
The lacrosse ball is interesting though 'cause it's covered with this grippy, um, rubber, which I love. I love the rubber of a lacrosse ball.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
But a lacrosse ball has no yield, neither does a bowling ball. Neither does a foam roller, a hard foam roller. These will just keep pushing their weight into you, and you either suffer through it or you brace against it. It causes so much discomfort, you're like, "I, I'm just fighting against my own tension. I'm not getting anywhere here." So this one, uh, Korean paper, it l- it was very special for two reasons. It disclosed what's called durometer. That's the, the, that's the way we measure hardness in objects, right? So, you know, wood is harder than foam. Um, gum is much softer than a tennis ball, right? So we have this, this scale of hardnesses, um, that's measured by, um, a, a measured, um, in what's called, uh, the Shore scale, and you use a durometer to-

Dr. Andy Galpin
Mm

Jill Miller
... to, to test for indentation hardness. So they, uh, this cohort used, uh, people with chronic neck pain, and they used a cohort of over 60-year-olds in Korea. So it's very unusual to have a cohort of aged people. Most research in self myofascial release is on young people in college on foam rollers. Most of them are rolling their calves, spoiler alert-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... or their hamstrings, Andy-

Dr. Andy Galpin
Mm-hmm

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Jill Miller
... or their quads. But to find old people with neck pain-

Dr. Andy Galpin
Yep

Jill Miller
... and then to either put them on a lacrosse ball or a soft inflated ball. So what do you think happened to the cohort?

Dr. Andy Galpin
The ones that put themselves in more pain got better, right?

Jill Miller
The hard ball folks, um, what they found was there was a, a thickening effect in the... When they were measuring EMG, the muscles were just in tension. The trapezius muscles braced against the ball, so the, the ball couldn't even get to depth-

Dr. Andy Galpin
Right

Jill Miller
... because the body was protecting itself. Those that used the soft ball had an increase of, uh, neck range of motion and a decrease of pain because the ball could get in. The ball was actually to do the therapeutic work because they weren't fighting against their own neurological tension. Um, so in my book, soft is supreme in terms of working with your nervous system rather than working against it and creating even more sympathetic stress, propagating even more pain. Um, there's, uh, some other research by a guy named Leonid Blum and Mark Driscoll. Uh, Leonid specializes in cerebral palsy, and he works with families, um, to help, uh, the children with cerebral palsy to, you know, improve their posture and pain. Um, and they- he uses only soft implements, uh, with these kids, and it really helps them to create a more spontaneous upright posture and, um, have better movement patterns. But what they did, what Driscoll and Blum did, is they, um, did some indentation hardness tests with a lot of different substrates, and they made, I think they made like a, a mock, uh, cell, not cell culture, but they were able to measure the distance of forces-

Dr. Andy Galpin
Mm

Jill Miller
... using these different, um, tools into the substrate, and what they found was that the softer tools were able to reach the furthest distance into the, the body. So that's one of the reasons

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why I'm a really big fan of soft tools. They don't have to hurt to work, and when-You're rolling and it hurts, that's great information for you. You know, the rolling isn't about trying to make more hurt. You're actually trying to get rid of the hurt. But when you do roll into something that does hurt, that also should tell you either it's a protective response or I'm actually encountering parts of my body that are inflamed or don't move well. I think it's really good information, but you wanna be able to work with that instead of, um, think that you can just beat it out of you.

Dr. Andy Galpin
Yeah. Well, I'm still gonna try to beat it out, but I appreciate you and your science, Jill. The glare, if you all just saw the glare she just gave me . No, I don't do it. I u- I've, I've learned my lesson from there.

Jill Miller
So yeah. And the other thing is, you know, your own, um, muscular tension or your gluey tissue from, uh, overuse or over-training, um, the glueiness coming from-

Dr. Andy Galpin
Mm

Jill Miller
... a increased viscosity of this hyaluronan that the fascicites produce.

Dr. Andy Galpin
Yeah.

Jill Miller
Uh, this is really a, a hot mess inside of there, and we wanna not have that there. And so when we get that feedback from tools, I think it's really great information that we, we may be burning ourselves out and setting ourselves up for an injury down the road. So I think it is really, really good feedback when we come across those pain spots, but then I think we need to, to work in an informed way to reduce that, um, at, at all costs.

Dr. Andy Galpin
Today's episode is sponsored by AG1. AG1 is a vitamin mineral drink with probiotics, prebiotics, and adaptogens. Initially, I was extremely skeptical of AG1, as I am with all supplement companies. But after months of discussions with their lead nutritional scientist and the general team at AG1, I've been impressed by AG1's commitment to sourcing the highest quality ingredients and constantly updating their formulas to have the right ingredients in the optimal amounts. By now, it is abundantly clear that the gut microbiome plays a critical role in everything from body composition to bone health to mental health. And the probiotics and prebiotics in AG1 help to promote a healthy gut microbiome, improve digestion, reduce food cravings, and increase short chain fatty acids, which play a critical role in regulating metabolism and immune

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responses. It's for these reasons, and many others, that I personally take AG1 almost every day. Now, it's of course not a replacement for eating whole, healthy foods, but it is a great way to make sure that you're plugging in any gaps in your nutrition to improve your energy, bolster your immune system, and just generally help promote a healthy gut microbiome and more. If you'd like to try AG1, you can go to drinkag1.com/perform to receive five free travel packs plus a year's supply of vitamin D3 plus K2. Again, that's drinkag1.com/perform to receive five free travel packs plus a year's supply of vitamin D3 plus K2. Today's episode is also sponsored by LMNT. LMNT is an electrolyte drink mix that has an ideal electrolyte ratio of sodium, potassium, and magnesium, but no sugar. Hydration is critical to performance, both physical and mental performance. Countless studies have shown that even a slight degree of dehydration, even as small as 1%, can lead to decreases in physical output and mental performance. We also know that electrolytes are critical to proper hydration, which I've been harping on for years. But you can't do that, proper hydration, by only drinking water. You need to get the right amount of electrolytes in the right ratios, and that's why I'm a huge fan of LMNT. In fact, many of you will probably remember that I featured LMNT in my YouTube series on optimizing hydration nearly five years ago. I featured LMNT in these videos because their blend of 1,000 milligrams of sodium, 200 milligrams potassium, and 60 milligrams of magnesium really is unique and different than any other electrolyte on the market, and it has great scientific support. I use LMNT constantly, particularly when I'm sweating a lot, and I routinely make it a part of my clients' optimization programs. If you'd like to try LMNT, you can go to drinkLMNT.com/perform to claim a free LMNT sample pack with the purchase of any LMNT drink mix. Again, that's drinkLMNT.com/perform to claim a free sample pack. I would imagine the same logic extends to formal massage. So this is if you're thinking about, uh, the classic Swedish massage-

Jill Miller
Yeah

Dr. Andy Galpin
... and deep tissue, right? So obviously the normal thing feels good. Deep tissue's great, but, uh, probably the same thing for any type of self-care, uh, any type of stretching. If you're to the point of extreme discomfort, potentially not your best strategy because of protective mechanisms locking up and stuff. So some amount of discomfort, but not past what, like three out of 10, four out of 10?

Jill Miller
Yeah.

Dr. Andy Galpin
Like how would you-

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Jill Miller
So I think they... It's like a therapeutic discomfort.

Dr. Andy Galpin
There you go.

Jill Miller
I call it comfortable discomfort.

Dr. Andy Galpin
Okay.

Jill Miller
Like tolerable discomfort where you can still breathe. Um, you know, your, you, you don't have involuntary overflow, meaning you're not clenching your jaw.

Dr. Andy Galpin
Mm.

Jill Miller
Um, I mean, some of the things that we see when I'm rolling people out in a classroom is their eyes will freeze open.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Um, their hands will clench like they're holding onto a gun and a purse at the same time. Um, or, you know, they'll do, uh, weird tics with their jaw, and, and this just means they're in overflow. They're in sympathetic overflow. They're not engaging a therapeutic response, and they might also actually be frankly dissociating from their body.

Dr. Andy Galpin
Mm.

Jill Miller
So that to me, um, is a really, a removal of presence, and I think you, I think, and this is what I write about in Body By Breath, it's really important that you are present with your entire being while you're doing this work so that you can, um, be a, a conscious chooser of your own healing, and that it's not just happening to you because you're getting lucky or you're not bypassing it and, you know, sort of splitting or dissociating in the context of self-massage or massage. Now, I know I have endured massages where I finally am like, "Okay, I'm gonna leave psychologically-

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Dr. Andy Galpin
Mm-hmm. Yeah

Jill Miller
... and I'm gonna let this person-

Dr. Andy Galpin
Yeah

Jill Miller
... do whatever they want 'cause they're not listening to me-

Dr. Andy Galpin
Yeah

Jill Miller
I'm just choosing to leave, right?

Dr. Andy Galpin
Sure.

Jill Miller
And I'm just gonna be a shell on the table, which sounds, like, totally crazy. But, you know, we can make those choices too.

Dr. Andy Galpin
Sure.

Jill Miller
Like, we don't always have to be totally, you know, zen and present and all of that. Sometimes we're like I kinda wanna see what will happen if they just maw on my vastus medialis-

Dr. Andy Galpin
Yeah

Jill Miller
... till I bruise. I just wanna see what's gonna happen. Will that free up-

Dr. Andy Galpin
Yeah

Jill Miller
... you know, this portion of my, my knee?

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Dr. Andy Galpin
Yeah. I would imagine then what you're saying is if your, if your myofascial release strategy is check your phone, answer a couple emails while you're cruising on a foam roller for three minutes, what you're trying to tell me is that's probably not the most effective strategy.

Jill Miller
You know what? It is an okay strategy for the fibroblasts-

Dr. Andy Galpin
Yeah

Jill Miller
... and the fascicites. Those fluids, those fibers, they will respond to that contact.

Dr. Andy Galpin
'Cause it's just smashing, moving.

Jill Miller
Yeah.

Dr. Andy Galpin
Yeah.

Jill Miller
I mean, it's, it's fine. But I, I think if you really want to be in control of this remodel of yourself, you wanna be aware. You wanna s- remain aware and pick up on both the subtle and gross sensations that are percolating from these different sensory neurons at different levels within your tissues.

Dr. Andy Galpin
I think this is a really nice way to frame it because it's still not negative, right? You hop on a foam roller for one minute, but bad things didn't happen. But are you getting the most bang for your buck? And this allows people to level up when they want to, right?

Jill Miller
Mm-hmm.

Dr. Andy Galpin
So if you need to check out for a few minutes on the massage table, check out. Great. But if you're also then trying to use this as a strategy for many other things, there are options. And just people knowing you can use modalities like this to go after bigger problems is something that I li- don't think a lot of folks really realize. So I know you have many examples of that, but before we get to any of that, I really wanna dwell on double, triple, q- quadruple tap on this compression

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idea.

Jill Miller
Okay.

Dr. Andy Galpin
I want you to walk me through, you said glide-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... earlier. This is what I said earlier was I didn't realize you could do it. I didn't realize self massage could be anything besides compression.

Jill Miller
Mm. Oh, okay. Right.

Dr. Andy Galpin
So hit me with w- why am I pulling... You, you gave the examples earlier of your skin.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
I had no idea your skin should move, right? When you pull it up and pop it, like, okay, great. But I didn't know it should glide past and feel like that. I didn't know when it got pinned down that that was telling me anything. I didn't realize if I grabbed the outside of my quad and I pinched the skin off there, it should slide past itself.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Once I realized that, once I started using your strategies, and then I started watching and looking at people doing things like cupping-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... I was like, "Oh."

Jill Miller
Mm-hmm.

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Dr. Andy Galpin
There is way more to this game than just compression.

Jill Miller
Correct.

Dr. Andy Galpin
So whether this is massage compression-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... self massage compression-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... foam rolling, we're still talking compression, compression, compression-

Jill Miller
Yes

Dr. Andy Galpin
... right? What's the other side of this equation, or the other two sides, or however you're, you frame it to be?

Jill Miller
Yes. So your, your fascial tissues have the ability to move in every direction. They're vectored in every possible angle all o- oh, throughout your body. So, um, just squishing them is beneficial, but only squishing them is leaving out the possibility of offloading them or tractioning them in the opposite direction. So, um, this suction type of thing that a cup can do is just so amazing because it can allow a gapping to occur from bone to skin rather than you just pressing in from skin to bone, and that can relieve a lot of over-compression tension. Um, or possibly you have, um, some adhesi- a-adhesions or agglomerations, um, that, uh, can't be helped at a certain vector. And so doing techniques, uh, like I say in the role model, we do this thing called, um, pin, spin, mobilize, and this was a term that I picked up from Kelly.

Dr. Andy Galpin
Oh, I love it so much.

Jill Miller
Right? And so what we're doing is we're using, uh, one of the soft balls or any... We, we can

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really do this with any tool as long as it has grip. And you place it into your tissue, and you, you spin it, you twist it, you wrangle the tissue until you feel there is a tolerable pinch. And once you have that tolerable pinch, just think about that. That's a vortex of tissue that's whirled into the tool. That's a tremendous amount of stretch. And then from there, you attempt to move the tool or move your body right, left, um, back, forth. And so then that's moving that twisted knot in a variety of different ways. When I say knot, I don't mean like a muscle knot. It's the, the twisted, um, skin, superficial fascia, loose fascia, and possibly deep fascia at that level, um, that we're getting all this traction. And then when you release that, there'll be a ton of perfusion. Uh, there'll be a, a whoosh of warmth and this sudden onset of range of motion improvements, um, that's local to that joint. You know? So if I were, uh, doing that on the, the rib cage, you will have such dynamic breaths after that. Um, so the pin, spin, and mobilize, that includes this, uh, vector called shear, right? So shear is where we're getting, um, basically horizontal stretch. Um, but, you know, cupping my... Cupping is, is an additional, uh, local traction that really stretches, um, skin, superficial fascia, all the retinacula cutis, and then can even grip into deep fascia and create a force vector maybe even to the periosteum. So that's the skin, the fascial skin around the bones. Um, and there are, of course, a- nerve endings and blood vesselsAll the way at depth that are being um teased in a novel way that they're not getting day to day. 'Cause most of, right, most of gravity is pushing us into ourselves-

Dr. Andy Galpin
Mm-hmm. Mm-hmm

Jill Miller
... instead of like-- I mean, there's a good reason. Like we don't wanna float off of ourselves. But just think of that, that feeling you get when... I'm thinking about my husband, um, when-- Just think about when we walk the dog, and I grab him by the scruff of his neck.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
You know where that coat hanger area is, right at the base of the neck, at the upper trapezius, and I just traction him right in that Dowager's hump area. He doesn't have one, but you know what I'm talking about.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Just like I would lift a puppy by the scruff of its skin. It feels amazing to have stretch in that direction. We just don't get it. Um, so I try to do that using, uh, two balls in different areas of the

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body to, to c- also create that type of, of offloading traction rather than a compression traction. Um, I think you'd have to look into the cupping literature to see other benefits of what that offloading type of, of stretch does, and I haven't really looked into that.

Dr. Andy Galpin
Yeah. How do I perform decompression by myself? And as I was alluding to earlier, this is what changed for me, right? I can foam roll my back. I feel a little bit better for five seconds. But when I do traction-

Jill Miller
Mm.

Dr. Andy Galpin
When I do decompression-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... for specifically my low back, that's the big changes I get, and that lasts hours-

Jill Miller
Hours

Dr. Andy Galpin
... for, for me personally. It's not the same. Other areas of my body feel better actually with compression, with smashing.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
But certain areas, it is always going to be traction. You mentioned glide and slide. You talked about twisting. And for people at home, like visualize this. Literally pinch your skin like your little brother would pinch you and twist it, and do that, and keep doing that, and move it around, and then you'll let it go. And once the kinda pain from the pinch goes away, you realize like, oh my gosh, that whole area is moving better now. I would just love a few more direct examples. How can people do traction and decompression all by themselves?

Jill Miller
During the pandemic, I was in peak stress, just like everybody else. I was homeschooling a five-year-old, a kindergartner, and a three-year-old preschooler who had never had a computer in front of their face in their whole lives.

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Dr. Andy Galpin
Mm-hmm.

Jill Miller
And all of a sudden, their schools were on Zoom, and we were pivoting our company and filming all this content, and it was so stressful. I started to have... And I'm, also I was writing a book, of course, about stress regulation, and I started to have panic attacks, which is not-- And it, that is not in, uh, something that I'm not used to. I definitely had panic attacks in my life, but this was horrible. And I had come across just some anatomical body part that I'd read about before, but sometimes the, sometimes a body part, especially when it's fascial topography, doesn't stick the first time. It doesn't stick the second time. It doesn't stick the seventh time. But finally, the eighth time, I became fascinated by this particular area of the thoracolumbar aponeurosis called the lateral raphe. So the thoracolumbar aponeurosis is the, the plane upon plane of flat epimysial fascia that is the tendon of your lats. It's the tendon of your external abdominal obliques, your internal abdominal obliques, your transversus abdominis, your erector spinae. They're also layers that envelop the psoas and quadratus lumborum. So we have a, a layer cake of deep fascia on the back called the thoracolumbar aponeurosis. All right? And within this, there is, there are these little seams where all of the layers of the thoraco- l- uh, lumbar aponeurosis come together, and these are called the lateral raphe or lateral raphe, if I'm pronouncing French correctly.

Dr. Andy Galpin
Hmm.

Jill Miller
So I wanna see if I can massage that lateral raphe. And so what I did was I, I have these tools called gorgeous balls, and they're soft, inflated rubber balls. Um, the ball feels like a human hand. It's very grippy, and they're very gushy, these balls. And so I place them on either side of my lower back, right about where the lateral raphe is. Where is that? Just above the pelvic bones, uh, connecting to the 12th rib. So we have this little zipper. This is where this lateral raphe is. And I laid on my back, and I had these gorgeous balls on the, the girth of my low back, and my sacrum was on the floor. These balls were on the sides of my low back. Rib cage and head was on the floor. And I laid there and I breathed for many, many minutes using my diaphragm as an internal massage tool, uh, to reach my way into this thoracolumbar aponeurosis. And I experienced a lot of pleasure over the many minutes that I was there, and that pleasure was I could feel from my sacrum to the crown of my head, my entire spine was lengthening while these balls were broadening me from side to side. When I, um... There's a lot more that happened there, but when I finally took the balls out, I could feel that my little body, I'm a little five-foot-two girly, I took those balls out, and I swear to God, I had grown an inch.

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Dr. Andy Galpin
Hmm.

Jill Miller
All of my discs had reperfused. My anteriorly tilted pelvis was no longer just passively hanging out in anterior tilt in a reclined position. And I know this is the experience you had-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... 'cause I did this with Andy, and after he did this decompression, he's like, "Oh, my, my lumbar spine is not extended anymore."

Dr. Andy Galpin
Yeah.

Jill Miller
"It just feels, quote-unquote, 'neutral.' It doesn't feel like it's hypertonic in this..." Um, and so I had that same experience, and part of thatBack tension that I had was all the emotional stress-

Dr. Andy Galpin
Sure

Jill Miller
... of carrying this business, of carrying this family, of not having a way out. So there was a lot of emotional release that went along with this decompression, 'cause I'm just holding on to so much. Um, so this is a way that one can painlessly address back pain, um, that can address, uh, arthritis in the spine that's, you know, making you hold your body in a certain way, um, and that isn't a rub-out. It's not like a rollout. I'm not, like, creating aggressive friction. This progressive position anchors these layers of thoracolumbar aponeurosis, and the breath is the tool that's creating this, uh, almost like this squeegee swipe, balloon action inside your body and creating this progressive stretch from bone to ligament to disc to fascial layer to muscle, uh, to in- induce a better glide throughout the entire axis. And then within that little capsule, that little position, um, there are so many little micro movements that one can do to address, um, you know, very nuanced things as well. But also you think about this decompression of the spine isn't just decompressing the spine, it's also decompressing all the visceral organs that are, are hanging out just on the front side of your body that are also, like, dealing with th- how they process stress or how they're processing your posture at all times. I think there are many different things that are decompressing. That is the overall emotional feeling of release. So I heard you say release when you were leading up this question. That word release in the self-myofascial release l- literature, unfortunately, we have this term self-myofascial release, although I think foam rolling is

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a horrible term also.

Dr. Andy Galpin
Yes.

Jill Miller
Okay?

Dr. Andy Galpin
Yes.

Jill Miller
So both-

Dr. Andy Galpin
I know the science hates-

Jill Miller
Yeah

Dr. Andy Galpin
... self-myofascial release.

Jill Miller
I know. But you-

Dr. Andy Galpin
But yet clearly they're there

Jill Miller
... feel this ephemeral, uh, psychological, almost spiritual sense of something has released. Some heaviness that I felt before or some strain that I was preoccupied with has evaporated. Why? I just laid on two gushy air-filled balls and I breathed. I didn't even move. I just lay-

Dr. Andy Galpin
And nothing even hurt.

Jill Miller
And nothing hurt, and my breath was the movement. How subtle and amazing that is.

Dr. Andy Galpin
There is, I would say, I don't know, probably a doubling of the literature in myofascial release in the last couple of years.

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Jill Miller
Mm-hmm.

Dr. Andy Galpin
It is really, really exploding. There was not much to... I mean, I would literally think it's probably doubled.

Jill Miller
You're right.

Dr. Andy Galpin
So we're learning more. Clearly, we don't have all the answers. This is a field where we have to lean on clinicians, is my opinion. Because the science is catching up. We're getting there, but we need to have people like you who have, can simply tell us, "This is what I've done, and this is the people, and this is the, the coaching access," um, to give us more tools, 'cause the science is, is just going to be behind us for some time. So I know that there's distention with the term-

Jill Miller
Yeah

Dr. Andy Galpin
... myofascial release. And you've alluded to that earlier. It's doesn't necessarily only mean that the myofascia themselves are being released. So, um, do you know, is there a more appropriate scientific term? Is that still kind of up for debate or landing?

Jill Miller
Um, I think I propose, like, myofascial... What did I propose?

Dr. Andy Galpin
Treatment? Or-

Jill Miller
Um, well, I think, I think massage is actually-

Dr. Andy Galpin
Oh, okay

Jill Miller
... I think that's actually a right word.

Dr. Andy Galpin
Well, we don't have a great term. We'll acknowledge-

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Jill Miller
Uh, like manipulation.

Dr. Andy Galpin
Sure.

Jill Miller
Yeah.

Dr. Andy Galpin
'Cause the actual result, the, the release, we can't guarantee. We can guarantee the massage part or the manipulation right there.

Jill Miller
Right, the manipulation. Exactly. Myofascial manipulation. I described how I came... A lot of, a lot of how I came about the roll outs that I do are, so many of them are about stress regulation, but they happen to help, be so helpful for people with pain and, and so many other different, um, syndromes. But I wanted to point out about this spinal decompression, um, exercise, uh, what's so notable, by the way, it's... I call it the lumbar hammock for short, but in, in Body by Breath, it's called spinal decompression via the lateral raft. It's really embarrassment. I can't believe I over-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... titled that, but it's just a lumbar hammock. You're just setting up-

Dr. Andy Galpin
Yep

Jill Miller
... a hammock. Um, but there is a researcher i- a professor in Wisconsin who is forming some cohorts right now in the firefighter community. She's had an N of one. She has a, a firefighter that she's been working with who has been doing these, uh, these, these type of roll outs, very gentle-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... non-painful not aggressive rolling. And she was really having trouble with a stress test that they regularly have to go through, I guess, to maintain their certification. They have to run, um, run up stairs with a heavy pack, many, many, many flights of stairs, and she kept breaking down.

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She was having difficulty in her preparation for the test. And the professor said, "Give me a month. Let me, let me work with you on some stress relieving techniques." And she shared this and a number of other of the Body by Breath techniques, and she was able to run the test with energy to spare and with no pain. And so now she's creating a cohort of firefighters to test out some things. Um, but the same researcher has also been doing this work in a much older population, uh, in a population of folks with Parkinson's disease.

Dr. Andy Galpin
Hmm.

Jill Miller
And all of them say they have immediate postural improvements. Their tremors stop or diminish greatly. So there are a lot of other autonomic nervous system benefits that this type of work does that isn't just necessarilyTissue dependent, right? But there are other shifts I think that are happening throughout the body that are notable and can be very helpful and, you know, low to no cost. If you don't have balls like I'm describing, what I've done as a substitute is I've rolled up yoga mats. I mean, most people can find-

Dr. Andy Galpin
Yeah

Jill Miller
... yoga mats or d-

Dr. Andy Galpin
Towel or something.

Jill Miller
Something. Yeah, but the grip is important.

Dr. Andy Galpin
Yeah.

Jill Miller
So-

Dr. Andy Galpin
Oh, fair, fair

Jill Miller
... you need to find something to put over the towel that's gonna create the grip, um, for you, so you have to experiment in your house. I like, um, like, uh, you know, can o- bottle openers that you use-

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Dr. Andy Galpin
Mm-hmm

Jill Miller
... to open a mayonnaise jar.

Dr. Andy Galpin
Yeah.

Jill Miller
Those are good. You have to have a few of those, and you can put those on some rolled up towels. But the grip is really important, again, because we're talking about this layer cake. We're talking about trying to create, um, horizontal forces, shear forces, that are going from skin all the way to bone. And but we're not just doing it with compression, like you said. We're not just pressing in, we're trying to traction and offload. So you have to look for that in your house.

Dr. Andy Galpin
Quick question. Do you have any sample videos online if someone wanted to see that, the exercise-

Jill Miller
Yes

Dr. Andy Galpin
... something like that, that we can link to the show notes and-

Jill Miller
Yes

Dr. Andy Galpin
... all that.

Jill Miller
I have many on Instagram. I have many free videos on YouTube, and I have this... I think I have a nine-minute version on YouTube of this one.

Dr. Andy Galpin
Okay, great. So you guys wanna go try that out, we can link all that-

Jill Miller
Yeah

Dr. Andy Galpin
... directly in the show notes. Today's episode is sponsored by David. David makes protein bars

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unlike any I have ever encountered. They have an amazing 28 grams of protein, only 150 calories, and zero grams of sugar. That's right, 28 grams of protein, and 75% of its calories come from that protein. This is 50% higher than the next closest protein bar. Honestly, it's the best tasting protein bar I've had by a mile. While I often talk about the importance of getting one gram of protein per pound of body weight for things like muscle health and recovery and the promotion of lean body mass and satiety, the reality is that for most people, getting that one gram of protein per pound of body weight is really challenging. However, David makes that easy. Their bars taste incredible, and are each packed with 28 grams of protein. I eat one almost every day and always have two or three in my backpack when I'm traveling. Like, literally always. It probably sounds funny, but I eat them as dessert all the time. When you try them, you'll know exactly what I mean. The macronutrients, one more time, are 28 grams of protein, 150 calories, and zero grams of sugar. If you're interested in trying these bars for yourself, you can go to davidprotein.com/perform. Again, that's davidprotein.com/perform. You alluded to this earlier. You spoke about the diaphragm. I wanna s- go to this side of the equation. Can we start by walking us through the two primary diaphragms we're gonna be worried about here? People hear diaphragm, they forget there's, like, multiple, four of them.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Top one, bottom one. What are they doing here, and what's this got to do with our conversation? And, and you can see, again, the point I'm working to here is, like, how do we actually use the gut-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... very physiologically and anatomically to get pain gone from everywhere else in my body?

Jill Miller
It's so cool. I had to write a 480-page book about it . I love the diaphragm.

Dr. Andy Galpin
Sure.

Jill Miller
Oh my goodness. Um-

Dr. Andy Galpin
The respiratory diaphragm specifically, right?

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Jill Miller
Yes, the respiratory diaphragm. The respiratory diaphragm. Yeah, this is this interesting horizontal muscle, this sort of misshapen parachute, um, inside of the rib cage. You have this, um, partition between the abdominal organs and your heart and lungs, and this muscle acts as a, a pump for both the, the viscera below it as well as the lungs and the heart above it. Um, and it's also keeping those things separate. If you didn't have your diaphragm, your small intestine would be coming out of your nose.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Most unattractive- ... and disgusting. So it's, it's there for, for that reason. The, the diaphragm... Let me just, uh, rewind just a little bit. When you're doing that decompression exercise, one of the cues, one of the attention cues that I gave to you-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... and to the other folks here at the Perform podcast was to, once the balls were in place, was to deliberately breathe south of the rib cage, right? To breathe in a gutward direction, to breathe the energy of your attention into the balls that are on either side of your low back. Um, and what that enables is you to begin to sense the actual excursion, the downward movement of your diaphragm on inhale.

Dr. Andy Galpin
That's exactly what I felt, yep.

Jill Miller
And then it's relaxation on exhale, and this was a, basically a slow forced inhale, meaning you're deliberately inhaling, and then I asked them to not force the exhale. So the exhale was just a, what we call passive recoil in the diaphragm space, or rather in the, uh, fascia space. So we have this inhalation where you're feeling the movement of the diaphragm into the right and left ball. Um, but what I also asked them, especially Andy, to pay attention to was, I wonder if you feel any difference in the movement on the right side versus the left as you're here breathing. And was there a difference for you?

Dr. Andy Galpin
Yeah, it was... I think I described it as, it was so different, it didn't even feel like the same body parts. It was as different as my right knee is from my left elbow. Like, w- it was completely separate.

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Jill Miller
Totally different. These are two hemispheres of one muscle. We have a right diaphragm, and we have a left diaphragm, and they're innervated separately by a right and left phrenic nerve. Um, and your right diaphragm is a little bit higher in your body, and the left hemisphere is a little bit lower, but you can't sense it. You can't feel your diaphragm. This partition-

Dr. Andy Galpin
Mm

Jill Miller
... is devoid of muscle spindles. So you can't really ever know-Like I can say to you right now, Andy, can you tell me the degree of contraction in your right bicep?

Dr. Andy Galpin
Sure.

Jill Miller
Or can you tell me about... You, you can tell me about the position of your elbow-

Dr. Andy Galpin
Yep

Jill Miller
... by thinking about your right bicep. But if I told you right now, if I asked you right now, where is your diaphragm?

Dr. Andy Galpin
Yeah. Only 'cause I know where it is when we do different parts of breathing, I would know that. But I have no kinesthetic or proprioceptive awareness at all of my diaphragm.

Jill Miller
You have no pro- proprioceptive awareness of this muscle. Um, thank God, because if you had to feel it 20,000 times a day-

Dr. Andy Galpin
Sure

Jill Miller
... descending and ascending, you'd go mad. You can't afford that. This is, this, breathing is happening, um, automatically for you most of the time, unless you're taking control of it.

Dr. Andy Galpin
Mm-hmm.

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Jill Miller
And this is a skeletal muscle, and we can control it. It's amazing. We can do things with this skeletal muscle, um, that directly impact every system of the body. The diaphragm is a node that spawns responses all over our body.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Um, but for me, one of the most, um, practical things that I do with my clients regarding the diaphragm is inducing pressures into all the tissues that connect to the diaphragm so that they can build a better mapping of it and at the same time they can release tissues that unbeknownst to them are inhibiting the diaphragm from its full range of motion.

Dr. Andy Galpin
Interesting.

Jill Miller
Or from its potential range of motion. Now, I will say one more thing. The diaphragm, you, you do feel the diaphragm in one particular activity, and that is when it goes into spasm, and that's the hiccups.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
So that's really the one time when you, like, feel the diaphragm. Other than that, it's really hard to feel. So we have to make it visible through a pressure, through, um, a novel breathing strategies with pressure. When I talk about pressure, I'm talking about using the, especially the Corgis ball or the different, uh, therapy balls that I use in different ways, um, and trying to enlarge your proprioceptive and interoceptive awareness of the relationship of breathing-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... to the diaphragm. And so one of the key places we go, there's a lot of key places, but one of them is below the diaphragm, we'll go into the gut because the diaphragm is sewn into the same exact fascial fabric as the transversus abdominis. And so, um, if your transversus abdominis, uh, is, uh, very rigid from overtraining or from sucking your stomach in, these are things that will create adaptations in the collagen network of your fascia and create a lot of, of, of stiffness. And your, your diaphragm, as it descends, there should be a corresponding ballooning of everything

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that's below it, right? So as your diaphragm presses down, this is called intraabdominal pressure, your, your organs are gonna be-- they're gonna bob down because they're being pressed from above by the diaphragm. Your pelvic floor will have a stretch, and there'll be a circumferential stretch. The abdomen will stretch forward, the waist-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... and that thoracolumbar aponeurosis that I was trying to get you guys to perceive should also have a corresponding distension.

Dr. Andy Galpin
There's your horizontal movement right there.

Jill Miller
That's right. But most people are missing this horizontal movement, um, because of just the way life creates so much tension in our back body. Um, low back pain is the most prevalent cause of pain worldwide, and I'm here to solve that problem. I wish.

Dr. Andy Galpin
Sure.

Jill Miller
Um, so by going into the transversus abdominis with the Corgis ball, um... By the way, if you've never gone into the gut-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... to massage, I don't advise going into the gut to massage. I always advise a sideline position first to attenuate your pain-pressure response. Because when that ball or when that object goes into the abdomen, we go back to this muscle bracing response.

Dr. Andy Galpin
Yep.

Jill Miller
Your body will do anything to get to the next breath. And if your transversus abdominis is compromised by pressure, your brain is gonna start to signal pain, and that's gonna get you off of the, the object. It's gonna be so uncomfortable. So we have to figure out stealth ways to acclimate your body to this uncomfortable pressure that is threatening the diaphragm's

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movement. So there's a lot of paradoxes in here. So we, uh, in, in Body by Breath, one of the things we do is we work with mindset, so we'll actually self-suggest things to ourselves in order to welcome this discomfort, um, in a tolerable way. Like, I, I'm a student of my breath, right? So we might say something to ourselves like, "I'm a student of my breath," or, "My breath is welcome here." You know, things like that can be really helpful because you wanna be a student of this relationship of the diaphragm to the transversus abdominis. And by the way, it's not just the transversus, there's other stuff-

Dr. Andy Galpin
Sure

Jill Miller
... too, there too. But, um, you know, visceral pain is also very real. When you put an object, you know, right into your-

Dr. Andy Galpin
Yep

Jill Miller
... into your small intestine or your large intestine for the first time, or your bladder, uh, there might be some kickback.

Dr. Andy Galpin
Yeah. Yeah. Fair enough. Duly noted. Uh, I, I went for gut smash first, for the record.

Jill Miller
Of course you did.

Dr. Andy Galpin
Okay. Fairness. It's an easy story to tell. If, uh, my diaphragm isn't working, I could see how this could reduce performance, right? I could reduce my endurance 'cause I'm not breathing correctly. I could see all the things. My question is past that.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
How do I know? How can I tell if my diaphragm's working or not? I can't feel it, like you said earlier. Maybe my back doesn't hurt, so I don't have any sign of dysfunction. How is one to know if their diaphragm is-Working correctly. I believe you. It is the, it is the center of human movement. It's all those things. How do I know?

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Jill Miller
Yeah, Andrew has a quote, "Never skip diaphragm day." I don't know if he made it up or... I- it's, I have it in my book. I think it's hilarious.

Dr. Andy Galpin
Okay.

Jill Miller
Um, the diaphragm is probably working if you're alive.

Dr. Andy Galpin
Okay, fair.

Jill Miller
Your diaphragm's working.

Dr. Andy Galpin
Yep.

Jill Miller
It's doing its thing, but your intercostals may not be rhythmically moving very well. You may have inappropriate stiffness in this relationship between the transversus abdominis and the diaphragm. Um, you may not be getting good rib excursion, or you may be over-breathing by using what we call accessory breathing muscles.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
In Body By Breath, I break breathing into three different zones of breathing. There's zone 1, which is this area that we've been talking about, this very relaxing gut expansion, diaphragm descending. Zone 2 is the area of the intercostals com- uh, in combination with the diaphragm, so we have a rib upward rotation, rib downward rotation.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
And this is, you know, you have 12 sets of ribs on one side and 12 sets of ribs on the other, and they've gotta be moving well. Um, but if you are a person who is under a lot of stress and diabolical stress, eventually if you're only doing rib breathing all the time, which is a, uh, over time this is a sympathetic breathing style, you'll probably end up defaulting into what I call zone 3 breathing. And that zone 3 breathing is face, neck, shoulder type of breath, where you're you're

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really gasping for air.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
And you can see this in, um, asthmatics. You can see this in, you know, sudden onset of panic. Um, but this is also not always necessarily a harmful breath. You'll have this type of zone 3 breath in an orgasm, like a really heightened sense of delight. You know, so you'll hear these air-filled type of breath that are very, very shallow. But it's not a long-term strategy for health.

Dr. Andy Galpin
Right.

Jill Miller
So I, what... The way we test for it is, um, through, uh, responses to touch in these different areas. So I think that, you know, neck and shoulder pain, uh, are very common.

Dr. Andy Galpin
Yeah.

Jill Miller
Um, and I think with the use of tech, it's gotten, you know, worse and worse and worse 'cause you have the- the hand-to-eye positioning that comes from-

Dr. Andy Galpin
Right

Jill Miller
... holding cell phones. So we can cre- we can be in the cast of a zone 3 breather more often than probably our ancestors because of our, uh, our close environment with work and with tech.

Dr. Andy Galpin
Yeah.

Jill Miller
Um, and so these tensions in the face, neck, jaw, eyes, shoulders, um, all the way through the brachial plexus down into hands and fingers, um, I think are providing more sort of a simulation of zone 3 armoring that is really unnecessary for, um, efficient length tension in zones 1, 2, and 3.

Dr. Andy Galpin
How would I know if-

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Jill Miller
Mm

Dr. Andy Galpin
... I'm in one, two, or three? What would be signs, symptoms? Help me figure that one out.

Jill Miller
Oh, chronic neck pain, jaw pain, um, headaches, that would be somebody, uh, or- or hand pain, right? So anything that is coming from this, you know, all the, the areas that I described. So this would be, uh, we would be addressing that in zone 3. What do we do for that?

Dr. Andy Galpin
Yeah.

Jill Miller
Well, typically I'll do some zone 2 work first because you don't really get your shoulders to sit on top of your ribcage well unless your ribcage is able to upwardly and downwardly rotate well. So, um, w- I'll do a lot of sideline positions-

Dr. Andy Galpin
Mm

Jill Miller
... um, on the Coregeous balls on the, on the ribcage. And I'll train people to use the ball as an elastic biofeedback. So they'll, they'll do breathing in sideline, also in frontline, so they'll, they'll place the, the ball on their sternum-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... um, with their body weight and feel the intrathoracic pressures changing as they breathe into the tool. And so you start to pick up on the m- movements of breathing, um, and these sensing of the movements of breathing helps anchor you into-

Dr. Andy Galpin
Mm

Jill Miller
... more and more appropriate long-term healthy breathing patterns, which is zone 1, zone 2 is really where you wanna be most of the time, and you wanna use zone 3 in case of emergency. You're-

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Dr. Andy Galpin
Yeah

Jill Miller
... trying to cross the finish line, by all means, like y-

Dr. Andy Galpin
Breathe however you need to breathe.

Jill Miller
Yeah, breathe-

Dr. Andy Galpin
Who cares?

Jill Miller
... however you're gonna breathe.

Dr. Andy Galpin
Right.

Jill Miller
So we need zone 3 to be facile, but if it's always armored, if it's always in this high-stress position, you can see, right, we're on camera-

Dr. Andy Galpin
Yep

Jill Miller
... if you're looking. I've got my shoulders pinned up into my ears, and my, my head is being thrust forward. Uh, my upper back is rounded. You know, I've got nowhere to go.

Dr. Andy Galpin
Bruxism, chronic headaches, I would imagine this would be the same story, right? Pretty... You can't go as far as to say that's always because you're breathing that way, but I would imagine there's some pretty reasonable correlation between somebody who is in zone 3 breathing, as you're mentioning, and again, chronic headaches, migraines, bruxism, jaw clenching, the whole thing, right?

Jill Miller
Or even a- apneas, sleep apneas, right?

Dr. Andy Galpin
Oh, sure.

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Jill Miller
So this nighttime, um, unconscious, um, um, mouth, jaw, tongue behavior that is deadly.

Dr. Andy Galpin
And so what you're really trying to do is to get them to be more self-aware. By spending more time in two, uh-

Jill Miller
One and two

Dr. Andy Galpin
... y- you're saying-

Jill Miller
Yeah

Dr. Andy Galpin
... you'll realize you're in three, and you don't even know it.

Jill Miller
Yeah. Uh, yeah, so I call this playing your wind instrument.

Dr. Andy Galpin
Mm.

Jill Miller
So by becoming aware of the feedback of the soft tissues in these different zones, uh, you can really make choices about... I mean, obviously your physiology is your physiology. I live in LA. We had fires in LA.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
I couldn't believe what happened, um, to me psychologically when this, this-

Dr. Andy Galpin
Yep

Jill Miller
... this devastation was going on. I mean, so doing, um, practices thatfamiliarize you with your own zone one, zone two, zone three, and that you have ways to at least flip the stress switches now and again, um, and bone up on practices that build your recovery resilience or at least, uh, fill up your parasympathetic cup-

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Dr. Andy Galpin
Right

Jill Miller
... rather than continue to overload the sympathetic cup. Uh, I think this is, this is what I'm r- referring to in terms of playing your wind instrument. But for me, pressure is always a part of that because that is what's giving you the biofeedback about which zone is my home? Like, where am I mostly breathing into?

Dr. Andy Galpin
Could you give me a one sample of what something like that would look like? I- I'm laying there on my side.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
How many breaths am I taking? How long am I staying there for? Am I doing this every day, multiple times a day? I know the answer is, you know, depends on all the situation, but what would be, you know, kind of a sample strategy here?

Jill Miller
Oh, y- this can change within two minutes.

Dr. Andy Galpin
Yep.

Jill Miller
Yeah. And you wanna do the other side, obviously. You wanna do both sides. Um, but, uh, I like to do a lot of contract relax type-

Dr. Andy Galpin
Mm

Jill Miller
... of exercise there, 'cause that also plays with some of the baroreceptors in the aorta, and so we get a really interesting, I think, vagal, vagal rush-

Dr. Andy Galpin
Mm

Jill Miller
... from doing some of these breath hold contract... Let me describe that to you. So, so you're laying on your side, and I have many videos on Instagram that cover this. And, um, you can put

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like a block or a pillow underneath your head, and you have a soft gushy ball, like Coregeous or something else, underneath your ribs. And you take a dynamic breath, a zone two breath, that really broadens the rib cage like Popeye. You hold your breath, and then you stiffen. You activate those muscles that moved your ribs apart, and then you exhale and let go. So you can exhale passively and just let it all go. Um, but you can also build on the exhale strategy and try to void your lungs of air.

Dr. Andy Galpin
Mm.

Jill Miller
So let's say we inhale , hold, contract, and then exhale. And then once you think you're empty, then blow out four more candles on the birthday cake.

Dr. Andy Galpin
Mm.

Jill Miller
Blow out six more candles on the birthday cake till you get to such a absence of intrathoracic pressure that you have a spontaneous, um, inhalation. So there's lots of different tricks to work on creating this elasticity of the rib cage. And I do find that doing both ends, this dynamic inhale, hold, and then the exhale with the re- really forcing the air out. Forcing the air out not in a way where you're, um, pinching your face and scrunching your eyebrows and going into a zone three reactivity, but truly using the intercostals and the diaphragm and the transversus abdominis to get the air out. Um, this is a really great way to build that, just the costal recoil. And when you do that, you do the both sides, you're... This really helps the costal vertebral joints also.

Dr. Andy Galpin
Mm.

Jill Miller
So you're gonna find that your thoracic spine, your whole spine, is gonna have better mobility, especially, um, rotation, like transverse plane rotation. It's, it's amazing what it does.

Dr. Andy Galpin
So I'd imagine once a day to start to get that going and see what happens, right?

Jill Miller
Yeah.

Dr. Andy Galpin
And you could probably do better?

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Jill Miller
Once a day, do you want me to prescribe?

Dr. Andy Galpin
Right.

Jill Miller
Everybody.

Dr. Andy Galpin
Yeah.

Jill Miller
Get down a little bit every day. Oh, it makes such a difference.

Dr. Andy Galpin
Morning or night would be better?

Jill Miller
Um, I like t- uh, if I'm gonna only do it once a day, I'll... Mm, boy, that's a really hard call.

Dr. Andy Galpin
You got one, Jill. Give me one.

Jill Miller
Ugh, um-

Dr. Andy Galpin
Do I gotta do it... Let's say I'm dealing with headaches and jaw pain at night or-

Jill Miller
Yeah. You gotta do this in the morning.

Dr. Andy Galpin
In the morning.

Jill Miller
Well, okay, okay, excuse me. You need to do it at night and the morning.

Dr. Andy Galpin
Okay.

Jill Miller
Okay?

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Dr. Andy Galpin
You're not gonna just let me get away with the morning?

Jill Miller
No, you're not.

Dr. Andy Galpin
Okay.

Jill Miller
No, because, uh, o- o- one of the things pre-bed, uh, and I've seen this happen in my students, um, doing many of these parasympathetic exercise. So all of it, by the way, all these exercises that I'm describing are going to do what I call turn on your off switch. They will accelerate a parasympathetic dominant state, um, and again, keep pushing off this weird sympathetic overflow. So when people have the jaw grinding happening at night, they get incredibly, um, incredible soreness in the, all the muscles of the face. Um, a lot of this is, uh, you know, beyond your control. This is just happening unconsciously. Um, but what I have seen in students that do a number of these exercises, also exercises for the face, neck, and head, not just a Coregeous ball-

Dr. Andy Galpin
Mm

Jill Miller
... in the rib cage. But we need to address the temporomandibular joint, the temporalis muscle, um, other, um, muscles that are floating in the, uh, the superficial fascial layer of the face-

Dr. Andy Galpin
Mm

Jill Miller
... this is very interesting, um, can help to adjust that sympathetic switch. By the way, these muscles of the face that I'm describing, they also share source nuclei in the, the brainstem with the vagus nerve.

Dr. Andy Galpin
Mm.

Jill Miller
And so this is another way to just stimulate the vagus from a, a palpation point of view, combined with this breathing type of exercise that also is pushing the gas on your off switch.

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Dr. Andy Galpin
Mm-hmm.

Jill Miller
So I think the more you can dose up on a parasympathetic stimuli prior to bed, um, you may find over time that you have less and less of this, uh, unconscious clenching overnight. But I would say if you know you have pain in the morning every day and you wanna go work out, just do a little bit of the work, and then it'll free up so much of your range of motion and change the pain as we described, you know, we talked about earlier.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
So why not do a little bit in the morning and do a little bit at night?

Dr. Andy Galpin
Yeah, it makes sense, right? Uh, get into good positions before you go train.And then getting in a good position before you go to bed. Like, how could you not do that? When we think about stress, autonomic nervous system, all right, and we have our, our two branches. We'll, we'll keep it as two for now, right? So we have our sympathetic nervous system, fight and flight. We have our parasympathetic, rest and digest. There's more to the story here, friends. Yes, I'm aware, but for the sake of conversation, we'll keep it right there. Most people assume if I'm not at a high heart rate, if I'm not, uh, mentally stressed right now, that my central nervous... or my, my sympathetic nervous system, my fight or flight is not on. But there's a very clear difference between not being on and actively pressing the gas or turning, what is it? Turning off on more-

Jill Miller
Turning on the off switch

Dr. Andy Galpin
... turning on the off switch. How should we think about this? What are strategies we can do to be more effective at turning the off switch on more? Did I capture that correctly?

Jill Miller
Yes. Yes. So one of my goals with writing Body by Breath was trying to sell this notion of parasympathetic tolerance. I think that we are, we're not in a parasympathetic dominant society, and we're not parasympathetic dominant beings.

Dr. Andy Galpin
Right.

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Jill Miller
We're sympathetic dominant beings. Um, but without doing-- without investing in our own recovery, um, it's hard to keep producing. It's hard to stay creative. It's hard to keep thinking clearly. It's hard to make decisions for your family. Um, it's hard to pick out which freaking color curtain you wanna have in your, in your new office. So it really is important to be able to, um, create the physiological ability to allow parasympathetic virtues to arise within your body. So I call this parasympathetic tolerance capacity. And, um, I personally need it for my own wellbeing. Otherwise, I just... I mean, I will just grind it out. Like, I will just go nonstop. Um, I think that's just part of my own family lineage. Like you just, you go, go, go. You produce, you produce, you produce. So, um, and I think that, um, one of the things that I've also picked up from the fascia research space is that when we are constantly in a sympathetic aroused state, exposed to shots of our own adrenaline and cortisol constantly, th-there are adaptive changes in our fascial tissues because of it. So namely, your, um, fibroblasts, it's been shown when they are exposed to adrenaline, um, don't have an immediate change, but, uh, after 24 hours, the fibroblasts, they convert due to the presence of something called TGF-beta. They start to convert into like a gremlin version of a fibroblast, which is a myofibroblast. And a myofibroblast becomes a contractile cell within the, the fascial network.

Dr. Andy Galpin
Mm.

Jill Miller
And these myofibroblasts actually have myosin in them, and they are prevalent in people who have, uh, thickened fascia, non-gliding fascia. This was first found in thoracolumbar aponeurosis. This was first found in people with low back pain, this high prevalence of these myofibroblasts. And, um, but it doesn't happen immediately. So you can, you, you can be startled, and then you can calm down and get on. But these repeated insults, so the presence of adrenaline, um, over a course of 24 hours, this, uh, the fibroblasts will start to uptake, um, TGF-beta or, and this will convert into this myofibroblast. But what happens with that is it starts to shrink the tissue, and it's at a very slow rate.

Dr. Andy Galpin
Mm.

Jill Miller
So you don't all of a sudden become tight, um, like I said, in a day, a day and a half. But over the course of a month, um, you will have one centimeter of tensioning in these tissues. So exposing yourself to stresses is very important for adaptation and for health, but the chronic soaking in a stress response will change the nature of your connective tissue, and you will have tissue thickening, and this can lead to pain problems. So exposing oneself to parasympathetic

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practices as a way to offset, um, and refill your cup, so to speak, I think is a really great way to consciously balance our life because there, there's never not gonna be enormous amounts of stress showing up in our life. Um, but having this as a respite that's within you, like this is your own internal medicine chest. In Body by Breath, I talk about, um, the five Ps of the parasympathetic nervous system. There's really five Ps that this is a self-produced recipe that will change state guaranteed every time. So y- the first P is perspective, and so this is that, that mindset piece. There's a top-down appreciation that you are willing to create conscious change or conscious awareness. So that top-down is a, is a host for the experience. So if you just go into rolling willy-nilly, will it do something? Yes. But if you're really trying to, I think, improve your parasympathetic tolerance, you wanna be there to receive the information that-Your body is gonna start to share with you. 'Cause one of the things that happens when you turn on your off switch is quite frequently, in the off switch, your emotions arise.

Dr. Andy Galpin
Mm.

Jill Miller
And those emotions can be pretty unpleasant and intolerable. And it's, but it's very important because that's what's in the way of, for many of us, of communication, of growth, of relational, uh, relational safety, all those things. So perspective, um, for example, one of the perspectives that, that I worked with when I released the book is all of me is welcome here. Because releasing a book, and you know 'cause you've written books-

Dr. Andy Galpin
Mm

Jill Miller
... you are... Like, that's my entire brain. That's my, my everything I feel, think, and perceive is, like, in that book. And so it's really scary to, you know, what if this word is wrong? What if I got this theory, you know, what if I misappropriated something? Or, you know, it's... So all of me is welcome here, and that really helped me with a lot of the public speaking that I did post that book. Um, but something more simple that anybody can do is, like, I embody my body. I love that one 'cause it's just like, okay, I embody my body. And so it allows you to be a student of this internal process. Parasympathetic dominant state is not a loud state. It's very quiet.

Dr. Andy Galpin
Right.

Jill Miller
So you really have to put yourself into a state of deep listening and sensing in order to, um, to have it manifest. So perspective. The second P is place. And place ideally for true quietude, for

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true parasympathetic arousal, um, you need to have a place where you feel safe. And that could be, you know, indoors or outdoors, but it should be relatively quiet. Ideally, for the relaxation response to occur, it should be on the darker side, so not in the presence of bright lights, not in the presence of a lot of noise like clanging kettlebells, you know, and things being slammed here and there. Uh, but when we work with teachers, we, we tell them how to set up environments where they're able to establish place for their students so that their students feel like they can let their guard down, right? 'Cause you can do this stuff in a gym. You can. Um, you can also do it in a war zone. We have people working in refugee camps doing this type of work. So it's just about setting up parameters of, like, here's our space to let go, to be able to be vulnerable. So your perspective, you have place. The third is position. And position can change your physiology immediately. As soon as you recline, there's just no more postural stress on your heart and your diaphragm, and you're able to not have as much sympathetic tone in your body. So we always encourage people to typically to recline or to even boost that by going into a gentle slope position, which takes advantage of the baroreceptor reflex. So if we can put people in a position where their pelvis is just a little bit higher than their heart, higher than their head, right, in a little bit of a gentle slope, um, that'll really enhance a vagal dominant state. So you've got... And also just getting on the ground feels so good. And of course, there's all this research about earthing and whatnot, so go with gravity. Perspective-

Dr. Andy Galpin
Place

Jill Miller
... place, position. Four, pace of breath. Pace of breath or pneumatic pacing, if we wanna have two Ps there.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Um, breath pacing exercises can alter your, your state. And I'm sure you've talked about this on your podcast, but slow, deep breathing is primal. Um, you know, uh, the HHP Foundation-

Dr. Andy Galpin
Mm

Jill Miller
... I know you are aware of the Health and, uh, Human Performance Foundation, which, um, is a great amalgamator of all breath research, and it's free and available online. Tanya Bentley is their founder, and Ryan McKenzie is also one of the co-founders. So they recently put out a systematic review on all the breath research that was targeted towards anxiety reduction. And

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what they found in, you know, running all the, the numbers on the r- on the different papers is that slow, deep breathing was, for five minutes daily, is really the, the sweet spot. Uh, you can do a mix of fast-paced breathing with slow breathing, but you mustn't only do fast breathing. Fast breathing alone is not going to alter your stress response. You must include the slow-paced breathing. Uh, so I really appreciated this, um, this paper from them 'cause it certainly validated, you know, my instincts-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... and, and what I've seen in my clients. So, um, extended exhales tend to be really beneficial, but you can also do extended inhales. Just make your breathing slow-paced, and I would add to that, let's also not, um, use our zone three muscles for that breathing.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
So I mean, obviously, slow breathing is gonna be involving zone one, zone two. And then the fifth P is palpation. And we've been talking about this palpation via self-myofascial release, um, you know, the whole time that we've been talking, um, as a way to dampen sympathetic outflow and to enhance, uh, sensory feedback, both proprioceptive and subtle sensing interoceptive feedback into the body, and this all enhancing the relaxation response or this parasympathetic dominant state. So for me, this, this recipe of the five Ps, um, is something that's very doable andCan happen in a very cohesive timeframe of, of this five-minute timeframe. Um, like the simplest thing I could suggest to your listeners is you can just get down on the ground and put your pelvis up on something like a coregeous ball, um, because that's gonna give you traction, so that there's the palpation piece, um, and you're already, you know, positioned in the recline, and you do very, very slow breathing there. You're hopefully in a safe place where you're doing this, and then you say to yourself, you know, "My breath is home," or, "I embody my body," one of those things, and there, there you have it, for five minutes.

Dr. Andy Galpin
Super easy. I really appreciate you laying that out. That is going to be phenomenally effective for a lot of people, I guarantee it. The last thing I wanna draw into all this is then how does this relate to things like the pelvic floor, right? So we... I said earlier there's multiple diaphragms.

Jill Miller
Oh, sure.

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Dr. Andy Galpin
Pelvic floor is a diaphragm, right? This is... It's just the bottom one, right? Um, I admittedly don't spend a ton of time on pelvic floor development, but this is a clear aspect of it, right? So how does the, the pelvic floor... And, and we could certainly do an entire discussion, many of them on the pelvic floor. But what are the, the top-hitting things as it relates to the conversation thus far that we should be thinking about with the diaphragmic floor?

Jill Miller
Uh, so one of my friends, Katie St. Clair, calls the respiratory diaphragm the thoracic floor, which I think is hilarious.

Dr. Andy Galpin
Mm-hmm. Right.

Jill Miller
Um, and the, this pelvic floor is another, uh, tissue that has, uh, horizontal fibers-

Dr. Andy Galpin
Right

Jill Miller
... like, you know, crisscrossing at this bottom of the, uh, bony funnel of the pelvis. And the-

Dr. Andy Galpin
It looks quite similar to the respiratory diaphragm, by the way, like reasonably.

Jill Miller
Yes, and it's going to have movement that mirrors the action of the thoracic diaphragm, of the respiratory diaphragm rather. So as the diaphragm descends and applies pressure into the viscera, um, and provides this distention, this circumferential distention to the core, there should also be a little bit of stretch in the pelvic floor. Um, unless your pelvis is akimbo, unless your pelvis is, your pelvis is rotated pretty far out of the pressure wave of the diaphragm. So if the, the diaphragm isn't able to exert this rhythmical pressure down into the pelvic floor, it's probably gonna exert it elsewhere. And so one of the classic shapes is you see the, uh, kind of the banana back, that-

Dr. Andy Galpin
Mm

Jill Miller
... rib thrust, anterior tilted pelvis. So if the diaphragm isn't pressurizing down to create stretch in the pelvic floor, which is very healthy for it, it's gonna pressurize forward into the front of the abdomen, into the rectus sheath, into a, a strong ligament called the linea alba, which often is

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breached and creates what's known as a diastasis recti. So these are fascial systems upon systems. These are, um, connected sheaths that rely on the correct amount of integrity in, in all layers for this great global response.

Dr. Andy Galpin
That's actually really, really helpful. People have oftentimes heard of things like rib flaring.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Right? And you just described it a little bit differently. So imagine, again, your, the bottom of your ribs are opening up. Instead of the bottom of your ribs pointing directly down-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... they're pointing, say, at a 45-degree angle out. Therefore, when you breathe and you're expanding that, that pressure is now going outwards, horizontal to your body, instead of vertically, which then pushes on the pelvic floor-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... to get it to move correctly. You're also then reducing pressure posteriorly, right?

Jill Miller
Yes.

Dr. Andy Galpin
And that matters because that's the low back getting pinned down.

Jill Miller
Again.

Dr. Andy Galpin
Right? Like-

Jill Miller
Low back victim yet again.

Dr. Andy Galpin
Right. There you go, right? So it, it's all of this stuff. That's why stacking is like-- we'll, we'll use

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that term pretty colloquially. Stacking those two diaphragms on top of each other is the optimal scenario.

Jill Miller
Yes.

Dr. Andy Galpin
If they're both tilted front or back, we can live. It's when they are off-kilter-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... and the pressure, whether it's the bottom one, by the way, or the top one.

Jill Miller
Right.

Dr. Andy Galpin
So whether this is pelvic tilt causing the problem, or rib flaring, or the opposite-

Jill Miller
Right

Dr. Andy Galpin
... either way, we're in dysfunction, which can manifest itself, as we've been saying all day, in 1,000 different things.

Jill Miller
Yeah. I mean, there's so many different things to discuss here. It's like, oh, well, you've got chronic hip pain. That's going to move your pelvis a little bit away from your center of mass so that-

Dr. Andy Galpin
Yep

Jill Miller
... you're not putting as much weight on that uncomfortable hip or knee or ankle or whatever it is. But, you know, people, people are perfectly imperfect. We're, uh, incredibly, uh, adapted to our asymmetries.

Dr. Andy Galpin
Mm-hmm.

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Jill Miller
Um, and that's, uh, for the best. Uh, but there's probably better and better ways, and I think this is one of the places that I love talking to Kelly about is, you know, looking for, uh, being able to centrate joints so that they have more options of movement. Because if you have rotated off of axis so considerably that your range of motion in a, at a-

Dr. Andy Galpin
Mm

Jill Miller
... as we account for joint by joint, um, then we can get into a lot of trouble. And that's where doing, you know, some really good fascial work, self-myofascial release, um, in very specific joints in very specific ways can, um, allow for a restore, a restoration of elasticity and muscle function, um, in tissues that have been compromised by position. So this is something I, I mean, I love working with people to, you know, tune up these little areas that have become messed up by, you know, scar tissue or positioning or injury. 'Cause you see the, you see the, this remodeling happening over time, and the remodeling is the collagen network adapting to your new normal.

Dr. Andy Galpin
Yeah. What are the accepted best practices for dealing with diastasis recti?

Jill Miller
My friend Katie Bowman, she wrote a book called Diastasis Recti, and she's one of my favorite movers and thinkers in the movement movement space. And, uh, her bookOne of the things that she tal- talks about is that diastasis recti is a whole body issue.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
It's never just that you have this overstretch syndrome in the abdomen, but there were, there are probably things that, um, led up to your, uh, body harboring more anterior pressures.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Although if you are carrying triplets and twins-

Dr. Andy Galpin
Mm, sure

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Jill Miller
... um, or if you have over-tensioned your abdomen through overtraining, um, this can also be problematic when, when time, when the time comes for the abdomen to stretch. So let me backtrack a little bit. Diastasis recti is a breach of the connective tissue link between the right and left halves of the anterior abdomen. So we have these deep fascial layers that lock themselves around the rectus abdominis, the obliques, the transversus abdominis, and they all zip into a common ligament called the linea alba, which, um, connects from the bottom of your sternum all the way to your pubic symphysis, and this is an incredibly, uh, uh, lot of integrity in this system, and this is how you get your core force production. Um, we've got the right half and the left half of our abdomen working well together to stabilize our spine and our pelvis and do all the things, help us to breathe.

Dr. Andy Galpin
You can imagine a plane... What's, what's the game? Like, the doctor game where the, uh, the kids can go in and try to-

Jill Miller
Operation?

Dr. Andy Galpin
Operation, right? So you imagine a slit going from your sternum all the way down. You would splay left and right horizontally, and you would splay vertically.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Right? You would open up in all four areas. That's exactly the line you're talking about.

Jill Miller
Yes.

Dr. Andy Galpin
If you can imagine... And I'm basically saying this little piece for the male audience, 'cause I know every female listening knows exactly what you're talking about already. But if you think about a six-pack-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... and you think about the muscles are two columns of three, right? So one next to each other left and right.

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Jill Miller
Well, five and five. I mean, I've seen-

Dr. Andy Galpin
Sure. Right

Jill Miller
... dissection where you've literally got one, one rectus abdominis from soup to nuts on one half, and then the other one, you had one, uh, one divided by a small tendonous inscription.

Dr. Andy Galpin
Oh.

Jill Miller
I've seen so many anomalies-

Dr. Andy Galpin
Sure

Jill Miller
... in the rectus. So if you can't get a six-pack, boys, it's because you've got a one and a half pack by birth, okay?

Dr. Andy Galpin
Yeah. Yeah. Yeah. Well, that middle c- middle line between the two columns-

Jill Miller
Mm-hmm. Yes

Dr. Andy Galpin
... is exactly what you're talking about.

Jill Miller
The zipper. Yeah.

Dr. Andy Galpin
This is a fascia.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
This is a connective tissue issue.

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Jill Miller
Yes.

Dr. Andy Galpin
This is why we're talking about it, right?

Jill Miller
It is.

Dr. Andy Galpin
So when that becomes splayed open, you have that effect of, of the operation. You've had a tight line, you called it a zipper.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Perfect analogy. It's supposed to keep those two sides connected so force can transfer and everything else. It's not working. It's, it's damaged or whatever, however you wanna phrase that.

Jill Miller
Well, what, it, really 100% of women get a diastasis recti during pregnancy.

Dr. Andy Galpin
You have to.

Jill Miller
And that is granted by the amount of elastin and relaxin, um, that's produced, um, from your growing fetus and all-

Dr. Andy Galpin
Yeah

Jill Miller
... of the hormonal changes that happen within you and that change the elasticity of the tissue. You must enlarge in order for the fetus to grow, and so the accommodation we have is we have these elastic changes in our fascial tissues. The problem with a diastasis recti is in, uh, you know, after birth, for some women, um, it can take many, many months. Some there is never a resealing, so to speak, of the, you know, the heat seal, like as if you were a meat, uh, a meat packer, that it never gets reinforced. And there is a very wide gap, and that gap is then filled in with superficial fascia, adipose tissue, and collagen, but it doesn't have the strength or integrity, um, that you had pre-birth. And so, um, this is very problematic for force production through the core. We're not getting transfer of forces from right to left or from top to bottom. We have a

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proprioceptive deficit. Um, and, uh, you know, it, it is integral. I mean, I've seen these-

Dr. Andy Galpin
Yeah. Oh, yeah

Jill Miller
... I mean, you've got... It's, it's a good connection between the right and left in terms of the, the fatty layer that has filled it in, but we don't have the muscle force production in a cooperative way. And so, um, these women can have symptoms for years of back pain, pelvic pain, incontinence, prolapse. Um, but, you know, people who are more lax in their connective tissue tend to be more prone to get these, um, diastasis that linger. So most will close, about 66% will end up after a year, they'll have almost no legacy of a separation, and then you have this, this, this, you know, third of women that are outliers.

Dr. Andy Galpin
Okay, well, that's important to know. Again, speaking, I'm sorry to offend, but mostly to the male side of the equation here. A year. Not, not six weeks. Not, not, not-

Jill Miller
No, not six weeks

Dr. Andy Galpin
... not s- 16 weeks, right? The, the, this is two-thirds by a year, which means a third still after a year are not back, right?

Jill Miller
So w- when we go back to this discussion on the fibroblasts, they're a slow-moving cell.

Dr. Andy Galpin
Yep.

Jill Miller
They are going to repair you, but you need time, and you need consistency to allow that collagen remodeling to occur.

Dr. Andy Galpin
Right.

Jill Miller
It will or it won't. I mean, sometimes it just doesn't 'cause there's pathology or there's, there are, you know, maybe you have hyperlaxed tissue. Um, but what, one of the things that Katie talks about is that the diastasis is a whole body thing, and we really need to address, um, hip, pelvis, low back, and we really need to address shoulder ribcage to adjust the position of the ribcage to

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try to optimize consistently the position of ribcage to pelvis and then do exercises that, um,co-occur with breathing rhythms because by the way, your breathing is the lining of your core. These breathing muscles are the lining of your birthday suit, and we need to use them appropriately to try to build correct tension over time. But it's not something that can be rushed, but it's definitely something that needs to be done. I mean, you really should be doing, um, these type of breathing exercises during pregnancy as well, I mean, hopefully. And this is a longer story. It's a much longer story.

Dr. Andy Galpin
Sure.

Jill Miller
I do have a chapter in Body by Breath that covers diastasis recti and also, um, self-massage application for that. And I will say this is one of the warnings I have if somebody does have a diastasis recti, is you don't wanna put a ball right in the center of the area that is overstretched, but you wanna really think about, um, creating movements that would move the core muscles from the side to the middle.

Dr. Andy Galpin
Yeah.

Jill Miller
So you think about, uh, creating vectors of pressure that don't necessarily scrub over the midline, but they move from the side to the middle, and, uh, doing that in a, in a variety of different ways with different breathing exercises and then with tension-based exercises to try to rebuild tension on axis. So this is not something that's easy to describe in a podcast, but-- and it's very personal because each woman, um, will have a different level of stretch. Um, you know, some people have just more, more of their right side-

Dr. Andy Galpin
Mm-hmm, mm-hmm

Jill Miller
... moved away from the midline. Maybe it's not both sides that moved away, right? Maybe the baby was sitting in a way, 'cause babies sit weird in your uterus, man. They just do weird things, you know, just sort of jammed up against the, the right side of your abdomen with their little bottom there for the, the last two and a half months, and it just puts so much stretch load on, you know, the external abdominal oblique, um, and the transversus. Maybe the, the, you know, you don't have that much gapping. Anyway, there's different ways to measure this with fingers, and you, you definitely need to get-

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Dr. Andy Galpin
Yep

Jill Miller
... get it checked out by a, a pelvic floor PT. They're the ideal people to diagnose, um, and to give input on that. But these things are a fascia-based injury.

Dr. Andy Galpin
Amazing. We could certainly do a whole show just on DR, without question. Uh, but I think we'll leave people right now with saying pelvic floor physical therapist would be the place to go a-and generally, your recommendation for, for this area, for people that want a program, they're dealing with it right now, or maybe they're pregnant or gonna become pregnant, so on and so forth, that would be the, the broad category people just to start off with at least, right?

Jill Miller
Yes, and I would also, if you know you're pregnant or you wanna get pregnant, I would get Diastasis Recti, the book by Katie, 'cause she talks about exercises pre, during, and post. They're-- it's an excellent book.

Dr. Andy Galpin
What you're talking about is a case of kind of hypermobility, right?

Jill Miller
I consider the pregnant body on the hypermobility spectrum. And when we have pregnant students, we treat them like a hypermobile client, and there are differences in terms of rolling with a hypermobile body than a non-hypermobile body, for sure. I love working with the hypermobile population. And just FYI, according to Jessica Eckels' research, 20% of people have some degree of hypermobility.

Dr. Andy Galpin
Hmm.

Jill Miller
Not-- this is not to say that it's pathological. It's not to say that it's-

Dr. Andy Galpin
I get it. Yeah

Jill Miller
... um, you know, Ehlers-Danlos or Marfan syndrome, but, like, 20% of the population is pretty loose. So I've come up with a framework for rolling with hypermobility, and one of the, uh, other clinicians I follow, I love her work, I wrote the forward to her book, is Libby Hinesley.

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Dr. Andy Galpin
Mm-hmm.

Jill Miller
She wrote Yoga for Bendy Bodies, and she's got great information in there for, um, it-- practicing if you, if you are hypermobile, and so th- I would include the pregnant cohort in here also. Um, number one is breath. Use a conscious breathing practice while you're rolling because it will tune you into interoceptive feedback. Um, it'll also, uh, put you in touch with a calmer nervous system. Uh, hypermobile bodies tend to be higher in anxiety in general, and, uh, there are changes in brain regions. This is the work of, like I mentioned, Jessica Eckels and Hugo Critchley. You can look this up. It's so fascinating. Um, so when you're rolling, if you know that you are hypermobile, you should stay towards muscle bellies. So these are all Bs.

Dr. Andy Galpin
Hmm.

Jill Miller
We've got breath, belly. Stay in the belly. Don't go rolling at the joints. Why don't we know-- why don't we just wanna roll at the joints? Because-

Dr. Andy Galpin
Makes sense

Jill Miller
... bony junctions are where dislocations happen. So that's one of the, the third Bs, avoid bony junctions, because you couldn't easily dislocate, um, because there's just less muscle. There's less muscle mass there, and you're hanging out in your joint capsules and your ligaments there. Regarding rolling in the bellies, the other thing about rolling in the bellies is a lot of times, um, like you were mentioning, there will be these hypertonic areas-

Dr. Andy Galpin
Hmm

Jill Miller
... in people with hypermobility, and we wanna be able to restore good length tension so they can really get appropriate strength in agonist-antagonist relationships. And so rolling within the muscle bellies might help us to decouple some inappropriate trigger points or inappropriate hypertonic regions, so that's, that's the aim. Um, the fourth B is brace, so using contract relax techniques. You're not always trying to roll to the bone. You're not always trying to get all the way at depth. So I can do rolling that can address some of the more superficial tissues by creating, um, a, a little bit of muscle bracing, and that's gonna allow me to roll superficial fascia and also to roll loose fascia transition with the deep fascia. So I can-- W-where normally I would say

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contract relax, um, to amplify parasympathetic values in most bodies, when I'm dealing with a hypermobile person, especially, let's say, they have, um, hypermobility in certain spinal segments, I actually want them to keep some amount of tension in there while they're rolling, so I can get some of the benefits, some of the, maybe the parasympathetic benefits of rolling, but I don't wanna lose some of my support benefits. So that's... it's very personalized there. Um, and then, yeah, to avoiding going all the way to depth and again dislocating. So the bracing can be very important.Staying superficial. So this takes us back to superficial fascia. We can reap a lot of the parasympathetic benefits of rolling and the proprioceptive benefits of rolling by staying in the skin, the fatty layer, and the superficial fascia. The majority of the sensory neurons, um, within the, the nerve net that's associated with the fascial tissues, the majority of them are in the superficial fascia. And so I can get a lot of proprioceptive bang for my buck by staying on the surface, and, um, that might be all it takes to give the, that proprioceptive feedback to a very loose person to improve their positioning. So a lot of times, and this goes along with the contract relax also, um, a lot of the time with the very hypermobile person, they have a really hard time sensing, uh, where their joint junctions are. They blow past them.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Uh, which isn't good for overall stability. I mean, they can go there, and they should occasionally, but maybe not load in a really weird vector, right?

Dr. Andy Galpin
Mm-hmm.

Jill Miller
So working superficially and working with the contract relax can then heighten my proprioception of, of my body. Um, and then I also say with, uh, hypermobile people, like, when in doubt, don't roll it out.

Dr. Andy Galpin
Hmm.

Jill Miller
You can cause injury. You don't necessarily always know until it's a day too late. But, um, I do encourage people who are hypermobile to roll out, especially if they are the, the highly anxious type or also have digestive challenges.

Dr. Andy Galpin
Oh.

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Jill Miller
So, you know, in hypermobility, when you think about, um, super loose people, super bendy people, it's not just the fascia that's comprised of collagen, but all of your organs are comprised of collagen, and there are, uh, you know, your, your eyes are comprised of collagen. So there are so many other weird symptoms that hypermobile people will have, um, uh, breathing problems, um, autoimmune challenges. A lot of them have-

Dr. Andy Galpin
Hmm

Jill Miller
... mast cell activation challenges and, um, uh, IBS symptoms. So there's just, like, a host of things. So tamping down the sympathetic overflow, putting them into a place where they can be reflective and calm is, I think, very, very helpful for, for all of that.

Dr. Andy Galpin
Going to the other end of the spectrum-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... somebody that needs to gain flexibility-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... needs to gain, um, mobility.

Jill Miller
Mm-hmm.

Dr. Andy Galpin
Outside of, of course, s- you know, the foam rolling and things you've described so far, where does static stretching land in this equation? Do you like it? Do you hate it? Should it be done in a particular way?

Jill Miller
Oh, I love all movement. I love-

Dr. Andy Galpin
I know you do

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Jill Miller
... static stretching. I love isometric work. Um, where does it fall for people who are very, um, muscle bound or maybe even what we would call scar tissue bound? So somebody-

Dr. Andy Galpin
Hmm

Jill Miller
... who maybe has overtrained, like, say, they wanna have a really big... bubble muscles, I call these people-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... where you have just a t- more bicep than is necessary for, you know, general health, um, but they've done it by really overtraining.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Um, I think a combination of rolling and static stretching. What we see with the, the rolling can actually allow for that temporary elasticity to show up.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
So you can actually improve joint positions after rolling, so I'd recommend that as a prescriptive for them. Um, and you can roll the bicep. You can do, um, techniques called stacking, where you have, like, the ball's like a vice on either side of the bicep.

Dr. Andy Galpin
Oh, sure, yeah.

Jill Miller
Um, you can also just y- you know, lean against the wall with a, a block between your rib cage and your arm, and you have a ball here, and you have a ball here, and you just lean and create-

Dr. Andy Galpin
Mm-hmm

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Jill Miller
... like a pancake of your bicep and then do different movements of the elbow, uh, different movements of the shoulder and create different vectors, and that can i- in- in- increase elasticity so quickly, and then I would work on static stretching just to, to do, um, long held traction, uh, within the fascial tissues. But I would also work on the antagonist, so that would... there would need to be some tricep work. Um, I'm just thinking about this particular model.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
I mean, but you also need to work into the forearm because you've got, you know, a myofascial expansion into the, uh, membrane between the radius and the ulna. You know, this basically is periosteal sheath.

Dr. Andy Galpin
Yeah.

Jill Miller
So there's, there's a lot more to it, but, um, I've seen this in many clients, and they're always shocked that after a few days of rolling and static stretching that they gain generalized improvements in range of motion all over their body.

Dr. Andy Galpin
Mm-hmm.

Jill Miller
Um, but they're n- they're really not gonna do it on their own. They need to -

Dr. Andy Galpin
Yeah

Jill Miller
... some of these people, they just, they just, they need to be led day after day, um, and then their mind is blown, and then they go right back to their overtraining after that.

Dr. Andy Galpin
You mentioned at the very beginning, and I, and I said, when I tend to think of manual therapy, I almost as- always associate this as pain. In other words, I did too much training in my quad. I'm gonna roll it out, so I'm not so sore. Or I think about I'm tight, right? So I'm gonna use these two things. I basically didn't think about this area at all outside of those two cases. Either I'm tight, so I wanna release things more. I'm, my back's bound up. I'm tight from a 12-hour plane flight, or y- you follow and stuff, or, and I'm sore. You just alluded to some of them now, but what are some

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of the other benefits that have been shown, either scientifically that you're aware of, or just you've seen in your clinical practice, that we can get from, and we'll just keep calling it self-myofascial release or similar-ish things?

Jill Miller
There are so many benefits to self-myofascial release. Um, now mind you, I already mentioned I have a bias. I'm a ball, softball-Person. This is the evidence from all the literature. So this is a combination of rollers and sticks and tools. This is not about vibrating tools, by the way. So this is like just really cheap implements that anybody can do home care with. Um, so it improves movement coordination. You just gain better proprioception by rolling. Um, it improves range of motion and mobility, and that-- those changes can be obvious very, very quickly. Um, either rolling like along the spine, you can change your shoulders. Rolling around the knee, you can, uh, r-rolling around the knee, you can help your hip, you can help your knee. So, uh, it works everywhere. Uh, the surprising, I think some of the surprising thing is that the rolling improves torque. So when you roll, the muscle that you're targeting will be able to generate more forces afterwards. Um, and this is specifically with rolling, not necessarily static compressive. So, um, that I'm not, I'm not sure of. I don't think anybody's done that research with torque and just-

Dr. Andy Galpin
No, but there's a lot on actual strength and torque in y- in this specific realm. So regardless of that other section, who cares? We know for sure, uh, and it's been shown again many times at many angles, uh, that this stuff will enhance acute force production.

Jill Miller
That's great. Um, it decreases pain.

Dr. Andy Galpin
There you go. Right.

Jill Miller
That's great. Yeah. You woke up, you're sore, get on the ball.

Dr. Andy Galpin
Yep.

Jill Miller
Roll yourself out, and go practice again. Um, it reduces arterial stiffness and improves vascular endothelial function.

Dr. Andy Galpin
Mm-hmm.

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Jill Miller
Uh, it's really good. You know, we don't wanna have sticky vasculature, that's for sure. So getting stretch, um, through this, um, you know, pressure and, uh, wringing, uh, very helpful. Um, it decreases delayed onset muscle soreness, so whether that it times it out so that-

Dr. Andy Galpin
Mm-hmm

Jill Miller
... you get it on day three instead of day two, or you just have less of that inflammation, so that's a good thing. Um, it induces physiological relaxation-

Dr. Andy Galpin
Yeah

Jill Miller
... and parasympathetic features, which is one of my favorite parts about it.

Dr. Andy Galpin
Yeah, of course.

Jill Miller
It's a, a chill pill without taking a pill.

Dr. Andy Galpin
Right.

Jill Miller
Um, it reduces lymphedema and, uh, decreases local tissue inflammation, and there's some really cool research out of Harvard. Uh, Beau Risiou did some, uh, research with very, very soft tools. I'm talking about the amount of pressure that a, a pencil eraser would exert if you dropped it into your hand.

Dr. Andy Galpin
Hmm.

Jill Miller
Um, when they, they, uh, destroyed some anterior tibialis of-

Dr. Andy Galpin
Yeah

Jill Miller
... of mice, and they did these, uh, very gentle oscillations using this implement. The mouse can't

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do self myofascial release, so this was administered through these little, like, little tiny vices. Um, but the... It was a very, very soft latex, not a hard, um, thing. So I'm extrapolating here, uh, for that because-

Dr. Andy Galpin
Yeah, I get it. Yeah

Jill Miller
... the mouse did not roll itself. Uh, but it was a tool.

Dr. Andy Galpin
Yeah, we get it.

Jill Miller
There's some research out of Germany. Dr. Robert Schleip is one of my favorite fascia researchers. He's one of the originators of the Fascia Research, uh, Congress and the Fascia Research Society. He has found, um, with this, uh, group he's working with in a, a mental health institution there, that the rolling is helpful for major depressive disorder.

Dr. Andy Galpin
Oh, yeah.

Jill Miller
Um, they're doing surveys, um, you know, very, uh, regarded surveys, you know, before and after rolling, uh, around affect, around memory and cognition, and they're finding that the rolling, um, changes some of the, uh, tissue mechanics as well as, um, improves their emotional affect. Um, and then finally, it's helpful for interoception and sustained attention. So there's some work, um, out of Canada. Um, I'm blanking on that researcher's name.

Dr. Andy Galpin
Well, I, I'm sure we'll find that and hopefully put it in the show notes for you. But I can appreciate all this stuff because I didn't appreciate any of that b-before really coming across some of the stuff you were doing, and I know that the field is evolving. We're learning more. This is a particular area that I actually don't care that much about the molecular mechanisms. I'm interested in it. I think it's really cool.

Jill Miller
We do. The fascia researchers are very interested in it.

Dr. Andy Galpin
I know. I know you are. But why I'm saying I almost don't care is, look, I didn't care that this was working because it was repairing tissue damage inside a muscle, or if this was a nervous system, or if this was a connected... I, I didn't really care. What I cared about was I don't hurt as

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much anymore-

Jill Miller
Mm-hmm

Dr. Andy Galpin
... afterwards. Or I'm seeing this change. Is this helping me get better? It's interesting. I cour- of course, as a physiologist, like to hear the, the things. We'll learn more about it. I'm sure the field will get more specific. You'll find different tools, different strategies, techniques work for better applications and outcomes and all that. But it's incredibly valuable, in my opinion, to have people like you who know the science based on where it stands now. We know the limitations. We know what we don't know. We know what's been shown to not work. But then you have on the other side of this equation thousands of hours, years of experience with countless types of clientele, personally, with courses, with seminars, and you can really add context to saying, "Well, we've tried this, and we've seen this, and we've noticed this." So when you have a field like this where the science is just, is where it is, having that clinical experience is incredibly valuable. So I can't thank you enough for coming by today, sharing a ton of research, a ton of physiology, lots of personal anecdotes. I know that, uh, people, if they wanna see direct examples, they can go and, and check out, uh, all your videos and your free things you put out there, and we'll link to all of that, of course. So thank you so much for all of that and, and all the years as well, and we really appreciate you coming by today.

Jill Miller
Thank you, Andy. Your work has been life-changing for me, and I love being a friend of yours, and I also love being a student of the education that you offer.

Dr. Andy Galpin
Awesome. Thank you so much. I hope you enjoyed today's discussion with Jill Miller as much as I did. To find direct links to the videos we referred to earlier, Jill's courses, seminars, products, and other services, please check out the links provided in the show notes. Thank you for joining for today's episode. My goal, as always, is to share exciting scientific insights that help you perform at your best. If the show resonates with you and you wanna help ensure this information remains free and accessible to anyone in the world, there are a few ways that you can support. First, you can subscribe to the show on YouTube, Spotify, and Apple, and on Apple and Spotify, you can leave us up to a five-star review. Subscribing and leaving a review really does help us a lot. Also, please check out our sponsors. The show would not exist without them and their exceptional products and services. Finally, you can share today's episode with a friend who you think would enjoy it. If you have any content questions or suggestions, please put those in the comments section on YouTube. I really do try my best to read them all and to see what you have to say. I use my Instagram and X profiles also exclusively for scientific communication, so those

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