

[Transcript] The Tim Ferriss Show / #675: Eric Cressey, Cressey Sports Performance — Tactical Deep Dive on Back Pain, Movement Diagnosis, Training Principles, Developing Mobility, Building Power, Fascial Manipulation, and Rules for Athletes

This episode is brought to you by 8 Sleep. Temperature is one of the main causes of poor sleep and heat is my personal nemesis. I've suffered for decades, tossing and turning, throwing blankets off, pulling the back on, putting one leg on top and repeating all of that ad nauseam. But now I am falling asleep in record time. Why? Because I'm using a device as recommended to me by friends called the Pod Cover by 8 Sleep. The Pod Cover fits on any mattress and allows you to adjust the temperature of your sleeping environment, providing the optimal temperature that gets you the best night's sleep. With the Pod Cover's dual zone temperature control, you and your partner can set your sides of the bed to as cool as 55 degrees or as hot as 110 degrees. I think generally in my experience, my partners prefer the high side and I like to sleep very, very cool. So stop fighting, this helps. Based on your biometrics, environment and sleep stages, the Pod Cover makes temperature adjustments throughout the night that limit wake-ups and increase your percentage of deep sleep. In addition to its best-in-class temperature regulation, the Pod Cover sensors also track your health and sleep metrics without the need to use a wearable. So go to 8sleep.com slash Tim for \$300 off the Pod Cover through June 6. Stay cool this summer with 8 Sleep, now shipping within the US, Canada, the UK, select countries in the EU and Australia. That's 8sleep.com slash Tim, spelled out E-I-G-H-T, sleep.com slash Tim for \$300 off.

This episode is brought to you by AeroPress. I love AeroPress with more than 45,000 five-star reviews and customers in more than 60 countries. It might be the highest-rated coffee maker on the planet. Let's rewind just a bit because back in 2010-2011, I tested the entire gamut of coffee brewing and filtering options alongside a former Barista world champion. This was for research for the four-hour chef. That concluded with a statement that the AeroPress was, quote, bar none, my favorite brewing method. I even mentioned it and made a cup of coffee on late night with Jimmy Fallon using the AeroPress. Here is the back-back story. Remember the Arope, the amazing UFO-like disc that you could throw farther than a football field? Allen Adler, a mechanical engineer in Stanford University Lecture, created that. Then after conquering the 1980s toy market, he began to obsess over one thing, coffee. The result was the AeroPress, which debuted in 2006. It was quickly adopted by the specialty coffee community, and it became so popular with the Barista community that someone in Oslo, Norway started a world AeroPress championship.

Because the AeroPress combines the best of three brewing methods, you get a cup that is full-bodied like a French press, smooth and complex as if you were using a pour-over method and rich in flavor like espresso. Best of all, it's super small. You can pack it in your bag when you travel.

It takes literally five seconds to clean. It is all practical, no fuss, and you don't have to drink mediocre coffee at your office or Airbnb. Now they have a new crystal clear version, sleek enough for display and tough enough for the road. You can pick one up at aeropress.com slash tim. That's A-E-R-O-P-R-E-S-S dot com slash tim for less than \$50. That's aeropress.com slash tim. My listeners, that's you guys, can get 15% off. Just use the link aeropress.com slash tim.

I highly encourage you to try it out. You will not be disappointed aeropress.com slash tim. Hello, boys and girls, ladies and germs. This is Tim Ferriss. Welcome to another episode of The Tim Ferriss Show, where it is my job, each and every episode, to deconstruct world-class performers from all different disciplines to tease out the best practices, the exercises,

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the influences, the books, etc., that you can apply to your own lives. And my guest today is Eric Cressy. I've known Eric for quite some time. You can find him on Twitter at EricCressy, C-R-E-S-S-E-Y. Eric Cressy M-A-C-S-C-S is president and co-founder of Cressey Sports Performance with facilities in Palm Beach Gardens, Florida and Hudson, Massachusetts. He has worked with clients

ranging from youth sports to the professional and Olympic ranks, but he is best known for his very extensive work with baseball players, more than 100 professional players train at CSP each offseason. Eric also serves as director of player health and performance for the New York Yankees. You may have heard of them. Eric double majored in exercise science and sports and fitness management at the University of New England and then received his master's degree in kinesiology with a concentration in exercise science at the University of Connecticut.

Cressy has published books and video resources that have been sold in more than 60 countries. He regularly lectures both nationally and internationally, and his research has been published in the Journal of Strength and Conditioning Research. He serves as a consultant to New Balance,

Proteus Motion, and Athletic Greens. Cressy has a blog and free newsletter at his website, ericcressy.com, and has a podcast at elitebaseballpodcast.com. You can find more about his training facilities at cressysportsperformance.com and on social media, [ericcressy](https://www.instagram.com/ericcressy), on Instagram, Twitter, and elsewhere. We'll link to all of those in the show notes at tim.plog slash podcast. And without further ado, please enjoy a very practical, a very tactical, and wide-ranging conversation with Eric Cressy. Eric, Dr. Cressy, nice to see you.

You too. Thanks for having me.

Absolutely. And I thought we could start with the personal because I feel, and this is not my quote, but the intensely personal is often the most universal. And the way to lead into that is by reading an email you sent to me. This was not too long ago, but it led to this conversation on the podcast. Hi, Tim. I hope this email finds you well. Wonderful to see your continued success with the podcast. Thank you for that. In particular, I love the section on medical literacy in the recent episode with Peter Atia. It's such an important concept that can go in a number of different directions, but my brain immediately went to the realm of orthopedics.

A few things that I think our must covers include, don't worry guys, this is not going to be the great American novel, but these are the bullets to get me very excited to have a conversation that I could share with people. I was like, I'm going to have this conversation anyway. Why don't we share it with folks? Because I think it'll be incredibly helpful.

Number one, incidental findings on musculoskeletal imaging of asymptomatic individuals. We'll explain what that means. Bias slash oversight and radiology. We'll probably touch on all these.

Three, the medical model potentially not being well equipped to handle non-homogeneous conditions like low back pain. The origin of this was my personal experience of having this escalating low back pain that led to x-rays, MRIs, and to this point in time, it's been very hard to decipher what is happening. Back to the email. Number four, systemic causes of musculoskeletal pain in parentheses of vitamin D, prescription meds, etc. Five, the overlooked misunderstood emerging role of the fascial system. Six, psychosocial stress and sleep deprivation as they relate to injury risk. Seven, new frontiers in biologic stem cell,

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PRP, etc. I wanted to read this email in particular for the close and some phrasing in that. This is from you. I was always fascinated with a lot of these things, but over the past four years, with the Yankees, my access to aha moments has been far greater. It might make for an intriguing episode that would help folks advocate for themselves a bit better. That self-advocation is super interesting to me, and I thought we would start with the low back pain because I've learned so much in the last month or two. We can begin anywhere that makes sense, but actually, before we get to that, just to establish some bona fides, because people certainly have heard the bio, but what are some of your PRs in the deadlift? Let's just begin there. Personal records. I pulled 660 at a body weight of 181, a little bit lighter at a body weight of 165, so I've lifted my fair share of heavy stuff without really a well-targeted long-term goal with it in mind. Now, without recommending this to other people many years ago, because we were introduced to something around, I don't know, 2010, 2012 in that range, you once sent me a video of you doing something you would probably not advise to any of your clients, which was trap bar deadlifts

for higher reps with some ungodly amount of weight for the reps. Do you recall what this might have looked like? I think it was 415 for 25, and I made the mistake of doing it Thanksgiving morning, and I absolutely ruined the holiday. I think I had a headache for about four days, so definitely one of my more ignorant moments in my youth. All in the quest of science, though, right? All in the quest of science, a man of the people. The reason I wanted to bring this up is because there are many theoreticians out there. I am very interested in people who have the academic

and research understanding of the literature, but who are also practitioners, and that is certainly you on many different levels. So how should we edge our way into low back pain? What do you think it makes sense to start? I think back pain is fascinating, obviously. It's an all-encompassing diagnosis. It covers a lot of different things that impacts a lot of different people. What's particularly fascinating about it is, it's very different. If you're a nine-year-old kid and you fall off the playground, you break your forearm, you throw in a cast, he heals up, you're good to go. There's a much more significant level of chronicity that happens with the back pain that we see in the general population. And I think what's to my email's point, and the term non-homogeneous was one I actually stole from Dr. Stuart McGill, who's great in this, and he's talked about how the medical system may not actually be well designed to handle a non-homogeneous condition like... Meaning, widely varied.

Exactly. Each case being different, or somewhat different.

Speaking in a really broad strokes in an athletic population, we tend to see much more extension-based low back pain. So we're going to see in a tennis player, or a baseball player, a soccer player, is probably markedly different than what we're going to see as someone who sat at a computer for 30 years, or a roof, or a plumber, or a floor, who spent a lot of time inflection. Bending forward.

Correct. And then what we have is we have a lot of people that have probably done a little bit of both and created adaptations in both directions. Maybe it's the plumber who goes out and then plays an erect basketball league four nights a week, or something like that. So everyone presents, I think, with a different history of activity and symptoms, and either successful or failed

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treatments that may have intervened in one way or another. It often leaves us just in this situation where you can't just look at these all the same.

Let's maybe segue, just for a moment, to radiology, which people might raise an eyebrow over, but let me explain why. The event that precipitated me reaching out to you was getting a radiologist's report after an MRI. And I got the report, and it was right before going to dinner. I was in an Uber. I somehow got to the attacks, which I thought was very interesting. I thought it was a phishing attack at first, but it turned out to be legitimate. And there was moderate to severe XYZ, this type of degeneration, that type of degeneration. And as a layperson, albeit someone who's tried to take time to become somewhat medically literate, it was a terrifying read from me personally. And the, I think it's the impressions slash conclusions section, as you pointed out, was a little strange. Usually there's some type of summary, but it effectively just said C above. And as someone who doesn't read these reports frequently, I just took that at face value, that that's how these things are generally formatted. And spoke with you, spoke with Peter Tia, and Dr. Tia said to me on the phone, he said, well, if I were to show you an MRI of my spine, I think he keeps his images somewhere close to his desk. He said, it's a garbage fire, basically. It makes your spine look like a neonate. But he is, as far as I know, asymptomatic. He does not have any type of low back pain or back pain. How should we think about the use of these tools? Your experience is not at all, I hate to say it unique. I think it's very much something that happens every day. And let me preface this by saying, I'm not a radiologist. I'm not an orthopedic surgeon. I'm not a doctor in any capacity. I'm a strength edition coach. So I kind of found this world by accident. I do happen to look at a couple thousand radiology reports every year. It's something that kind of happened by accident, just because you started to try to work backwards from the conditions that we were seeing, people who are having pain and various points in their body. And we want to understand why this is not to take away from radiologists or doctors at all, because it's an incredibly specialized approach. And it's a huge part of the diagnostic puzzle. But the thing that I would say that's interesting, first off is we'll have people that'll walk in with their films and I'll say, listen, I'm not reading those for you. People go to school for a decade to understand how to do that. But I can certainly kind of draw maybe some conclusions from some of the things that you see relative to my sample size. So I always try to always illustrate that in our conversations. But the big picture I would say is that it has to be looked at as a piece of the diagnostic puzzle. So really, no diagnostic imaging is appropriate without an accompanying physical exam, a full case history as you go through a variety of things. Because as we kind of alluded to in that initial email, there's a lot of things that can impact it. And what's really fascinating, maybe this is the place where it gets intriguing for people, is there's actually an article that came out in the Lancet in 2009, an exact quote from it that said, lumbar imaging for low back pain without indications of serious underlying conditions does not improve clinical outcomes. Clinicians should refrain from routine immediate lumbar imaging in patients with acute or sub acute low back pain and without features suggesting a serious underlying condition. So we've always been taught the second something gets hurts, you call your doctor, you go and get an MRI and you get all the answers. And there may absolutely be a case for that in certain situations. And there may also be times where you get a whole bunch of false positives that can wind up leading you to bark up the wrong tree. And that happens a lot with spines.

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How objective are these reports? I remember we chat on the phone and I want to say that you mentioned if in some, I wouldn't know what to call them studies, perhaps experiments that if radiologists were shown photographs of the patient's faces, that the outcomes differed. Yeah, there was one particular study and I don't think it's at all reflective of like a greater conspiracy theory in the radiology community that patients pictures were actually shown to the radiologists before reading, they tended to read a little bit more intently. So I think it's like anything else, radiology is a little bit like fine art and they're ultimately trying to interpret what they see. And sometimes you can see a little bit more or a little bit less. And sometimes if you see something that's very slight, you might not relate it in a report, whereas other people might document, you know, absolutely everything. And the additional context I would add to that is number one, I'm used to duplicating tests to get a second opinion before staging any kind of intervention. But I have much more comfort with blood draws and those types of biomarkers. So if I see something that's out of whack, I don't immediately freak out. I think, well, okay, if my triglycerides have shot up that significantly, it's probably some type of dietary issue. Maybe I just ate a ton of meat the night before and I had it too late, etc. Or it could be a lab error. And I'll run the test again. And only when you have confirmation, what I consider beginning the stage interventions, I have less exposure to MRIs. So it threw me into a complete tizzy, right? I mean, I really was scared of this because it seemed also maybe unlike the blood markers, like something structural I could not fix potentially without some kind of surgery. And whether it's objective or not, and I have the number of friends or radiologists and very, very good at what they do. It's an incredibly difficult skill to develop. And that being as it may, the aspect of low back pain that is different from my past injuries, because as you know, I've had a long list of injuries, if I, let's just say, really hurt my shoulder, really hurt my knee, really hurt my ankle, I've done all these things, and I get an MRI ultimately, the correlation from image read to pain seems to be much stronger than with the low back. Whereas with the low back, it's like you have people who might have what appear to be normal images, but they're extremely symptomatic, they have all sorts of pain showing up and vice versa. So how do you begin to examine or fix low back pain? That's very definition of a billion dollar question. I mean, just to speak to some of the things that you just kind of hinted at in terms of actual numbers, there was actually a landmark study in the New England Journal of Medicine that basically looked at a collection of asymptomatic spines. I believe there were 98 particular subjects, 52% of them had a disc bulge at one level, 27% had a protrusion and 1% had an extrusion. So 82% of people had something on it and actually 38% of them had abnormalities at more than one level. Without having it in front of me, your report was markedly more significantly than that. We saw quite a bit of more and that was looking at a relatively unathletic population and you look at yourself like you've got a history in a wide variety of sports. You've tried just about everything and when I saw yours, I started thinking more of there was actually studying the American Journal of Medicine that came out in 2000 that looked at elite Spanish athletes and they're actually scoping especially for stress fractures and what was interesting is they found 8% of Spanish athletes were affected and only 50% of them really demonstrated symptoms. So really, you're looking at a scenario where one out of 21 out of

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25 actually had a stress fracture. They had no idea it was there. They saw it a lot in track and field throwers and rowers and gymnasts and weight lifters. But when I saw that study, I didn't buy it in an American population just because weight lifting is much more accepted here. We see way more early sports specialization here. We see more rotational sports hockey, obviously lacrosse, baseball, you know, everything's just played at a much higher level. And I think that study was also done 23 years ago. So I think right now we are dealing with an epidemic of a lot of young athletes that always have stress fractures taking place. Every time I see a bleak strain on a professional baseball player, there's usually an old stress fracture listed on the radiology report that they just saw. So for a guy like you, it's a unique look because you have a wide variety of things that could be emerging and certainly when you got your report read, they talked about absolutely everything that was on there. Right. And then I was sitting at dinner trying to concentrate, but my inner voice was going, I think you feel tingling in your low back. I think there's burning in your toes. I think your foot is numb. I was freaking out, which is unlike me. But it took having a conversation with you just to think about how compartmentalized my reference points are. A conversation with you to do maybe what in retrospect is obvious, which is send the images to somebody else. Don't send the report because that's the interpretation, but get a second read, which is what I'm doing right now. How should we think about low back pain, whether it's preventative or diagnosing? We can go in any direction that you think makes sense. Yeah. I mean, I think the first thing I'll say is that we probably have been conditioned to think that it is all the same and it really isn't. What we see in a sedentary population is generally going to be markedly different than what we encounter in our very athletic population, particularly those that utilize strength and conditioning on top of sports participation. It's one thing to just be an Olympic lifter. It's another thing altogether to Olympic lift and then go play soccer or something like that. I think we have to really understand our population norm for sure. Yeah. I remember you asked me on the phone, you said or asked if I thought I was compression sensitive, flexion sensitive, or extension sensitive. Is that right? Yeah, good memory. Yeah. Extension, bending backwards like a back bend. Let's just say I'm simplifying this, of course, flexion like yoga, bending over at the waist, rounding your spine, and then compression, which I knew immediately I was going to be sensitive to because I think the test, don't do this at home folks, work with a professional. This is not medical advice, but was to raise up my heels. It's like a classic heel stomp test. Heel stomp test. I was like, nope, I don't even want to do that because I know it's going to hurt. Those are tough ones because our heads weigh more than bowling balls. We're always encountering compression in our daily life and some of those are some of the most stubborn cases of back pain. But I think in the big picture, you talked about freaking out over an MRI, right? I'm not proud of it, but it's true. It's like looking at your business, right? And you had one employee that had a bad day, showed up late for work or something like that, and you immediately think, oh my god, my business is falling apart. In reality, it's one little entity. You might be wildly profitable and a million things are going right. So you

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have to be careful about honing in on one aspect of that diagnostic equation. So I talk a lot more about not just having a medical diagnosis, but also having a movement diagnosis, having an ability to relate how you move to what's actually taking place in the context of your symptoms.

So let's talk about that because as always with my very self-interested podcast, I wanted to have this conversation because I think it'll be very helpful for folks who are trying to navigate this type of non-homogeneous condition. I just like using big words.

And I also wanted you to have a chance to look at my movement, to look at my current state to see if you can discern anything about the low back. So what might a movement screen or an assessment look like? What are some of the things that you would take someone

through? The first thing I'll say is it always starts with a conversation. And I think that's really, really overlooked unfortunately nowadays because if there's one thing I've learned over the course of my career, it's that people always under report, even if you look at like fashion manipulation, which is a prominent soft tissue intervention right now. They'll dig deep on, hey, did you break your ankle when you were younger or anything like that? So it can really open some eyes for you. And I've had several times in my career where I've been burned by not digging

deeper. You look at a guy and he's like, yeah, it just doesn't make sense. I fractured my scapula on a car accident 10 years ago. Do you want to give an example on the prescription med side?

Because

people might think it's unrelated so they don't report it, but whether Accutane or something else. Yeah, that is one that we, if there's one we see in the most commonly, particularly because of our work with young athletes is athletes that are taking acne medication and don't necessarily want to report it. It's a sensitive subject, right? And oftentimes you do a postural screen, they take their shirt off and they have significant acne that's readily apparent. But some of that stuff can stay in your system for a while and there can be some pronounced musculoskeletal side effects in

terms of joint pain and things like that. So we've seen a number of athletes over the years that have done well as they got away from it, but we've also seen scenarios where they didn't report it.

And we floundered with kind of the wrong approaches for three or four months before it finally just came up in conversation. In the general population certainly there's concerns.

You guys spoke on your podcast about statin use. Some people do have really significant muscle soreness with that. We've seen certain antibiotics that may make people more susceptible to tendon injuries as well. Cipro. Yeah, that's one that's been discussed for sure. So it just speaks to, you always have to dig deeper on it. And people really tend to underreport, you know, pharmacological

interventions, they underreport previous musculoskeletal injuries. And I think they also underreport what they might not know. Do you know if this person is wildly deficient in vitamin D or they have an adequate magnesium levels? There can be so many different places where things can kind of go off the rails systemically that I think it's just so important to always start with a conversation and also get a feel for their history with exercise and in some cases rehabilitation, what's worked, what hasn't, what's made you feel better. All right, you felt great

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with dry needling, but not with something else. Those are all things that can kind of clue into the, you know, the clinical puzzle, so to speak. Yeah, totally. If somebody's, let's just say a jujitsu player and they're constantly in guard, that's going to be very different from say a surfer who spends 90% of their time paddling in that extension. So you have the conversation, what happens after that? I always go to a static postural assessment and there's a lot of, I guess, debate over posture and it doesn't perfectly predict injury or lack thereof, but it does give us some clues into where people at least start. And then there are schools of thought that are heavily focused on alignment. The idea being if you're in a good alignment, it's going to increase the likelihood that you're going to be in a better position once you actually wind up somewhere else. I look at it much more as how's gravity working on this body? What are the shapes that they're in? And it starts to give me some clues on, hey, if you've got really, really low shoulders, you got this downslope shoulder blade like crazy and you have anterior shoulder pain. I'm probably thinking that when we get to movement, you're, you know, your scapular upward rotation, what's taking place when you take your arms overhead, probably is going to be less than ideal just because you're starting 10 yards behind the starting race. The other fly in the ointment for me is that I have congenital transitional vertebra. Well, I should say vertebrae. What is the plural? Vertebra is the singular, I guess. So I have one transitional segment, which means for people who may wonder, if you're looking at my lumbar spine, so my lower back on an MRI from the side, the segments of the spine should, and I'm simplifying here, but look kind of rectangular. And in my case, I have one vertebra in the lower back that is more like a wedge. It's like a door wedge. So I have a lot of lower back, lordosis, right? I have sway back, basically. I used to have kyphosis, which was that like hunchback look. Thankfully, fix that. But that is also another, that's another aspect to this whole thing, which has led it to be a problem for decades. It's true for my brother as well. But then whatever it was 12 weeks ago, suddenly everything just got put into acceleration mode from pain perspective. And it's really been mystifying. And it's made me really sympathize for people in chronic pain because it seems to be such an elusive problem for so many people. So you look at the static posture. What comes next? I mean, to your point, everybody's invincible until they're not, right? And I think that's a line I tend to use quite a bit. But you might have that conversation about, hey, I have a congenital variant in some way. Some people we see in the structure of their hips or could be a number of different things. But what you also have to do is you have conversations with doctors with physical therapists to see if their symptoms actually correlate where that may take place. And that's something I should emphasize that I work as part of a comprehensive team. I have physical therapists one door down and massage therapists. And we refer out to a lot of orthos on the regular. But once we've done that postural screen, you know, for me, I will go into a collection of like, I guess, classic orthopedic range of motion tests, we may do some manual muscle testing. And then we actually get them up and move them around in more general screens, things like overhead squats, overhead lunge walks, push-ups, toe touches, shoulder abduction slash flexion, all these different screens that are, I guess, collectively general screens. So you want a collection of both general and specific screens that you're not necessarily missing things. I got it. So general screen, but you're also doing specific screens that might relate to the

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lower back assessment. Yeah. And those are your gateways, right? In my world, those are sometimes just the things that I need to know on whether, hey, we need to refer this out. Because you're going to have people that walk in with low back pain that just they trained like idiots, they either choose the wrong exercises, they who you call an idiot, or they go in the wrong, they go in the wrong patterns or whatever it is. So some people just need good coaching and maybe a little break, maybe need a discussion, but like, hey, the volume in your program is just inappropriate. We need to find some different kind of variability for you. And then other people, they kind of screen, this is something much more clinical. We need to escalate this. We need to get it to the hands of somebody who could do some imaging for it and maybe get a better diagnosis, or we may in-house do some kind of test retest where it's, hey, let's do some manual therapy here and let's see if they get some symptomatic resolution. And if we do create some kind of a transient change, whether it's in the context of their range of motion or in their reduction of symptoms, what are some things on the exercise side of things that we can do to follow it up to make those changes stick? Is there a resource or a book, anything that people could check out to become familiar with some of these movement screens? Long time ago, I talked about FMS in the four-hour body. There are probably many other variants of that type of screen. With the understanding that you should work with a professional, are there any other resources you might recommend? Yeah, for sure. And I think the crew at FMS has done a good job and the selective functional movement assessment is kind of a little bit more of a clinical add-on to that, that I think they've done a good job with that. If you walk in and look at our screen, it's really a collection of different philosophies all melded together. So I think my response would probably be very different for people in the health and humor performance industries asking versus like a general population folk. With that said, I know Kelly and Juliet Starrat in their new book have kind of talked about some stuff. He was a recent guest, just know things that people should be able to accomplish in terms of activities of day living and tasks. I do think that's maybe a good proactive screen that people could use. It's built to move for people. Great read. Just finished it.

So people could start there. Let's continue to go down the rabbit hole of lower back pain. So I'm looking at some research that I gathered for this conversation. Could you speak to maybe some of the ingredients in the cocktail that can produce lower back pain or exacerbate lower back pain? So I have a number of things here. I didn't want to read them in depth. And maybe you have revised your thinking on this, but I have a whole list of things here. Left AIC, right BC patterning. No idea what that is. Poor motor control and strength of the glutes, poor hip rotation and mobility in general, thoracic spine mobility, etc. Are there any usual suspects that in not necessarily sedentary folks, but let's just make this personal, because that's the easiest way to have a conversation. You have a former competitive athlete, me, and I've done a fair amount of extension and flexion, but I'd say probably more flexion just from wrestling and so on. And I have not competed in a long time, but I've continued with the weight training and sometimes more methodical than other times. What are some of the ingredients that you would want to consider as part of the cocktail that is producing the lower back pain? I can't remember when I wrote that, but it's a good find in the archives. I think the big things that I would say is all those things come back

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to probably two things. It's loading aberrant patterns. So in the example of the left AIC, right BC patterning that speaks to the posture restoration institute, and they talk about a very predictable pattern of asymmetry, right hips that are shifted out, low right shoulders, and so there can be some compensatory things when we start to load that. What does that mean? Left AIC? It's just an abbreviation for the pattern that they talk about. I see. But basically, that's the way they define it. And you will see it very commonly. If you go to any major league baseball game, you'll see every shortstop standing between pitches, like in the exact same position, they'll be stuck in their right hip with a low right shoulder. And their mindset has always been that we'd rather breathe well and move poorly than move well and not be able to breathe. It's a survival instinct. And to some degree, these patterns that we account for are how we maintain our line of sight and our ability to breathe the way that we want to. So these are normal asymmetries, right? We have a heart and we have a vena cava on one side and a liver on the other side. But when we get into trouble is where these things may become excessive. And we load on top of them and we lose the variability that we count on to have long-term successful movement. And I think that's what leads to my second point is that when we talk about poor hip rotation, poor thoracic spine mobility, really what people get into trouble is they sell out for too much movement at one joint. What do you mean by that? So if you look at how your spine is constructed as an example, look at your lumbar spine. They're very big vertebral segments. They're really conditioned much more for handling compression. They don't rotate nearly as much. And as you go further up your spine, you have substantially smaller segments that are way more equipped for rotational capacity. And I think that just speaks to our body's wonderful design is that we need to get a lot of rotation through our hips and a lot of rotation through our mid-back, our thoracic spine, and certainly our cervical spine as well. And we don't necessarily have it. Sometimes we go to the wrong places to get it. And that's why some people will wind up with back pain. What would be some of the wrong places? The lumbar spine in particular. Oh, I see. Rotating at the lumbar. Correct. Basically using the molars of the back to rotate. That's exactly it. And you get into trouble when you bang those big segments off of one another. You can wind up with a collection of different issues. And, you know, Stu McGill has done some great stuff in his research where he's talked about spine range of motion, particularly lumbar spine range of motion being positively correlated with injury risk. It has to move, but it just can't move to an extent. There is such a thing as hypermobility. Exactly. And I think the challenge that we see sometimes is how people change over the course of time. So, you know, I talked in that article about poor hip mobility. And we know is that some athletes over the course of time will develop reactive changes in their hip. Now, does poor hip mobility in this context mean hip extension, sort of the freeze frame of the sprinter with one leg behind them? Or does it mean something else? I think it can be all the above. You know, if you look at a lack of hip internal rotation, it seems to be associated with low back pain and golfers. So, I think it depends on what your activity is. But I would argue that not having sufficient hip flexion can create problems too. I think it's a joint that obviously has evolved from an evolutionary standpoint from being very, very mobile to mean a little bit more stable to support weight bearing. But where we get into trouble is we start to lay down, you know, a lot of bony overgrowth on the acetabulum or the socket or on the

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head of the femur. And those can create a collection of challenges because you have stiffness that you have a hard time working around. So, at the end of the day, it all comes back to we lose variability over the course of time. We lose the ability to go back to what's very foundational for us. So, I'd love to chat maybe about thoracic mobility in a second. Just to do a deep dive on one of these. First, I want to say, and you can fact check me on this, just for people listening who may suffer from low back pain or back pain, or actually, it's a question. What percentage of your super high performing players, if you were to take an MRI of their back, have what would be viewed as something pathological or deterioration? 100%. 100%. And the best example I can give you, this is with NEES 2020 study of 115 patients average age was 44, so 230 total NEES. MRI showed abnormalities in 97% of NEES. 30% of them have meniscal tears. 57% had cartilage abnormalities. 46% had tendon abnormalities. And 6% of them were actually qualifying as high grade tendinopathy. They had some ligament disruptions in there. 2% of them had ACL issues that they didn't even know were there. And so, these are 44 year olds. And this wasn't really an athletic population. So, you can imagine the wear and tear that takes place from playing any sport at a really high level. And you can do this for every joint in the body. It's pretty eye-opening. And when I reached out to Kelly Starrett, the co-author of the most recent build to move, who you mentioned, about the same MRI read, because I was like, okay, Defconn 5, need to figure this out. Especially before I go traveling internationally and won't have access to much. And his rough reply, I'm paraphrasing here, but you might recall some of this. He said, you know, all that says is you're a savage who's played sports really intensely. He's like, guess what? If I sent you a photo of your face from when you were 15 and then compared it to your face now, you've aged. That's true for your back too. Rub some dirt in it. He's like, it's going to be fine. Don't forget. And then he sent me a photograph of something that was removed from his knee, a camera board was. And he's like, that's supposed to be flat. And it was just a mangled mass. And he's like, yeah, now I'm back to full operating capacity. And just to your point, I think normalizing it a little bit for folks to say, Hey, this is super common. And it's just part of being human for most of us. It's insignificant, but it's part of the discussion. Another study that I talk about a lot with our athletes. So there was a study of Scandinavian junior basketball players. And this is significant because we're talking about a collection of basketball players in their late teens, like these are the guys that can recover from anything. I'm in my 40s. I can't bounce back from the dumb stuff I used to. They looked at 134 players, 268 tenants. And this is where it gets really fast. And it's only 19 tenants. So 7% of them actually presented clinically with like a patellar tenonopathy. They said the front of my knee hurts. And then what they did is they went back and they ultrasounded all 268 tenants. And they found that under ultrasound, 26% of all tenants could be diagnosed with tenonopathy. So they hit the clinical qualifying criteria for a tenant problem. So you can make the argument that for every one we diagnose, there's probably three that get overlooked. And it's probably substantially higher. Both these numbers probably shift as we get older and older. And that to me is just so important. You almost have to look at your muscular skeletal health as there's a line. It's a symptomatic threshold line. I'm either

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above it or below it. It's kind of like being right on the fringe of having like a type two diabetes diagnosis. You go for a walk, you watch what you used for a couple days. They started my cookies last night. I think I might be there.

Exactly. That was a veiled cookies reference. But I think what we look at is everyone to some degree is probably working right at that threshold. And maybe it's because some of those imaging findings are significant. But it's our job to figure out what can we do with our movement diagnosis? What is it that we see in how they move, whether it's a hip rotation limitation or a lack of scapular upward rotation or poor cervical spine motion, whatever it is, what are the things that we can do in our training interventions, both in terms of what we do and what we don't do to keep people below those symptomatic thresholds. And it's not even just an exercise thing. Sometimes it's a, you know, we've all had that friend who got dairy out of his life and it changed his life or someone that was legitimately intolerant to gluten that had serious problems with that. And so sometimes it's a systemic intervention as much as it is like a true, you know, training or rehabilitation intervention. Just a quick thanks to one of our sponsors and we'll be right back to the show.

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So let's take the limited thoracic mobility. Please feel free to fine tune this, but let's just call it mid-back for mid-back just for simplicity so people know what we're talking about. A lot of folks listening spend a lot of time at computers, probably not getting much rotation. What would the training look like if you diagnosed someone with very poor thoracic mobility? What might some of the training look like to address that?

The first thing is, I would say, make sure that you're separating static posture from movement proficiency. And we see very different things in an athletic population versus a dustbound population. In a dustbound population, you're obviously going to see people similar to older adults who acquire more of a hunchback posture, that kyphosis. In the athletic population, we actually see a lot of very flat thoracic splines. We see people who are almost like in a military posture from extending and rotating so much. And that actually creates a scenario where we need to do a lot more reaching and rounding and rotating to drive flexion. In my baseball

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guys, we spend a lot of time talking about that. Could you say that one more time? Talking about what? Yeah, so we're talking about the upper back. I think the assumption is that everybody is very kyphotic, meaning that we have that classic S-curve where we round up top and then we arch further down. And that's how we're built, but we can acquire different positions in different places. So if you sit at a computer all day, you're going to more than likely reaffirm that. It's going to get significantly worse. In an athletic population, what's interesting is athletes extend, they rotate, they actually arch their upper back so much that they move in the exact opposite direction. And they actually lose the convex concave relationship between the ribcage and the scapula. So in our baseball world, we actually do the exact opposite in many cases of what we'll do with a lot of our people or maybe the folks that you're referring to, the folks that sit at a computer a lot. Well, let's take the computer folks because that's going to be the majority. What might you prescribe in that situation? I think the number one thing that I'm looking for is I'm looking at that upper back posture as an avenue through which I can create movement and in particular rotation. Historically speaking, if you're really rounded through your upper back, it's not going to rotate very well. If you just look at the way that the segments kind of sit on each other. Yeah, try to do a pirouette while you're bent over at the waist. Exactly. So I think the challenge is a lot of people go to the gym and they do things that reaffirm it. They ride the bike, they bench press, they do a lot of things that just kind of support that existing posture. So do a whole bunch of cycling to reinforce the computer posture. And then on top of that, they may select exercises that don't allow them to safely get out of that posture. So classic example is the guy that sits like that at a computer all day and he goes to the gym, he tries to overhead press and his shoulder starts to bark at him. There's nothing inherently wrong with overhead pressing, but he might not have the proficiency to even get enough thoracic extension to safely get overhead. Yeah, just a quick side note, one of my very close friends has this habit, his proportions are a little unusual, former world championship level kickboxer. But the way he historically has worked at his computer is kind of slouching back on a couch. So his head is really crane forward. And he was totally fine until he wasn't where he went from that posture for like eight hours to playing a game of tennis after work, did a couple serves, and then had two plus years of horrifying neck pain, just bending the paper clip into sort of rangers of motion where you don't have. And think about what happened is that's just is robbing Peter to pay Paul, right? If your upper back doesn't move, something else has to pay the price. Maybe it's his cervical spine that was put into positions that were less than ideal. A lot of times we see a scapula just doesn't sit flush with the rib cage the way that it should. So let's say you have somebody who has developed a bit of the Quasimodo back. Where do you start? The first thing that I'm going to try to do is I'm going to try to safely give them movement variability. So things like, you know, the old kind of adage of pull twice as much as you push, there may be some merit to it in that population. I get on more of that. When I'm doing my pulling, I'm actually doing a lot of stuff that's probably unilateral. So one arm at a time. And the reason I would do that is I want to be reaching with the opposite arm. So I want to kind of bring everything back to almost ambulation, like that reciprocal action that takes place during the gait cycle. Could you give an example of pulling and then pushing or extending? Exactly. So think of like a cable row where you just do it one arm at a time in the standing position. And if you're

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rowing with the right arm, you would actually be reaching forward with the left. So you're actually in the process, you're not just moving your shoulder blade on your rib cage, what you're actually doing is you're teaching your thoracic spine to rotate a little bit more. So we find ourselves trying to attack rotation, I think more and more across the board with our clients, just because it is the thing that seems to go away. Even people that lift through a full range of motion and live what we think are really varied lives, like you look at them and they often lose T-spine mobility, they lose hip rotation over the course of time. And maybe that's just where life takes us. We don't run as fast. We don't do as many athletic things into our 40s, but it's been impactful for folks. Yeah. So T-spine is thoracic folks.

What are some other tools or exercises that you might consider for somebody who's mostly desk bound, which is a lot of people, including me right now, I would say. Even if you are training every day, it's like, okay, well, you have, I think you've written before, it's like you have two hours to get it right and like another 16 to 20 hours to get it wrong. Absolutely. What might you inject into the program?

Yeah. The first thing I would say is amplitude. And maybe I got ahead of myself by talking about the rows because that's a, it's a loaded movement, right? I think probably what's more important, and we look at like the long-term successful folks that really do make significant changes, not just to their posture, but probably more importantly to their movement quality.

It's using the warmups to actually impart some kind of favorable change to the way people move. So instead of just getting your body temperature up right in the bike for five minutes, the play is more often than not to find ways to expose yourself to new movement patterns. So for some of those folks, there may be like an element of self-massage release, whether that's using lacrosse ball or an acu-mobility ball or foam rolling or something to that effect. And then following it up, we may do some positional breathing just to kind of teach different ways that they can get expansion through their ribcage, which can help them to optimize some of their mobility through their t-spine for sure. And then following it up with larger amplitude movements. So when I say amplitude, I mean, add range of motion, stuff that you don't

get in your daily life. We look at people that work on factory lines that do the same thing over and over again. They wind up with these pattern overload things, but if we give them exposure to more significant ranges of motion, they do substantially better. And it's probably something that's mediated through the fascial system. We look at all these fascial chains in our body, everything starts at our hands, our feet, and our head. And if we're really stuck in a small amplitude movement for an extended period of time, meaning shorter range of movement. Correct. Yeah, exactly. And Thomas Myers, who's the author of Anatomy Trains, I distinctly remember

a conversation with him. He spoke at a conference back in 2009. At the end of the conference, I remember chatting with him and he said, we probably know about 25% of what we need to know about the fascial system. And he listed off a few different things that he thought were really important for fascial fitness. And really the biggest things were multi-joint movements and be patient. Those are the two things that he emphasized over and over again. And I'm going to have 28-year-old daughters and a four-year-old, and they do everything imaginable.

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One of them sits upside down while she's reading. Every walk across the living room has to include a cartwheel. They are craving movement variability in every aspect of their life. And over the course of time, we just lose that, whether it's long car rides or different things that we do. You didn't see my cartwheels after the cookies last night. Exactly. I think sometimes a loss of athletic participation, right? It's very structured in our world from up until age 18, in many cases. And then people, they go off to college, they get jobs, whatever it is. And unless you're joining a men's soccer league every Saturday afternoon or something like that, it's not there. And I do think there's something to be said about folks trying not to lose that amplitude in their lives. And we even see it in higher-level sports. I work in baseball. And if you're starting a picture, you want every pitch to look exactly the same. Where you get into trouble is when there's deviations and hitters see it differently. So there's an unyielding level of specificity in the baseball world that needs to be, I guess, supported by training that adds varied range of motion to people's daily lives. Let's expand on the fascial manipulation. And then I think I might want to come back to exercises. Just to paint a picture for actionable stuff that people might consider. You talked about the row, but other examples of increasing range of motion amplitude. So we could do that in either order. Do you want to hit that first or do you want to go straight to fascial matters and fascial manipulation? Let's talk the exercise stuff since we're touching on a little bit. I think another thing that's really, really helpful is anything that allows your shoulder blade to move freely in space. So you think about, if I have you going into a bench press, you lay on your back, your shoulder blades are kind of tug down underneath you. In fact, the way that we coach high level benching is pinch your scaps down and back. In the real world, when you reach, your shoulder blade actually has to move around your rib cage. It effectively delivers your arm that comes from thoracic rotations, the upper back rotates, which moves the rib cage, the scapula moves on the rib cage, then the arm moves. And when we're stuck down on a bench, it's not necessarily a truly functional movement. And it might be great for aesthetics. And it might be great because you like to bench press. That's how a long good or X-Arms are, practical and all. There you go. So whenever possible, I try to emphasize things like pushups, cable presses, I love landmine presses. So let's talk about these pushups. Are you talking getting into more of a hollow back position or just a flat position? I prefer the hollow back position. We'll actually call them yoga pushups. Some people call them pushups to downward dog, but I think those are great options for driving some scapular upward rotation and really kind of hinted at that convex concave relationship of the scap and the ribcage. It's so important to really reaffirm. What were the other two that you mentioned? Any kind of cable presses where you're in the standing position and maybe pressing away from a cable column and some of the same ideas of opposite arm reach can be really helpful. I got it. So these are alternating arms. Yeah, exactly. And so it'd be sort of like a, I got this right, unilateral hammer press, but with cables, something like that. And then the landmine was the last one. What is that landmine? Imagine a barbell stuck in a corner. They actually have, you know, that's an overhead. Correct. Yeah. And it isn't, it isn't. It's interesting. You'll see a lot of people that can't handle overhead pressing and they do great

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with landmine options and you can do so many different variations on it. And is the landmine from a half kneeling position? You can go half kneeling, split stance standing. We'll do step throughs. We'll do rotational ones. There's a couple of different attachments that you can use. Tons of stuff. Let me quick Google search. We'll find you a million things on Instagram and YouTube for better. What are the benefits of landmine presses?

I think above all else, it's the free scapula pressing. Your shoulder, buddy is able to move freely, whereas it's not locked to a bench like you would with a bench press. But I think beyond that, there's something to be said about it. It's almost like a calculated way to get some axial loading. You know, some of the same benefits. Could you define axial load? So when we deadlift, when we squat, there's a significant amount of load that goes through our spine. And some people don't handle that really, really well. And I'd argue, you're probably got to like that right now. And you may be one of those.

Yeah. You probably could, could landmine press. I know for me personally, I don't handle really, really heavy overhead pressing great with my own shoulder history, but actually my low back that bothers me with the overhead press is more than my shoulders. One more thing we got to unpack when we find a little look at you.

Even though I had my left shoulder completely reconstructed, my shoulders are still better than my low back.

Sometimes where you have to look deeper is you look back at the injury history is, you know, maybe there's a mobility restriction, a loss of thoracic rotation from, you know, wearing a sling after a surgery. These are all things you have to unpack, but landmines are awesome. We use them with our general pop folks, with our athletes a ton. It's just kind of like a, it's a moderated overhead press is the way I would look at it. So definitely an important tool in the training toolbox.

Do you use weighted rotational exercises like chop and lift with cables or some variant of that? Yeah, we do this quite a bit. Both chops and lifts, we throw med balls a ton.

We use something called the Proteus, which is a cool technology.

It's kind of purely concentric that allows you to train some of those patterns in the fluid way.

Why is that meaningful? So for folks who may wonder, please crack me if I'm getting this wrong, but if you imagine doing a bicep curl, because most people know what a curl is, the concentric would be the positive portion. When you are lifting the weight, the eccentric would be the lowering of the weight where you're sort of lengthening the overlap of the fibers. Why is the concentric focus helpful?

I think it's important in part because you can do more of it. You can do a high volume of concentric work and it won't necessarily make you sore. So it can be advantageous for athletes who are in season, but there are scenarios in our daily lives where we do have kind of purely concentric stuff. Think of like lifting a couch to help your friend move to a new apartment or something like that, or just things that we do with med ball. If you look at some of the athletic activities that we encounter, like kicking a soccer ball is largely a concentric motion. There's going to be some elements of deceleration, but there is a high velocity component. So when you throw a baseball, there's actually a ton of deceleration taking place throughout the entire system, but it is a concentric dominant sport. So I'm just going and training the opposite direction.

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Doesn't necessarily match up from like a pure loading and velocity standpoint.

Okay, so I feel like we've checked the tick box of a number of exercises that people might find helpful, of course, with the help of a professional fascia. Let's talk about it.

Yeah, there's a lot to talk about. There is. We'll probably get some death threats from people that listen. People are crazy out there. It's wild. Yes. People are saying it's very strong opinions. It's religion and politics and the fascial system are kind of like a three big things. I saw you posted the picture of some cupping that you had recently and got eviscerated for like a better time. Oh yeah. And then I followed it up with saying this is the Rorschach test for people on the internet. I was strong opinions because I didn't even provide any context. People didn't even ask what I was using it for, but the conviction and the rage was impressive. So maybe you could just start from the basics and explain what fascia is. So then we can go from there. The best way I can describe it is the first time I ever sat on a surgery. I sat on an elbow surgery. And for those of you who don't know, Tommy John surgery is a most kind of storied surgery in the baseball world. It's a tiny ligament on the inside of the elbow and it's a limiter. It's subjected to crazy high stresses at super high velocities and the fastest motion in all sports, which is the baseball throw. And what basically happens is that ligament, when it's ruptured, needs to be repaired. So basically, they'll basically take a graft either from your forearm or from your leg and they'll use to take a tendon and make a ligament. But what happens is they have to do an incision on the inside of your elbow. So they open you up and when you open it up, you're expecting to see this pristine anatomy chart the first time you're there. We all took, you know, I stress physiology, anatomy, all that stuff. And I even had gross anatomy during my undergraduate experience. I spent a much time with cadavers and it still didn't prepare me for this. But they have muscles, they have tendons, they have bones, they have ligaments, they have nerves. That's the stuff you expect to see. But when they actually cut that elbow open for the first time, you're like, holy cow, what is all this stuff? It's the fascist, the intramuscular septum in it. And a ligament is intramuscular septum. Exactly. Yeah, I'm throwing big words out here. No, I need to slow this down. So you go all the way down. I'm going to use it correctly tomorrow. I can't wait. Yeah. And what you're looking at very quickly is like, there's a lot of stuff to get through because a ligament connects bone to bone. So you see all these different layers and what is all this stuff in the way that was in any of these anatomy charts? And visually, what does it look like? Is it kind of like spider webs? That's a great way to describe it. Yeah. And the hard part is when I got gross anatomy, a lot of it had been cut away because they were teaching you muscle. You know, we were the exercise science students, the med students and the OTs and the athletic trainers, they all got it before we did. So we missed out on all that. The hard part about that world, though, is it's very, very important in terms of as we're learning kind of how it both restricts or optimizes mobility, how it helps us to transfer force. And the best way I can describe it is we've all seen that freaky athletic high drummer who just doesn't look very strong but jumps out of the gym. We see baseball players in our world. There's a couple guys that throw 100 miles an hour that weigh 160, 170 pounds. It just doesn't make sense. These are very facially driven athletes. They're not producing high levels of force with classic muscular strength. If you looked at like a Mark Maguire back in the day, Maguire was a very strong guy. It looked like the ball just sat on

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his bat for a while and he muscled it out of the park. And he looked at other guys who had just freakish bat speed that, you know, we're very elastic in nature. Dan Paph is a great coach. He talks about mechanically and facially driven athletes. Our facially driven athletes largely use this kind of connective tissue matrix to really effectively transfer force. And I think you can fine tune it much like a whip, you know? Some people are really, really good at one activity. I'm a guy who was good at picking up heavy things off the floor, but I wasn't a great overhead presser. So I think we get what we train. And the fascial system is probably one reason why. What are, and this is waiting into dangerous territory, but misconceptions about the fascial system or some of the most interesting modalities of manipulating the fascial system that you've seen good outcomes from with your athletes? Yeah. Full disclosure, I am not a massage therapist or a physical therapist or even an athletic trainer. So it's outside of my scope of practice to actually do manual therapy. Yeah, but just what you've seen. I'm fortunate to work with some really, really good ones. My business partner Shane in Florida is phenomenal. I see some really high profile athletes. And on a regular basis, I see people that walk out of his office shocked at how good they feel. And I think what do we have in our toolkit? It could be a number of different things. It could be a very focal approach, like a dry needling, you know, kind of centers on trigger points and things like that. And dry needling for people who don't recognize it. Number one, I don't think you can find practitioners in all states. I think there's definitely a significant amount of lobbying that takes place around it. But dry needling, is it fair to say that same tools of acupuncture, but instead of meridians, you're going to be very careful. This entire conversation, we're trying to realize is the, so that would be a more formal use of exercise physiology initiatives. And then certainly, you know, there are things that are focal with respect to like classic pin and stretch techniques and things like that. Pin and stretch. So this is pinning something down, pressing into it. Yeah. And then stretching. Yeah. And then obviously... Would ART fit into that? The ART is certainly a focal approach. Right. Active release technique. Absolutely. Which is, you know, had great success in certain populations. And then certainly, you have more diffuse approaches that might cover a larger surface area, something like an instrument assisted approach where they might scrape along the entire length of your hamstrings, something like classic massage, which tends to cover a lot more square footage. And then cupping could kind of go in both directions. You can cup and drag, you can throw a cup on one spot. So there's a lot of different ways that you can impact the fascial system. I'd say the biggest misconception about it is that it doesn't work. I mean, that's my personal opinion. I think there'll be some folks from the pain science community that will have really strong disagreements. My mindset has always been if it's been on cave paintings for 5,000 years, massage probably has its place. And we're just figuring out why it works. I don't think I'd be able to walk if I didn't have regular soft tissue work. You know, it's a challenging thing to study for sure. I do think that the academic world is doing a better job of actually starting to learn more about how different fascial layers glide on one another. We're actually starting to get some of the technology that can kind of see how things change pre and post treatment. At the end of the day, we have necessarily elucidated exactly why it works. And it's probably not even my place to say, but we are big bags of

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water. And probably what's happening with fascial interventions is that we're changing the way that fluids move so that folks do have better gliding of tissues that are adjacent to one another.

I don't think we're mechanically breaking down scar tissue. Maybe we're stimulating the nervous system in a unique way that transiently reduces the risk of that threat and maybe creates this short term opportunity for us to put in the right exercise interventions for motor learning.

And that's the stuff that I think gets missed. Some people might not have a good experience of manual therapy either because they work on the wrong places, they do the wrong approach, or what I see more commonly is they get that transient reduction in symptoms.

And what they don't do is follow it up with the right interventions to make the changes stick. So they feel good for 10 or 12 hours. And then the next day, they go right back to hurting. But I can say for all of my interactions with athletes, the success of our business, manual therapy has been a very important inclusion.

Part of the reason that I've traveled to where we're recording today is to do multiple sessions with someone who focuses on fascial manipulation. And I won't name names, but I was introduced to this person by a friend, PhD in neuroscience, who thought she had effectively permanent injury or disabilities related to multiple childbirths. And nothing even reduced the symptoms. And I recognize this as an anecdote, but she was completely transformed after two or three sessions.

And I try to wear a skeptical but not cynical hat. Also recognizing it's easy to throw the baby out with the bathwater. Sometimes, I think you might agree, like some of these amazing soft tissue workers may be very good at getting clinical outcomes, but they may not even themselves understand the exact mechanisms by which they're getting these outcomes.

But one thing that I did notice immediately was improved range of motion in my ankles. I've had a lot of lower leg injuries. And in the last two weeks after getting them pulverized, basically, it's incredible to notice on a daily basis how much more range of motion I have. And I certainly need to strengthen into those new ranges. But I'm excited to see where it goes. And I'm sure we'll get a lot of strong opinions on the internet. Where does it make sense to go next? We could talk about fascia. We could talk about low back more if we wanted. Could you talk to the role of the glutes with respect to low back pain or lack thereof? Yeah, for sure. And I think the whole glute amnesia thing maybe has been a little overdone. I tend to look at them as part of a comprehensive system in that we live in a population that's lost a lot of hip extension, the ability to obviously get your upper leg behind your body. And when we don't have adequate hip extension, we go somewhere else to substitute for it. So two big things happen when that's the case, you either get too much motion through your low back, so you get lumbar extension instead

of hip extension. We tend to see that particularly if you see like fatiguing runners, you know, as time goes on, they just kind of keep arching their back more and more. And you also have kind of the way that the joint itself is controlled where your glutes are really, really important is they kind of terminally extend your hip. They give you that last 10 degrees of hip extension that are so important. And what happens is when they don't really do their job at terminal hip extension, you get a very hamstrings dominant pattern. And a lot of people, because of the way the hamstrings attach and your pelvis will actually wind up with like an irritation in the front of the hip. So sometimes, you know, if the glutes don't do their job, it's not just

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the back pain aspect of things, but it's also a function of people kind of wind up beating up on the front side of the joint. That could be an issue for me. Yeah, I look at it very much. The glutes are kind of your rotator cuff of your hip. I think less about activate the glutes, activate the glutes. And I think more about how do we clean up our hip extension patterns so that they're actually taking place in the right place. But the glutes, you know, it's a buzzword, you know, it's certainly something that I think has gotten some good momentum for better or for worse in kind of the exercise community. But I look much more at how does it fit into the big picture, particularly because we just talked about fascial system, probably less about individual muscles and more about how comprehensive movements are controlled in a reasonably tight window. And you get to find terms here, but where does this is the leading question, strengthening the posterior chain fit into this?

Posterior chain, hamstring glutes, adductor magnus, and to some degree the lower back, like all these things are vital in stuff on the back. Yeah, everything on the backside of the body. I mean, I think just in general, we know that we're stronger in hinging patterns. If we're looking at functional carryover to the real world and our ability to attack what life stresses, I think Peter did a great job in his recent book just talking about the need to be strong into hip hinges. Do you need to deadlift 800 pounds? No. But in general, these are high cross sectional area muscles that probably have a lot more of an ability to help us. And most people are going to be stronger in a hinge pattern than they are in a squat pattern. So it's probably the most biomechanically efficient way for most people to accomplish various lifting tasks, whether it's something that's significant in the gym or something that's as simple as picking up a bag of groceries or a kid. What are your go-to exercises? If you could only pick two or three, let's just say, for the strengthening of the posterior chain and that hinging action, where would you go? Without a failure, looking at a deadlift. And deadlift is a broad categorization. You might have a trap bar deadlift or a kettlebell deadlift, something that in those realms are going to be a little bit easier to teach. A lot of people go right to the straight bar and some people just are not biomechanically set up to be successful with that. So we don't necessarily go to that. Things like kettlebell swings, if you're ready for the patterning and the higher velocity, I think a lot of people need to train power as much as they need to train strength,

particularly as we age. And that's a low impact alternative to going out and sprinting or jumping that isn't going to leave an achilles on the floor. So I think kettlebell swings probably have some merit in that discussion. Certainly various hip thrust opportunities have come about in the industry from a wide variety of exercise selections there. I think some people probably do better with them than others, but I do think there's a place for it. Anything in those worlds are good. Single-leg RDLs as well. Romanian deadlifts. Yeah, something underneath that deadlift umbrella. But at the end of the day, most of them are going to be deadlift derivatives. Same thing with a kettlebell swing. It's a deadlift that you just execute quickly.

Why is power important as we age in addition to strength? And maybe you could differentiate the two. So really think of power as just strength with a time component. It's how quickly we can apply force. And you'll see powerlifting is really not powerful. It's slow movement.

Yeah, lifting should be called powerlifting. Yeah, most of the athletes you see on TV are

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really, really powerful. The guys that are running fast and jumping high, that's kind of an in-person demonstration of power. But I think where power is tricky, we do know that it tends to detrain fastest. Strength or obit capacity, they actually stick around pretty well. Assuming you're not like a crazy high level of those things, you can probably train it if you're in an intermediate to slightly advanced stage. You can probably train it once every 30 days, and it's going to power. No, I'm talking about strength and obit capacity. On the power side of things, it seems like it starts to detrain in as little as five to seven days. So it's very important to actually challenge it. And where it becomes vitally important as we age is, this is the stuff that protects you when you're older and you want to avoid falls. And we know that you fracture your hip. For a lot of people, it's honestly a death sentence as terrible as it sounds because it markedly impacts your mobility. We know that the cognitive decline after a loss of ambulation is really substantial. So we see a lot of people that just tend to spiral after falls. Being honest, my own father passed away a couple of years ago after he fell down our several cellar steps and fractured his clavicle. And it was very interesting, maybe in the context of the orthopedic relationship to systemic factors, he kind of went through multi-system failure. He was unhealthy, but a clavicle fracture on a fall really kind of pushed him over the edge on it. Would training power have helped that? Probably not, but I think for a lot of people that wind up with hip fractures and things like that, we have to be very mindful of how power could potentially prevent it. So first, I'm sorry to hear that, Dad. And second, could you give an example of what type of power training might be incorporated to help mitigate the risk of a fall, for instance? It sounds terrible to say. Any kind of sprinting. And I'm not saying go out at age 80 and sprint, but we do see people in those ages that play tennis regularly that are involved in things that are higher velocity, that involve change of direction. So I think a lot of it is remain athletic into age. So what do we do with folks? We'll throw med balls. We'll do kind of a swing. And for people who may not get that, so medicine balls, weighted balls that you're sort of throwing against a wall or on the floor. Exactly. And relatively low risk for folks can be really helpful. But I think people sometimes overlook how much they do. My grandmother is 99 years old, and she's still golfs. That's her version of power training. And she's, you know, she's got two new hips and one knee, and she's been doing great. Robocop on the golf course. Yeah, exactly. So I think that's vitally important. If you don't use it, you lose it. And it's a function of a lot of things. That's mobility, that's strength. But power is probably the most important of the bunch when we talk about aging. Everyone's going to get stiff as they age, but you don't want to be stiff and weak slash slow. So before we delve back into the weeds, I thought we would take just a little breather and talk about books because of the rapid fire questions that I had sent over before we met up, you had highlighted a few that might be unpacking. So let's begin with what is the book or what are the books that you have gifted often before? I'm going to give you two, because there are kind of categories to it. I'd say the first one underneath this health and human performance realm, diagnosis and treatment of movement impairment syndromes. There's a Shirley Sarman book that I think is landmark. It's, I mean, it's decades old, super impactful, kind of reads like stereo instructions. So you're going to go through a page at a time, but Sarman is still practicing physical therapists. I watched you

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in St. Louis. You know, I think that one impacted me the most is we'd always had this very pathology driven model of movement where it was like, all right, you have biceps tendonitis. Here's what we're going to do to treat it. We're going to do ultrasound on the biceps and you're going to do this, this and this. And it changed the perspective from that medical diagnosis to a movement diagnosis. Instead, we started saying, all right, you have scapular downward rotation syndrome. And someone that's in this position from a movement standpoint could have a lat strain, they could have biceps tenopathy, they could have a rotator cuff irritation. So it made us realize that one movement issue could create a number of different pathologies versus going and, you know, having a diagnosis of biceps tendonitis could come from a collection of different things. So it got us thinking a lot differently about that. So that's one that I've, I've recommended and gifted, you know, quite a bit over the years in a different category. Chip and Dan Heath's books across the board are excellent. I think the longer I'm in this industry, the more I realized that it's all about closing the gap between what I know and what I implement. I think so much of their stuff is behavioral nature, understanding what makes people tick and, you know, how to get them to buy into different things. I think Dan Heath's latest book upstream was really, really good. Just in the concept of thinking about what are the things that are upstream in terms of our athlete's success while it's sleep, it's nutrition, it's taking care of these higher level concepts before we even get into the nuances of the particular exercise that we're giving them and things like that. And to be honest, Peter Attia's latest book, which I just finished in class week, is probably going to trend in that direction. Some of the stuff that's meant for longevity still optimizes performance for athletes. You'd be shocked at how many seemingly healthy 30 year old professional athletes have absolutely horrific blood work that really needs to be addressed. And I think that's something that could be a good one too. So I actually just got that from my mom. So three categories, I guess there. Yeah, got it from my dad as well. Just a quick side note of trivia. So the Heath brothers with mate to stick, I think it was forever ago, had the speaking session right before me in March of 2007, when I gave my very first presentation ever about the then forthcoming four hour work week. Wow. So they were right before me. I was a nobody and they were the nicest guys. They're great. They're just fantastic humans. Their stuff reads awesome. Decisive is another really good book. I actually gifted that to a number of different athletes who have been drafted, who have tried to decide between signing and going to college and just outlined the decision making process really well. So good stuff across the board. We'll probably return back to some of these rapid fire questions. But now that we gave everyone a Scooby's neck, let's go back to something you mentioned earlier. You did mention medical diagnosis versus movement diagnosis. And feel free to get into this any way that makes sense. Could you expand on movement diagnosis? For sure. And that is in many ways a derivative of Sarman's work, who we just talked about. I'll speak to my own example. I was a tennis player in high school, got recruited to play. I was a, as many coaches are, I was a fantastically mediocre athlete. I was all state in the state of Maine. Problem is there's only about a million people and not a lot of people play tennis. So, you know, upside was probably division three tennis, but I dealt with a lot of shoulder issues that ultimately kind of limited me from going on

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and playing college tennis. And this started, you know, my junior in high school and really, it was present all the way through my college years as I kind of walked away from tennis. I worked at a club and strong rackets and gave lessons and things like that. But in reality, it was something that really played me for a good five, six years. To the point that I was in pretty significant pain, actually in the summer between my undergraduate experience in the start of grad school, I was diagnosed with an undersurface cuff tear, which is a really common diagnosis. It's internal impingement, really something you see all the time in a throwing population. It's basically a, instead of in a classic, like general population, rotator cuff irritation, you'll see tearing on the top side. So the bursal side, I had an articular sided tear. So the underside. Is that from serving? That's exactly what it is. It's that big externally rotated abducted serve. You see it in baseball players, swimmers, tennis players. And I went through physical therapy and I didn't get better. I'd gone through multiple courses of it. And so I went off to grad school in the fall of 2003 thinking I was going to have surgery over winter break. I was going to, you know, suck it up for a few months. I was going to have surgery the day I got back from break, you know, be in a sling for a couple of weeks and then hopefully go back and do this spring semester. Was it a complete tear, partial tear? It was a partial tear, which to be honest, if you look at the research, sometimes they're the most stubborn because they're most painful. Yeah. A lot of people, you know, I've seen Achilles or patellar ruptures where people have no pain. Once they finally rupture, it's when they've got like a partial tear that's more painful. Maybe not very highly functional. But so I went off to college or to grad school in the fall of 2003, expecting to have surgery in three months and decided, you know, I'm going to just try to figure this out. I'm going to be a guinea pig in the, I guess, in the two Tim Ferriss way. I'm going to experiment. So I completely redesigned my training program, took out a lot of stuff, added some new stuff. And just significantly, I found actually a good ART guy down the street. How did you make those decisions? I had nothing left to lose. And a lot of it was just self-education, reading what was out there. And again, this is 2003. So the internet now, it wasn't as easy back then to kind of dig deep. So it was a lot more asking questions. And sure enough, got to go to a good ART down the street. And first time I had somebody dig a thumb in my subscapularis. Oh, that feels good.

Pretty much changed my life. Yeah, I'd bruised armpits and all that stuff. But I'll never forget Halloween day, 2003. I called my surgeon's office and I canceled the surgeon. I was completely asymptomatic.

Now, how would you weight the factors that led to that? Was the ART subscap release a revelation? Were there other things?

I think it was a lot of it. As I look back, I wanted to know what were the shortcomings that defined my experience in physical therapy. Why didn't I get better? How could I have re-engineered it differently? I think the first thing I'll say is it was a classic kind of insurance driven physical therapy model. I was one of six patients at a time. Some of them were grandmother rotator cuff repairs. Some of them maybe gymnast with stress fractures. I was a 22 year old athletic guy who had shoulder pain and needed to learn. And so there was probably an element of like the exercises just not being

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done correctly with not enough eyes on me. So I think that was the first one.

Second, as I implied, I really had no manual therapy. It was not a hands-on experience.

For me, that was particularly important. I had a pretty significant athletic background and I'm sure I'd been accumulating a lot of gunk in my armpit as I implied and they didn't touch my neck. And just in reality, it was, it could have been re-engineered markedly different.

But I think the biggest thing for me is there was no counseling about what else I was doing.

That wasn't necessarily with respect to sleep or hydration or intuition.

So the intake, the incompleteness of the intake.

Correct.

The variables were not controlled enough. I might have come in and done all the exercises great.

And it didn't matter because the training that I was doing on my own,

maybe my activity patterns in both work and in training were just not ideal.

So it made me realize that when we actually wanted to eventually design this system across sports performance, like one of the things that we needed to do was build out a team where everybody

was rolling in the right direction, that there was no stone that was left unturned. And that when

I see people who have failed rehab like I do, often it's one of those things.

They didn't have anybody put their hands on them or they've been giving

other exercises they thought would be helpful and they've been doing them completely and correctly.

So I kind of have my checklist that I go through. I have certain exercises that are in almost every rotator cuff pain patients programs and we come and we look at them and 75% of the time, they're just not being done correctly even because they weren't taught or they weren't being supervised. And it's to some degree, maybe it's a flawed business model. It's maybe some of the challenges with insurance driven physical therapy, but

it's not really rehab unless you're doing the exercise correctly. So I hate it when people say I failed rehab. It's like, no, sometimes rehab failed. You were trying and you just didn't get the right coach and cue or the right intervention that you needed.

Totally. And I should say, and this might seem obvious to everyone, but

the worst case is not that you don't get better. You can also get worse. And I think about a partial labrum tear that, you know, among my dozens of other injuries I had about two years ago from getting back into snowboarding and just getting hyper aggressive immediately because I'm an idiot. And long story short, it was misdiagnosed. And then I was given exercises that had a really strong kind of PNF internal rotation aspect and it just made it so much worse for weeks until I was able to say, wait a second, we see that a lot in the baseball world. In baseball players, if you think about what external rotation is, imagine what a baseball pitcher has to do to throw like insane to really lay their arm back. They have freakish external rotation, but we actually see in the throwing shoulder is something called retroversion. And it's actually an adaptation that takes place when kids are playing catch in the backyard at age eight, nine, and they actually work their growth plates and they acquire more shoulder layback. And it's advantageous. It helps you to throw hard and actually probably spares the elbow a little bit. But what we see is they actually present with less internal rotation on their throwing

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shoulder than they do on their non-throwing shoulder. And so it's in normal asymmetry. And what we'll sometimes see in clinicians that don't see a lot of baseball pitchers, they all of a sudden get their eyes on this like, oh my gosh, we got to stretch them into internal rotation because they're asymmetrical. And we'll actually see scenarios where the rehabilitation has created other challenges, whether it's a posterior capsule tear or irritation of the cuff. So what it really speaks to for me is that rehab in general is getting more and more nuanced and niched for lack of a better term. And when we started dealing with this baseball population, we quickly realized that it was a very underserved population. It was either, hey, here's the football program or here's the rehab program. Don't lift heavy or just do the football program. And we realized that you could push guys pretty hard if you understand their unique demands and the way that the game challenged them and what subtle intricacies that you may need to be put in from an exercise selection coaching standpoint. But we also saw that the game was changing dramatically. There was way more specialization with younger kids playing baseball year round, the massive increase in fastball velocity that's still taking place. The average major league player, you know, gained 22 pounds, 12% increase from 188 pounds to 210 pounds from 1990 to 2010. The game has just played at these insanely high speeds. So if you have like a generic program and you have maybe doctors that don't see a lot of baseball players and all those things, you're not going to be very well conditioned for it. Yeah. Yeah, man. Sports evolve quickly. You know, you look at MMA or you look at tennis. We were talking about this before we got started recording just the average heights. It's incredible. Of men and you don't see many Michael Changs playing professional tennis anymore. He was a freaky athletic, but these guys are monsters now. They're much, much bigger. Hit the ball down at you. Yeah. I'm at fastball velocity and the major leagues climbs every single year. And if you look at like my experience, we founded our facility in 2007. If you were a left-handed pitcher who was throwing 91 to 92 miles an hour, you were a first round pick. Nowadays, you see guys consistently throwing 100 miles an hour. Some of those kids can't even get drafted. It's incredible how much it's changed. That's incredible. So let's tie your personal experience with your own issues when you're younger, say 22, your personalization of your own program, having these breakthroughs with, say, the hands-on with ART, which is really remarkable on a whole lot of levels. I encourage people to check it out. Myofascial release, more broadly speaking also. And if you have a kink for BDSM where you're not sure where to find a convenient dungeon, let's say, you can get the sub-scap manipulation to get your fix because it fucking hurts. It's very unpleasant. You can get some like Iliakis if you really want to double down or so has work while you're at it. Let's tie your personal story back into the broader question of movement diagnosis. I think the challenge then becomes, I look back and I can see how I moved poorly. That's the challenge to me is that I was treated as a rotator cuff patient when I should have been treated as, here are the things that I didn't posteriorly tell my scapula well. I didn't upwardly rotate well. I had poor end range rotator cuff control. So I think what it speaks to is if we're talking about medical advocacy being the overarching theme of our discussion.

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Meaning enabling people to navigate more effectively.

Yeah. And I think when the conversation was initially happening, it was talking about, hey, our parents are aging. How do you advocate for your parents when they're getting medical care and you're having to make a lot of these hard, I guess, conversations take place.

But I think there is a need for it on the orthopedic settings. How do you advocate for yourself as a patient when your shoulder is barking at you? And I think for me, I always come back to like, you have to do a lot of questioning. You have to ask to make sure like, how specializes my issue in the baseball world. We had a teenage athlete. This is 2008 or so right after we opened up. And he had significant medial elbow symptoms, pain on the inside of his elbow with throwing. And super stubborn had been to a doctor. MRI was clean, clean in quotes always, which I never literally loved as a term, but kept having issues. And he was just, he went to a general ortho and long story short, you found that orthopedic surgeon. Yeah. Long story short, found his way to an elbow specialist, which is not a super common specialty. And more importantly, it was an orthopedic elbow specialist at an affiliation with a major league baseball team. So he was used to seeing these all the time and he quickly diagnosed him with a subluxating ulnar nerve. Some percentage

of the population has an ulnar nerve that kind of goes back and forth over the medial epicondyle. So your funny bone kind of moves depending on position. And the challenge is when you throw a baseball and you go from flexion to extension, it'll flare that nerve up. So you're really predisposed to nerve irritation. Plucking a base guitar string. The kid lost a year and a half and it wound up being an ulnar nerve transposition. It was a pretty quick surgery and he came back, played college baseball, but looking back on that, I was like, I never wanted to not be an advocate for an athlete because I didn't know. So for me, that was really important is we needed to be very, very specialized in our particular realm, which, you know, was baseball and it eventually morphed into shoulders, elbows, neck for all overhead athletes. We see, you know, tennis players, swimmers, and sure enough, probably six or 12 months after that, we had another baseball player who came in and I had really kind of immersed myself in all the research and things like that. And a kid came in with a really mundane shoulder radiology report. You know, an MRI, he had a little bit of posterior labral fraying, which is literally 100% of majorly baseball players. They all have fraying in their posterior shoulder. Like I looked at this kid's MRI and like, if I was a major league team, I'd give you 150 million without a problem with this MRI. And there was a doctor that wanted to do surgery on it just because he had some symptoms. I was like, let's pump the brakes. Let's actually rehab this. But they treated the MRI instead of the kid in front of him. He literally did like four weeks of PT, did a good return to throwing program. He only played four years of college baseball and never had shoulder issues again. So I look back on that and that year was very transformative that I needed to be an advocate for my athletes because they didn't know much like I didn't know when I was younger. And really, the quest over the last, you know, 15 years has been, how do we continue to build out our team at our facility, but also the network of people to whom we can refer just because as the game is getting more specialized, we need to be more specialized and who cares for our people.

In the service of helping people to advocate for themselves,

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the intent being, of course, in this conversation, not to say do what I do because I have an unusual network, right? I can call you. I can call Kelly Starrett. I can call various specialists. You brought up questions and asking questions. Are there any particular questions? And you could pick a condition. It could be a shoulder, but could be a lower back, something orthopedic or potentially orthopedic. What are some of the tools or questions you might recommend to folks who are hoping to become better advocates for themselves first? And maybe we talk about parents later. First and foremost, it's asking around who's had favorable experiences with different positions. Obviously, Bedside Manor plays into this tremendously. You want to make sure that you're dealing with a surgeon who is accessible. If things don't go well, things like that. So, we try to really align ourselves with people who have great Bedside Manor. We've been really fortunate to have some really strong relationships in that realm. So, I think that's important. How do you find those doctors if you're not a great team? I think it's obviously it's conversations. And I'm not sure that reading patient reviews online is great because you always tend to get just the really bad ones are the people that take the time to write it up. But I think asking people in your network who have been to these folks, particularly if there's a geographic component, hey, I live in Oklahoma and I need to see someone who's within 30 minutes of me. So, that's the first thing. The second thing I would say is how specialized is it? It's one thing if you break your leg. That happens all the time. People are pretty well equipped to handle that. When you have this very odd collection of symptoms, something that's unique, things like a thoracic outlet syndrome is a more specialized thing. Basically, your thoracic outlet is, you know, based where all the nerves and blood vessels of your upper extremities start up at your neck. And it can be effectively clamped off at and multiple different points. So, it can become a hard diagnosis when you see numbness and tingling in the fingers and you don't know whether it's at the neck, at the shoulder, at the elbow, all these different things. So, that's a harder diagnosis that's much more specialized. So, I think you have to be aware of the more complex it is, the more you might need to travel. The one thing that I actually talk about the most is when we're talking about rehabilitation specialists. I think it's always important to make sure you do some digging on what's the model that's employed in this rehabilitation realm? Is it a lot of one-on-one hands-on? Is it one person supervising eight patients at the same time? Is there a manual therapy component to it? Do you have experience working in these specific postoperative cases or with this, something like an Achilles ruptures? Is it a pretty specialized injury? Just someone who's done shoulder rehab all the time isn't necessarily going to be able to handle someone who's had a post-op Achilles. So, you have to be mindful of how specialized the actual rehabilitation may be. I think that's big and then kind of building out that you can always just scrutinize a resume. I think that goes a long way. I always worry when it's like, Bob Smith is a chiropractor that does this. He likes long walks on the beach, has a wife and two dogs and you read their bio and like there's no substance. When I read a bio or a myth for someone I can refer to, what I want to think I matched with that guy on a hinge. What I always want is I want someone who's got a number of different skill sets in their toolbox because if you're a carpenter who only has a hammer, everything starts looking like a nail. So, you're looking for some people that can delve into different methodologies to try to help get you better. Yeah, totally. Tell me if this is a decent

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heuristic to use. My bias has always been to work with practitioners. I'm using that deliberately, pretty broadly, whether they're soft tissue folks or surgeons or otherwise who work with a lot of currently competitive athletes just because please feel free to rip this apart. But my feeling is with sedentary folks, there may not be a clear pass fail. So, it's harder to get an accurate read of whether the surgery delivered what it intended to deliver in terms of outcomes. But with athletes, if they are, say, an Ironman triathlete and they're having trouble running because of X with their right leg and the promise is we will fix your right leg so you can get back to running, that is very simple to, in a sense, figure out from a pass fail perspective like, are they able to run and compete or not? And I just like maybe the simplicity of that. Any thoughts on that? The simplicity in identifying those people, yes, the complexity in what it takes that probably makes it a useful approach is a key consideration. So, I would say is there's being asymptomatic, there's return to play, and then there's return to performance. Those are three very different things. Like a surgeon can make you asymptomatic and you can lose all of your range of motion and not be able to return to play. If you're a recreational tennis player and you can't get your arm up, you're not going to be able to serve. And then it's another thing altogether you get back to return to performance. And I think when you deal with clinicians who are used to dealing with those higher level athletes, that's their outcome measure is return to performance. When you talk to major league baseball doctors, it's can you come back and pitch in the big leagues and throw 98 miles an hour anymore or not? And you know, it's not just the surgeon, it's not just the physical therapist, it's the entire team because you can do a lot of things wrong along the way. So, I do think the standard of care is probably higher when you're dealing with those competitive athletes. And there's also just a mindfulness to timelines is that, hey, we can't just mess around, we want to be proactive with this. So, I think it's useful. I would never pull the rug out from underneath people that haven't worked in that population, you know, if they've proven themselves clinically and you know, they really care because there's there's absolutely a need for that. But yeah, it probably gives you a little bit more mindfulness to how people look at the injury to treating them like an athlete, not just like a patient. I think that's probably important. Yeah, I've found that if you're in any decent size city or close to a decent size city, you don't have to find someone from the Yankees. You can give you a referral to their favorite ortho. The chances are there's some sports team that outperforms relative to other sports team, it could be high school, it could be a college team. And it would be relatively trivial to reach out to say a coach and be like, when your players have problems with X, where do you go? Do you have anyone you you like to send people to? And at least I've found that to maybe I'm biased, I probably am biased. This is a former athlete, but I really have found that beneficial and not maybe as intimidating or as difficult as people might think, which is not to totally minimize folks who don't specialize in athletes. But it's a pretty straightforward shorthand. What else should we talk about relative to movement diagnosis? And one thing that came to mind for me, which I'll just throw out there in case it takes us somewhere is there's a difference between understanding the structure or structural abnormalities and then the function and the patterning that someone uses coming back to that book recommendation. But what else can you say about movement diagnosis and how perhaps people listening can think about more of that type of

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movement diagnosis? So the first thing I would say is that movement diagnosis doesn't necessarily just need to be under the, I guess, original algorithms that Sarman outlined in that book, which I think are excellent. We still utilize day to day. But I think what it does is it gives rise to this thought process of there's so many other things that go into it. I'll give you an example. We often see in an athletic population like a scapular depression, their shoulder blades very low. Like as we're talking about this, like you have downslope shoulders, it's really something we see a lot of people have deadlifted, Olympic lifted, thrown a baseball, done anything imaginable in an extension or rotation sport athlete, particularly if they've combined it with a lot of strength and conditioning. So sometimes we see, you know, shoulder pain in that population because they just get stuck so far down in scapular depression, their shoulder blades sit so low that they can't possibly get their arms overhead safely. So we teach them better patterning, we adjust their exercise selection to drive more movement of the shoulder blades to get their arms overhead. We do overhead carries and we teach them what better movements

are. We do soft tissue work on the lats, all these different things that allow them to move better. But if that same person goes and just does a bunch of farmers walk at the end of the session, it can become a problem. Can you say a little bit more about that?

So like a farmer's walk, just taking heavy, heavy weights.

Right. So basically, not undoing the good work you've done, but doing something that reinforces their pattern. Exactly. Just brings us right back to it. And that's something that I think that happens a lot. And certainly there are times when that's non-modifiable in the context of, hey, I play football for a living and I have a concussion, I still need to run into people. Some things like that are very, very challenging.

We're talking about the training initiatives that a lot of people either use to support their athletic participation or what people use for their fitness initiatives. Those are very modifiable. So I think we need to be mindful of always being willing to adjust the program in the avenue. So we have some athletes, honestly, that have that predisposition that I just talked about and they don't deadlift. They don't farmers walk. They don't do walking lunges.

We do a lot of stuff in the front squat position and maybe we use a safety squat bar on their back.

We can find different ways to load them that won't interfere with our ability to create optimal movement. So often it's not just about what you do. It's about what you decide not to do.

And that's often the hardest part is sometimes you have to counsel athletes away from something that they might really enjoy. Are there any particular exercises that you think are

remarkably overestimated, overpopular? Like if you could just wave a magic wand and remove a handful of exercises, anything make that list? I really have always hesitated to contraindicate exercises. I think I tend to contraindicate people for exercises more often. We never

want to rule it out. I do think there's kind of an interesting trend now of a lot of people who are well into middle age who have lost some movement capacity that have gotten into a lot of like Olympic lifting and gymnastics training. And we forget that most really high level gymnasts do that from a young age. They built our capacity and they hold on to it over an extended period of time. They don't pick it up after they've already had like one rotator cuff repair and spent 25 years at a desk. So I do think that's an area where we need to be really, really cognizant of.

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Well, let's use a case that's right in front of us. So got this weird lower back thing. Any exercises you'd be like, yeah, maybe for the next X period of time. Yeah, I mean, I strike these from the record. Yeah, I think, you know, for the most part, if you're looking at some of the blanket statements, particularly based on some of the things you've told me, and I haven't looked at you yet, but it doesn't sound like heavy bilateral loading is your best friend. They seem like, you know, some single leg initiatives. Not my best friend. Yeah, compression in kind of positions that don't allow you to bail out very well, that, you know, kind of two-legged stuff is probably not your best friend. And some people just don't do well with it. I think we see kind of your classic flat spines. They generally tend to be people that are more susceptible to discogenic issues and they don't handle compression really well. So when I see a plumber spine, I'm probably not thinking it's going to be an 800 pound deadlifter coming in. So when you examine me later, this will be shortly after we wrap recording, what type of movement diagnoses, what are some examples of movement you'd move me through? So like I said, we'll start with some static posture stuff and I would get a look at just standing looking. Yeah, and that stuff just to stare at you and judge you. But then actually, we'll do some table-based assessments. And not just because I want to... Table-based meaning I lay down. Correct. So I'd look at hip and internal and external rotation, collection, different things like that. And one of the things you want to look at for something like that is you might have a wildly stiff hip that just doesn't move and your spine's paying the price. So we'd kind of look at some of that. And then actually from a functional standpoint, probably look at a toe touch pattern assuming it's not too problematic. Look at some squat patterns as well. I'm big on measuring infersternal angle. Say that again. Infersternal angle. Yeah, a lot's unpacked there. That's a lengthy podcast. But what is that? Just think of the angle at the bottom of your rib cage. You have some people that are very wide and some people that are very narrow. When you have a wide infersternal angle, they tend to be very kind of hinged in their squats. They're built for toe touches versus a narrow infersternal angle will usually be a very, very good squat pattern. They may struggle to hinge and it kind of creates this little like, I put it underneath the postural, I guess, measures, but it gives us a little bit of a glimpse into how people may move. So there's an emerging school of thought that I think is really profound in that regard. So the, what was the term again? Infersternal angle. So a large infersternal angle. Could I translate that to wide rib cage? Or is that not quite working? Wide versus narrow. Yeah. And credit to Bill Hartman. Bill has done some wonderful stuff in terms of being on this to the forefront. I think I have a large infersternal angle. I would say generally speaking, people who are biased towards being really, really strong, like weight lifters, power lifters, NFL linebackers, running backs, they're often your wide folks. I think when you look a lot more at like some of your really like your high jumpers, some of your six foot 360 pound pitchers who throw 95 miles an hour, they generally tend to be narrow. There's just different ways to get jobs done. And sometimes people will get into bad patterns just because they get a little bit too adhered to the things that come naturally good to them. So let's just say, since people may be familiar with this movement, in the case of a squat, so you'll have me perform a few different variations of the squat, what will that look like?

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And then what will you be looking for? We're looking at a little test retest on it. So I usually will do an overhead squat. It's kind of like a gateway to it. Holding my arm over head. Yep, correct. So generally try to keep you in a non kind of compensated position. In other words, like, we'll let you turn your toes way out and go to an ultra wide stance. So we just want to see what unpacks. And what's great, you can kind of, I joke, if you look for everything, you see nothing. So we can see everything from shoulder mobility to upper back mobility, to how well you hinge through your hips to whether you have adequate dorsal flexion really through your ankles, and also just how you position your center of mass. We can also look, you know, do you shift to one side or the other? You mentioned a, you know, leg length asymmetry, you, you know, we talked about potentially there being like a bony block and a hip, all those things are stuff that we need to kind of keep in mind. So and then we'll do some modifiers, right? If it doesn't look good, then we're probably going to go on. We're going to try some like a counterbalance where you don't have your hands up overhead and see if the pattern improves. Then we'll just kind of like workshop it in the sense that, you know, you screen out whether it was, was it terrible because the ankles didn't move? Did you fall over just because you can't reposition your center of mass effectively? All those things are on the table. Yeah, you're mentioning the 45 year olds like me getting into gymnastic strength training, which I actually, I'm a huge fan of, but if you talk to the people who really know what they're doing, like coach Chris Summer, he advocates people taking their time with the connective tissue remodeling. I think humans and maybe especially Americans are pretty bad at healing that, but you see also, and you mentioned this same thing in some say later in life, Olympic lifters who begin, they just don't have that dorsiflexion, right? The flexibility in the ankles, which a lot of these competitors have developed from a pretty young age. And then they have all these compensations above the ankles that create just mayhem biomechanically. I never have loved the term injury prone. I would say there's injury predisposed, and I think they're very different things like injury predisposed is the guy that rolled his ankle in high school and didn't do anything about it. All of a sudden he's got, you know, way more dorsiflexion on one side than the other. And he just kind of becomes this helicopter pattern of movement where everything is kind of rotating in the wrong places. So I think those are the things that when you be really mindful of. And if you're a 50-year-old man getting into Olympic lifting, you're more predisposed to injury than someone who's 15. It's not to say it can't be done. You know, you never want to discourage people from their goals. It's just that the onboarding has to be a little bit different. Yeah, it is incredible to see what some of these young athletes are doing. Maybe it's just more visible to me. I don't Olympic lift these days, but I subscribe to one account on Instagram, Hook Grip, and they have these competition shots. You just see these, I mean, in my mind, kids are like 18, 19, just clean and jerking, 480, 490 pounds. It's wild. I think in general, we're in an interesting transitional time for young athletes. I think a lot of this conversation centered around like self medical act. We see people on here who are, you know, listening because they're hip hurts or something like that, but like advocacy for your kids is a really big thing is the model is changing dramatically. Like when I grew up, we played multiple sports. We played a wide variety of sports until my mom, you know,

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yelled out to come in for dinner. And now we have kids that are legitimately playing baseball year round, playing soccer year round, and they're not getting that broad foundation, that rich, proprioceptive environment. And I think orthopedically, I know for a fact, we're paying the price for it in the baseball community because it's the most specialized game. It's the highest velocity movement and the shoulder internally rotates at 7,000 degrees per second. But we're also going to pay the price when these guys are 35 years old and getting shoulder replacements and things like that. It just seems like in general, youth sports are really headed in a negative direction. That's why what I do, I, in my eyes, I feel is so important. You have a lot of career stability. Maybe not as good as the hip surgeons, but yeah. Oh God. Yeah, one of the dialysis manufacturers. Maybe this will go nowhere, but I'll bring it up. I've read that you're a fan of the expression get long, get strong, train hard. That's a good one. Fair to say. Yeah, it's a great, it's a Charlie Weingroff line. Okay. What does this mean? So get long, right, is create a transient or more permanent change to range of motion. Maybe that's some positional breathing that gets you 15 degrees of hip internal rotation. Maybe it's some soft tissue work that gets you some shoulder flexion. There's all these different things. And I'll backtrack to that in a second, but get long, get strong. Go ahead and do some exercises that make that change stick. So all right, we're going to do a thoracic spine mobility drill to get some length. And I'm going to do a kettlebell arm bar just to help kind of hold it under load and then train hard. Now I'm going to do quite a bit of volume with ample load to make my brain, my body perceive it as normal so that I hold those patterns. Like that's what good training really does. And here's the problem. We can all agree on what a good lunge is and what's probably an excessive amount of exercise. So they get strong and train hard. Everybody's probably 99% in the same bucket on. It's the get long part. People love to argue about whether one discipline is better than the other. They love to argue about whether manual therapy works. They love to argue about whether it's incredible. They argue about whether positional breathing is lame and boring. And I think people just like to fight on the internet, but that's the challenge is we get so caught up as an industry arguing about the minutia of how to create a transient change in range of motion that would lose sight of the fact that we agree on the other two factors, 99% of the time. So how frequently, let's just say for yourself, right? Because you clearly still train. What does get long look like for you as an example? For me, it's historically been make the most of my warmups. If I take care of those, whether it's some self-massage release, like getting on a foam roller, doing some of that stuff. And for me, it's much more targeted. I'm not going to spend a lot of time on an area that I don't think needs it, but I'll use an AccuMobility ball on my neck a little bit just because my neck gets a little gummed up. And then I'll follow it up with a more thorough warmup, which is usually one to two positional breathing exercises. And then I'd say seven or eight exercises that are more long chain compound movements. What do you mean by long chain? Yeah. So it's things that involve multiple joints. So if you do like a spider man with hip lift and overhead reach, something like that, and some people call it world's greatest, like those are things that get you a wide variety of movements across multiple planes of motion. Those are great. And then after that, I'm honestly, I'm doing something that's reasonably powerful. Maybe it's throw some med balls or do a set of kettlebell swings. That's in the warmup

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or after the kind of like an extended warmup is the way I look at it. Maybe you sprint, maybe you jump something along those lines. I just think it's a good way to kind of like get your body temperature up and solidify some of that stuff. And then now we're going to go on I'm going to lift and I generally have four days a week and I'll condition a couple of days a week as well. How long does your warmup take? I would say it depends. Full disclosure, like I probably be a lot better off if I follow my own advice better, but I would say it's bare minimum 10 to 12 minutes. I think the older I've gotten the more I've realized that that needs to be extended. And I probably do better when there are targeted mobility initiatives between sessions as well. I don't think anybody at 40 has ever regretted doing more mobility exercises in their 20s and 30s. So that would be my advice is even if you don't think you need it, you need it. Yeah. I remember chatting with Kelly about this and maybe it was a profile piece that I read where he was working with some NFL team and he was talking to the guys and you know, the guys in their, let's just say earlier mid 20s were kind of like listening to music, daydreaming, not paying attention. He's talking about warmups and so on. And every single player who's a veteran who's been there for a while is paying complete attention. It's incredible. I never recognized it. Honestly, it was very impact for me. I had my first orthopedic surgery at a meniscus repair. I had kind of ignored some posterior medial knee pain in my left knee for a long time and actually finished it off, believe it or not, Christmas Eve 2020. I was rewracking a weight. I went to pivot and I caught it just right. I heard a pop and didn't think anything of it, kind of finished my lift and the next, you know, hour later I could barely move it. But what was fascinating about it to me was that I had the surgery a couple of weeks later and two weeks non weight bearing, two weeks partial weight bearing. And what blew my mind was how quickly I lost motion. And I was taking care of the knee motion, but my inability to kind of move side to side my adductor. So growing tightness was more significant. You just noticed I lost some shoulder mobility during my time on crutches. It was just very eye opening that, you know, for me at the time, that was 39. It was not a, you know, something that geriatric procedure. Yeah, I should not have deteriorated that quickly. And I don't feel like, I mean, I kept my fitness up and I was able to work out. I was hopping around on one leg and doing what I could, but it was extremely eye opening to me that that motion can be lost that quickly, even if you're paying attention to the particular joint where you had surgery and being very mindful of that. So I always try to counsel people on like the downstream effects of some of those orthopedic interventions. They're not just necessarily fixing a shoulder and elbow in many cases. Your neck might get cranky from where in that sling. So just be mindful of all the different places where you could lose motion. Like if you're in a sling for four to six weeks, there's not a whole lot of arm swing happening during your gait cycle. So it could have some other impacts. Well, I remember getting my shoulder reconstructed. This fantastic surgeon in SoCal was recommended by, I think he was recommended by Scott Mendelson, actually, famous power lifter, benches, thousand something pounds. Literally, literally, that's just an embellishment. And I remember paying so much attention to the rehab being really meticulous on the left arm, but not really feeling like I had marching instructions

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in retrospect for the other arm. I was compensating, of course, using my right arm in this case that was had not been using my right arm in this case that had not received surgery for everything. And I ended up developing all of these issues with the right shoulder.

Yep. And the other thing too is even during your rehab, the crossover effect, there's research that shows that, all right, let's say you have left shoulder surgery, you're in a sling. Assuming we do it without obviously setting you back, there are things that we can do for your right side. They won't do anything to minimize the atrophy that might take place on a shoulder side. But from a pure neurological standpoint, we can do some stuff to preserve the strength aspect of it too. So we always train the non injured side and our post surgery athletes. I trained my right leg a ton while my left leg was on the men and the crossover effect is a real thing. So I'm going to drag us into the some deep water here and feel free to interject or deflect or take us somewhere else. But I'm just going to read a few things and then you can modify. So this is in the context of, I think it was an interview on nickgrantham.com. Yeah, from some time ago. But the discussion was around creating bulletproof athletes. And I think that was the wording from Nick. So we have 10 points related to what would make or could help

make a bulletproof athlete. And I know this is a throwback, so I'll hand this over to you. But let me just read these first, if that's okay with you. Let's do it. And then you can update, modify as needed. So number one, adequate hip mobility. We've spoken about this a bit. Number two, stability of the lumbar spine, scapulae and glenohumeral joint. Number three, posterior chain strength and normal firing patterns. We spoke a little bit about that. Four, loads of posterior chain strength. Five, more pulling than pushing. So more deadlifts, rows, pull-ups, etc. Then pushing, squats, benches, overhead pressing. Six, greater attention to single leg movements. Seven, prioritization of soft tissue work in the form of foam rolling, ART and massage. Eight, attitude. And then in parentheses, being afraid when you're under bars, recipe for injury. Nine, adequate deloading periods. Ten, attention to daily posture. You have one to two hours per day to train. And 22 to 23 to screw it up in your daily life. So that's what we have. Is there anything that you would modify here, add to this? Maybe change because you've adapted your thinking since this was put on the internet? I think the first thing I would say is some of that stuff is really just a plan on some of the joint by joint approach that Negray Cook and Mike Boyle to their credit kind of put out there is that you have certain joints that are more conditioned for mobility, things like the shoulder, right? Obviously have a lot of motion. We need to drive more motor control. We use the term stability. I'm not sure it's a great way to describe it. And we have other joints that obviously are more built on, hey, they need to be really sturdy, like a knee, right? It's a hinge, it's load bearing, all that stuff. So a lot of this is just, hey, preserve what they're meant to do, either be mobile or be more stable. So I think I would definitely adhere to all of those different things. I think probably the stuff I might backtrack a little bit from is the more pulling than pushing. I think for your general population, folks, people who sit too much, that's still probably the case. I think in our athletic populations, I've gotten away from thinking it was just pushing and thinking it more now is reaching, things to drive more rotational capacity and some of that stuff. But I think on the other stuff, there's some good reminders in there, the attitude aspect of it, where I commented being afraid

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when

you're under a bar as a respiratory for injury. I actually see this a lot. You know, you see it the most in the weight room is people who don't take their warm-up seriously. I can't tell you how many times or people that just like jump right to 225 on the bar and stuff like that, you always take the bar, you always take your first 45. If you look at most powerlifting gyms, it's always plate quarter, plate quarter, 45, 25, all the way up.

So could you explain that just for people who may not have a view into this? So if we're talking about that would apply to deadlifting as well. Yeah, for sure. Okay. So you've trained in some facilities where people are pulling what from the floor? What would you say? A thousand. Yeah. So pulling incredible weight from the floor. I mean, not routinely, but yeah, 700, 800 regularly. Yeah. So what might their warm-up sequence look like? We don't have to go through all of them. I think at that level, you're going to see guys, for me personally, if I'm going to double 600, it's going to be usually 135, 225, 315. And once I've hit 315, I'm going to go 25s all the way along. So it'd be 315, 365, 405, 455, 495. There's a pretty significant build up to it. You don't just go and throw it on there. And it's usually your first exercise of the day. So there's an extra need for it. But you see so many people that just don't know how to kind of flip the switch and tap into the level of stiffness it takes to move that kind of weight. It's no different than having like a major league baseball pitcher go out and throw their first ball at 95 miles an hour. It's like the first couple throws are really, really gradual when you build up your long toss. So I see a lot of people that just don't have the right mindset to really be handling heavy weights. And it's probably even worse than when I actually probably gave this interview just because there's more distractions. I mean, this might have been like 2010. And here we are now. People are checking

Instagram between us sets and things like that. So there's probably even more of a recipe for people just getting hurt because they are locked in. Yeah. Well, let's hop back into the scooby snack category for a moment. What is the worst advice or terrible advice that you hear or see being given out often in your world? Just bad advice. I'm going to throw one out there that might be a little controversial is follow your passion. Actually, I've never loved that advice in our field or really any field. You know, if you look back, like when I was dealing with all these shoulder issues and athlete, I was passionate about fantasy sports and stuff like that. There was no livelihood to be made at that time. So I think what I did really well early in my career was without even knowing it, built some career capital to steal a Cal Newport term.

What do you mean by that? Just marketable skills. You know, skills that would eventually serve me without even knowing when I was going through shoulder rehab and all this shoulder stuff. Like I was actually working much more with basketball and soccer athletes during my grad degree at the University of Connecticut. It just so happened that some of the first athletes I worked with in the private sector were baseball players and because I had had all these shoulder issues and dealt with them myself, I think I identified a really underserved population even more than I otherwise would have. Would that have been the case if I had spent my entire undergraduate year boozing and not doing anything? I didn't do that. Instead, I worked. I experimented. I was in the gym every single day and I was annoying people that I knew were a lot smarter than me. So I never loved the idea of people falling their passion. I think you

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follow your marketable skills and eventually, as Newport, the book was *Be So Good, They Can't Ignore You*, he talked a lot about being able to redeem those eventually for other things. Maybe it's more compensation. Maybe it's a better work-life balance, more autonomy, whatever it may be. Too often in our industry, everybody has these very similar resumes. Everyone has an exercise science degree. Everybody has a letter recommendation from their academic

supervisor and their high school volleyball coach or whatever it is. Very rarely are they heavily differentiated in my world. I'm like, I want to know what's weird about you. Do you speak Spanish? Do you have experience with particular technology? Not necessarily about being passionate.

You're talking about hiring.

Yeah, for sure. When I talk to young coaches in this field, I'm always like, figure out what you can do to be differentiated. Very rarely does following your passion get you there because everybody in my field, you have to remember, most people wind up in this world because they like to exercise or they were former athletes that wanted to stay competitive, but it's not a differentiator. It's just something that they're passionate about.

You quickly realize when you open a training facility that some days it's not much different than running a restaurant or an accounting firm or something like that. I think where I've been served well is I always try to actually develop skills that could in one way or another make me differentiate in the marketplace. Makes a whole lot of sense. Passion does not automatically equal differentiate it for sure. You still need to have it, but still need to have it. It's not the most important, I'd say. What have you changed your mind about in the last few years and why? I'll give you two. The first one I would say is isometrics. And I think for those who don't know, isometric is really just a muscular activation where there's no change in length. So if I had Tim Holt in the bottom of a split squat for 30 seconds, that would be an isometric hold. And I always thought that, hey, the loading isn't significant enough. I'm not sure this really has its place. And we started to see more benefit, I think, with respect to really hyper mobile athletes. People who are really, really loose-jointed, giving them time to own positions is really helpful. But what really took me to the next level was Dr. Keith Barr's research is excellent. He's looked a lot at the favorable impacts of isometric holds on tendon health, particularly with respect to Achilles and patellar tendons. And it just seems like the biochemical response to isometric loading is really, really good. And it does things that we don't get from concentric or eccentric. Give any idea why that is? That's a lot of what his research has kind of postulated. But it seems like 30 seconds is kind of like a minimum threshold. So we've seen some really, really awesome changes in some of those chronic patellar tendonopathy people, chronic Achilles tendonopathy people, where we even use it proactively, like start of the offseason. We want to do some more isometric loading for people as we prepare them for their offseason sprint programs and things like that. So I think that's powerful. And the next step is how do we translate that to maybe tendons that aren't as easily measured? So the example would be like, you can touch your patellar tendon, you can touch your Achilles tendon. It's really hard to say, like, all right, I want to get in on my super speedatus tendon. And we know in a baseball world, like some of those get pretty banged up over the course of time, is there's something

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that we can do to favorably impact tendons that maybe aren't as easy to isolate? So I do think that's kind of like an exciting frontier and credit to Keith and his lab for doing some great work. So I'll be the first one. I think the second one is hanging. In general, I was kind of out on hanging for a long time, even though it's very evolutionary, if you really think about it, it makes no sense. Like holding onto a pull up bar and just hanging, just dangling. Yeah. And I think maybe my bias came because we see a lot of really hypermobile loose jointed folks in the baseball world, and they can just get in really, really bad positions. So when they hang, you usually see like elbow hyperextension, you see like a ball that's like flying out of the socket in the shoulder. And so I really didn't like the idea of doing a lot of it with them. What I quickly came to realize is if you have any athlete that has like any element of stiffness, things like that, it does seem to really make a big, big difference. So particularly when you integrate hanging with correct breathing, understanding how to inhale and exhale correctly, where you actually can manipulate

how you're pressurizing the rib cage, that has been I think a big difference maker for us, particularly with how people are very dense through their lats, and you get your arms overhead, you hang, you get some reduction in tone there, and you can also de-load it. There's nothing that says you have to hang with your full body weight. You can put your feet on a box and cut 50% of your body weight out. So I'd say if I had to change, if I've changed in two areas over the last couple years, isometrics and utilizing more hanging variations. So quick side notes. One, this is maybe neither here nor there, Bruce Lee, a huge fan of isometrics. And he was really a sort of high neural drive, connective tissue guy with a lot of what he did. And then the second is a question about the hanging. What might a protocol look like for your athletes?

How long are they doing? And then what is the correct breathing?

I'd say for me, I'm generally integrating in the warmup, particularly in someone who's really limited in shoulder flexion, so their ability to get their arm overhead. So I'll generally program it for breaths. So I might only have them do five breaths. And again, usually it'll be like like a lat inhibition hangs, we might not have, you know, full percentage of their body weight, but you know, we have other variations that are just like hanging, they're all, they're ultimately distraction exercises for the upper extremity that are effectively taking the rib cage away from the pelvis, right? So you're getting some length through quadratus lumborum and lat and long head of the triceps, all these different muscles that kind of all run in that same path. So five breaths, and it might be an inhale to the count of three and an exhale to the count of six. So you're talking about these taking close to a minute. So that's why, you know, full body weight might not be necessary. How we cue their breathing will kind of be impacted by some of the infersternal angle stuff that I talked about a little bit, or maybe a really forceful exhale for like a wide ISA that really needs to learn to kind of ISA is infersternal angle versus like a narrow, it might be more like an inhale through the nose and try to expand your rib cage to the sides. And then when you exhale, think of like fogging up the mirror versus like blowing out the birthday candles. So subtleties that we would obviously coach in different positions and we might use that more in one than the other. But yeah, definitely just some different ways that we'll attack it. Amazing. Well, Eric, I mean, we have a million different things we could talk about. I don't know, since you mentioned the book

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upstream from Dan Heath, was it? Dan was the one that wrote that one, correct? Yeah, Dan Heath. Would you like to speak to some of the upstream variables that people might want to pay attention to in your world? A couple big ones. I would say first, don't specialize young. I mean, that's a message for both the parents on this podcast, but also I think people who may be losing athletic initiatives in their life, like try to find a way to do a wide variety of movements well into adulthood. So that's certainly an upstream activity because it's much easier to do a little bit and maintain mobility than it is to lose it and try to get it back. It takes a lot more work. I think obviously sleep, nutrition and regular movement are very, very big. Certainly there are times when supplementation can make a big difference. We know that vitamin D deficiency seems to have some pretty big relationships to the musculoskeletal health as well. I think in the big picture of movement, if we're going to look underneath that umbrella. Just pause for anybody wondering, that is my dog, Molly, timing her extremely allowed water intake perfectly with whenever I'm recording. Man's best friend. I'm a big fan. But I think underneath the movement umbrella, optimizing rotation seems to be the one that's really, really big. I think we get really, really stuck in this sagittal playing world. Everything is very straight ahead to find what that means. So the sagittal playing would be straight ahead playing. So forward and back. If you had a pane of glass, like going through the middle of your head, that's a sagittal playing movement. A frontal playing would be side to side. It's like a lateral lunge or like a shuffle to the side. And then the transverse playing is I think where people get in trouble. That's rotational. So imagine rotating through a med ball or the rotation that takes place during a golf swing or tennis, baseball swing, something like that. Yeah. And I think in general, people lose rotational capacity, but it's actually vitally important. We use it probably a lot more than we could have possibly recognized. That's something that we need to be really, really mindful of for sure. I'd say watch for anything that snowballs for you, right? Like if you had a non-ideal pattern and then you go and you throw 500 pounds on your back and try to back squat. Bad idea. Yeah. Loading bad patterns generally magnifies it. But I would even argue that load doesn't just have to be weight on a barbell, load could be going out and running full speed when your hip's barking at you or you have an Achilles tendonopathy or something to that effect. Anytime you start to load dysfunctional patterns, I'd use that term very loosely because we're still, I think it is an industry unable to perfectly define what that is, but pushing through pain generally doesn't end really, really well. And then the last one, I'll say this is kind of an interesting methodology one that I might be starting an entirely new discussion as we work to wrap up. But I think you always want to know why you're stretching something. So don't just stretch something because it's tight, stretch because you have an actual rationale for doing so. But if you add motor control, if you look to add good stiffness to a situation, you'll almost never go wrong, but you can make yourself a lot worse if you stretch the wrong thing. Could you give an example of a rationale and adding stiffness? Let's talk about tight hamstrings because that's probably the tightness that we encounter, the absolute most. So your hamstrings could be tight for a lot of reasons. It could be tight because the muscles are actually fundamentally short. It would be really, really hard for that to happen just because they cross multiple joints, they extend the hip, they flex the knee, like you just don't live in that position to actually be short

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enough. So more often than not, what we see in the hamstrings is actually a protective tension. Our pelvis is really tipped forward. Our hamstrings posteriorly tilt the pelvis. So they're firing on all cylinders and many of our really, you know, kind of active extension bias athletes to kind of prevent and debilitating low back pain. So that tone is there for reasons. So if we stretch it out, sometimes we leave them transiently unstable in a little bit of a position of exposure. Likewise, you could have hamstrings tension because you blew out a disc in your low back, you have some kind of nerve tension, maybe you pulled a hammy and there's just like an element of that tissue not just realigning the right way. So it's kind of dense and fibrotic and nasty. So when we just go and we stretch aggressively, we're not always taking into account what could cause that. Conversely, you add some stability to the system. So in the case of like a protective tension, maybe you give them a little bit of core control, you give them some glute activation, teach them how to posteriorly tilt their pelvis and all of a sudden that tension kind of can resolve. So I'm always mindful of don't just stretch something because you think you need to stretch because you know exactly why it needs to be stretched. And more importantly, look to add good stiffness motor control somewhere else. And this is why some people go to yoga class and feel amazing. And then every once in a while, you get someone that just feels way worse when they left. They probably stretched out some protective tension or they hung out on a structure that didn't want to be hung out on. How would you suggest people learn more about this? The reasons for stretching versus not stretching? How to forensically analyze what they're experiencing to determine whether they should stretch or not. Are there any researchers, exercise, physios or otherwise who's thinking you respect on this? And the actionable items for folks. I think this is why it's important to have like good practitioners helping you. I think in general, we can probably both agree like you need a contract written up, you go to a lawyer, you need an MRI done, you go to a doctor, your tax is done, you go to an accountant. But anybody who's ever walked into a commercial gym will kind of see that people tend to throw a bunch of poop on the wall to see what sticks when it comes to exercise. And it's scary because you screw up your taxes, there's a way out of it. You screw up your body, you might have a lifetime of pain. So I do think in general, escalating things to qualified professionals is helpful. That's very hard because it's a low barrier to entry industry. We could go online and get your dog certified as a personal trainer this afternoon if we wanted to. And I think that is a problem is that licensure really isn't a thing. So there are some kind of fly by night operations that are challenging. So that's a great question. I'd have to really stew on it because I think it's such a multifaceted discussion that we really need to dig in on. Let's talk a little bit about separating the charlatans from the legitimate practitioners. What are some questions people might look for? Elements, things that are lacking or present, they would be not necessarily definitive, but possibly indicative of good or bad. So for instance, for me, when people ask me about various facilitators or researchers who are conducting clinical trials related to say, psychedelic compounds, the best people and almost all of the universities certainly will have comprehensive medical intake. And so what I tell people is, look, I recognize that saying, just say no to drugs may not work. Like just abstain is not necessarily going to convince

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everyone. So for those people who are going to try to self-navigate, at the very least, anyone you consider working with should, without your prompting, take you through a very comprehensive medical intake, just as one example. What prescription medications are you taking as one example? What are perhaps some of the things people look for or look out for with respect to the good and bad players? What are the tripwires? You know one that always blows me away. I'll go on the road here and there and work at it at random gyms. And I'm always amazed when I walk into a gym and they don't have you sign a waiver. That just to me is a sign that there could be so many other things that are going on there that just like that's the most button-up thing you can possibly do is that. Yeah. If they're missing that checklist.

Because when you do that, that's your emergency contact info. So if you walk into a random gym in the middle of Kansas or whatever to get a workout in and you're not filling that stuff up, you're diabetic and you collapse in the middle of your sesh, they should have all of your information on file so that they can call your emergency contact and find out, oh, he's a diabetic. That's the first thing that you tell the ambulance when they arrive. All those things. So I'm always astounded

that that happens. And I think often that's because it's usually like a 16-year-old kid at the desk and there's just standards that aren't helped. But then you have to ask yourself, all right, is this equipment been serviced correctly? Are these bands broken? Is this cable going to snap while I'm working out? Like those are some of the very realistic kind of challenges. Those are legitimate concerns too. I've seen some horrifying videos of people working on police systems and the cables just snap because they're not maintained.

Yeah, having run facilities. We have that. It's all very itemized in terms of how often we check it. And I want to know that anytime something goes on that we have like immediate contact info for everyone. So that's, I think that's maybe not where you're going with it. It was more with respect to that. That's super helpful. But I do think, I mean, certification is obviously like a minimum threshold for working with people. And like I talked about earlier with practitioners, you want to look at people that have been exposed to a wide variety of philosophies. I think that's helpful understanding like what a typical session looks like. If it's like, all right, they come in, they ride the bike for five minutes, and then we leg press and, you know, do pec-deck flies and stuff like that. It's probably not someone that's going to be an ideal fit for like teaching you how to move better. So, you know, when I see people that have a little bit more movement competency emphasis to this, that's important. I think it's vitally important to consider too, like the people that are probably listening to this podcast are not going to be the 1% that are trying to like compete as bodybuilders or, you know, in some cases be, you know, high, high level power lifters. We're talking about folks who are looking to exercise to improve their quality of life and to reduce the incidence of pain and all these different things. So you want someone that has a little bit more of a movement competency. So I look for things in that realm, like an awareness of, you know, how we can actually optimize movement quality.

So not to invite you to put your foot in a bear trap, but I will. Any certifications that you find more compelling than others, if someone's looking for someone to help them with the types of things that we're discussing in this conversation? In a word, no. Okay. And that's a sad commentary

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on our industry. And I think it's really, really hard because so many people have kind of flocked to that world. Don't get me wrong, there's stuff the NSCA has obviously been looked at as like kind of the gold standard, the CSCS. And, you know, I do think that's a critical threshold because it at least verifies that your first aid into CPR certified. And, you know, you have some awareness of how to design a training facility and some of those things. But I think if you talk to most people that are having success in this industry and they're coming back, they're saying that most of what I learned, I learned on the fly. I didn't learn it from my certification. I didn't even learn that much from my undergraduate exercise science degree in many cases. And then I think that's challenging. I do think there's some people that have put out certifications that tend to be very specialized in various ways on a wide variety of topics. But I don't know that there is one certification out there that really heavily differentiates. Really, well, I think Mike Boyle has done a great job with the certified functional strength coach certification. People that are that are doing that are certainly like above the basic threshold. Mike Robertson's certification is excellent as well. But I'm still not sure that certification is enough in our industry to like really uphold this really high standard because you can do it in a day. You can't do med school in a day. My wife is actually an optometrist. And she always is remarked about this. She's like, you know, she did four years of undergraduate school. It was a biochemistry major, four years of optometry school. And then she went to a one year residency in Corby and contact lens. And she's like, I spent nine years on eyes. And like people in your industry go to a weekend certification and they get a whole body. Mike is pretty eye opening for lack of the pun. But it's something that I think we need to be better on it. It's good for motivated people that want to make a difference because it is a low barrier in entry, but it's also bad for unmotivated people that want to enter an industry that can profoundly impacts people live really quickly too. Yeah, totally. Eric, we keep going for hours. Is there anything else that we have perhaps omitted or I'll take the blame for that that I have omitted that would make sense to talk about? And there are many notes in front of me. We could talk about any number of things. I think you've done a wonderful job, which is expected in light of how long you've been doing this. So I think probably the best place we're going to finish is me thanking you because you've done a great service to the body of knowledge by supporting so many different initiatives in this realm for a long time. So I commend you for all of your great work. Well, thanks, Eric. Well, I really appreciate that. And I think we're maybe we could try to wrap up. That's very kind of you to say. And I'm looking forward to getting unbroken. I do periodically smash Humpty Dumpty into a million pieces and then he needs to be put back together again. Let me read a name and maybe this will be a good place to begin to wrap up. Maybe not. We can decide. So B in quotation marks. Is it Bridgish Patel? Oh, yeah. What did you learn from this person? Who is that? My honor. So funny story. I got accepted to the University of Connecticut graduate school early in the summer of 2003. And I went to UConn not knowing what I really wanted to do underneath this kinesiology umbrella. I thought maybe I wanted to get into research and all that stuff. And it was just when I had started doing some writing in the kind of like an online medium. And Bridgish at the time was a graduate assistant strength edition coach at the University of Connecticut. And what Bridgish did was he actually read a couple of my articles. And so I got to

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campus. We had some graduate classes together. He had several teams at UConn that were underneath his umbrella. And he said, Hey, man, if you ever want to come in and coach, like or just observe, just say the word. He's like, awesome. He's like, All right, men's baseball is at 5 30 am tomorrow morning. I look back and he was a million percent like testing me. And sure enough, I got up at five, I showed up and I watched it. It literally changed my career in that moment because I saw the way that he commanded a room. I saw the way that the players bought into everything he said. In that moment, I got completely hooked on strange editing. And you know, at the time, I was taking organic chemistry for the class of like 250 undergraduates. And I saw what Bridgish did. And none of that is his focus on movement competency and things like that. It was just a different way of training people, but also a different way of impacting athletes, which I thought was great. What made him different or notable for you and how he interacted with his athletes or commended their attention? I think the biggest thing was how he could be two different people in the best way possible. You know, there's the old saying, they don't care much, you know, until they know how much you care. And with Bridgish, he could be very businesslike and in front of a crowd when you need to be very organized and locked in and in control rooms that everything could happen efficiently. But then I also saw the relationships that he had on the side, how he knew literally everything there was to know about every athlete. He clearly grasped them on a personal level and things like that. And interestingly, we only got probably six months together. He actually moved on and took a job at the college of the Holy Cross and actually just won a national championship with Quinn Opiac and Hockey. But looking back, like that was the reason I went into strain the dishing instead of something else underneath that umbrella. And I was very lucky to have very good mentors at UConn, him and Tina Murray, who's now with the Pittsburgh Penguins and Chris West and under the soccer umbrella and Andrew Hoody, who's back at UConn. There were just some amazing coaches that really, really helped me out there. Is there, looking forward, anything in particular that you would be excited to work on in the next handful of years that maybe you're not working on now or could be an extension of something you're working on? So baseball is in a challenging place right now. As we talked about a little earlier, you know, average fastball velocity has surged. Like there's very much this injury epidemic in baseball. And I think the challenging thing is that we hear about it at the Major League level and the stakes are the highest, but we're realizing more and more and most of the athletes are very broken at young levels. I look at radiology report after radiology report on 18 year old elbows and so many kids are blowing out at young ages and they're broken before they even know they're broken and they just, they get to higher levels and that's when they eventually start to kind of hit a wall. So I think really the big picture is what excites me the most is how do we favorably impact what's happening on the youth side of things to make sure that the next generation of really talented players are, are healthy because we're getting to a point where sports medicine really can't keep up with 16 year old kids that are throwing 100 miles an hour. That never happened in the past. So I think big picture it's the interaction between sports science, sports medicine, strength conditioning, biomechanics, mental skills,

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it's how all those different pieces fit together. It's a lot of the stuff I'm kind of tasked with in a daily basis in my role. So that's what's really exciting is how do we make this better for the next generation. Eric, thank you so much for the time. I always enjoy our conversations and people can find you in many different places. So crescysportsperformance.com, just to remind people on spelling, that's C-R-E-S-S-E-Y, ericcressey.com and we'll link to all the social as well. Are you more active on any particular social than any others? I'd say probably Twitter and Instagram. Okay, so Twitter is at [ericcressey](http://ericcressey.com) and Instagram also at [ericcressey](http://ericcressey.com). Thank you so much for taking the time. Thanks for having me. This was a lot of fun. I really, really appreciate it and I can't wait to get hands on and everybody listening, you can find show notes, links to everything we discussed as usual at [tim.blog slash podcast](http://tim.blog/slash/podcast) that includes transcripts and so on. And until next time, be just a little bit kinder than is necessary to others and to yourself. And as always, thanks for tuning in. Hey guys, this is Tim again, just one more thing before you take off and that is Five Bullet Friday. Would you enjoy getting a short email from me every Friday that provides a little fun before the weekend? Between one and a half and two million people subscribe to my free newsletter, my super short newsletter called Five Bullet Friday. Easy to sign up, easy to cancel. It is basically a half page that I send out every Friday to share the coolest things I've found or discovered or have started exploring over that week. It's kind of like my diary of cool things. It often includes articles I'm reading, books I'm reading, albums, perhaps gadgets, gizmos, all sorts of tech tricks and so on that get sent to me by my friends, including a lot of podcasts, guests and these strange esoteric things end up in my field. And then I test them and then I share them with you. So if that sounds fun, again, it's very short, a little tiny bite of goodness before you head off for the weekend, something to think about. If you'd like to try it out, just go to tim.blog/friday, type that into your browser tim.blog/friday, drop in your email and you'll get the very next one. Thanks for listening.

This episode is brought to you by AeroPress. I love AeroPress with more than 45,500 star reviews and customers in more than 60 countries. It might be the highest rated coffee maker on the planet. Let's rewind just a bit because back in 2010, 2011, I tested the entire gamut of coffee brewing and filtering options alongside a former barista world champion. This was for research for the four hour chef that concluded with a statement that the AeroPress was quote bar none my favorite brewing method and quote I even mentioned it and made a cup of coffee on late night with Jimmy Fallon using the AeroPress. Here is the back back story. Remember the aeroby, the amazing UFO like

disc that you could throw farther than a football field? Alan Adler, a mechanical engineer in Stanford University Lecture created that. Then after conquering the 1980s toy market, he began to obsess over one thing, coffee. The result was the AeroPress, which debuted in 2006. It was quickly adopted by the specialty coffee community and it became so popular with the barista community that someone in Oslo Norway started a world AeroPress championship. Because the AeroPress combines

the best of three brewing methods, you get a cup that is full bodied like a French press, smooth and complex as if you were using a pour over method and rich in flavor like espresso. Best of all, it's super small. You can pack it in your bag when you travel. It takes literally

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five seconds to clean. It is all practical, no fuss. And you don't have to drink mediocre coffee at your office or Airbnb. And now they have a new crystal clear version, sleek enough for display and tough enough for the road. You can pick one up at [AeroPress.com](https://aeropress.com) slash Tim, that's A-E-R-O-T-R-E-S-S

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