The Tim Ferriss Show Transcripts
Episode 64: Kelly Starrett
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Tim Ferriss: Kelly, what did you have for breakfast?

Kelly Starrett: I ate 20 dwarves while doing a handstand on the carpet.

Tim Ferriss: That's key: that carpet.

Hello, ladies and gentlemen. This is Tim Ferriss, and welcome to another episode of The Tim Ferriss Show. I am thrilled to be bringing you yet another example of world-class performance. And of course on The Tim Ferriss Show, what I attempt to do is deconstruct those performers to give you the tools and tricks that you can use, whether those people be from the world of finance, investors like billionaire Peter Thiel, celebrity, like Arnold Schwarzenegger, or sports.

And this episode is going to focus on the one thing besides politics and religion that gets Americans all hot and bothered, and that is CrossFit.

We will delve into the good, the bad, and the ugly of all things CrossFit. We will answer many questions, including: what are the three most dangerous exercises in CrossFit gyms, generally speaking? What are the most common nutritional mistakes in CrossFit? What do elite CrossFit athletes do differently than the rest? For example, what do Rich Froning and Jason Khalipa do for warmups? Is the CrossFit Games really CrossFit? And what is the future of CrossFit?

The man to answer all of this, and much more, is Kelly Starrett. He's trained CrossFit athletes for more than 130,000 hours, and 10 years at San Francisco CrossFit, which was one of the very first 50 CrossFit affiliates in the world. There are now more than 10,000. His clients include Olympic gold medalists, Tour de France cyclists, world and national record holders in Olympic weightlifting and powerlifting, CrossFit Games medalists, ballet dancers, elite military, on and on and on.

This is going to go very deep. It involves significantly less alcohol than the last long conversation I had with Kelly, which is also

included in the blog post at fourhourworkweek.com/podcast, where you can find show notes and other things.

And, without further ado, enjoy, discuss, debate, yell and scream. Here you are: Kelly Starrett.

Sir Kelly, welcome back to the show.

Kelly Starrett: Oh, thanks for having me. A little more lucid this time, perhaps.

Tim Ferriss: A little lucid. A little less alcohol, a little more caffeine. Whatever you gave me here I mistakenly thought was one cup of coffee. And you're like, "It's strong." I was on the phone, and I was like, "No, don't worry." Yes. Fucking strong coffee. Whatever.

Kelly Starrett: I think it's supposed to be diluted at like eight-to-one, but it's fine. I'm sure it'll be fine.

Tim Ferriss: So we are here at San Francisco CrossFit. And you have quite an anniversary I suppose you could call it.

You've spent ten years in this world called CrossFit.

Kelly Starrett: Yeah. This year now is ten full years.

Tim Ferriss: So I want to dig into this. Because we've known each other for quite a while. And to perhaps lead off, for people who may not be familiar with this world, or have heard the word a million times but don't know what it really means, for you, what is CrossFit? Or how do you define CrossFit?

Kelly Starrett: You know, there's the official definition of trying to get people to work at higher intensity, in movements that replicate the movements that we see in life. It looks like squatting and deadlifting and pushing and pulling and running. If we had to mash up the tenets of gymnastics, Olympic lifting, power lifting, and all the aerobic responsibilities that come along with that, that's what the programming looks like. But that's not what it is. For me now, ten years – we estimate, even in our gym here – we've been doing it for nine-plus years – we've done maybe 130,000 athlete hours here.

Which is a lot of pattern recognition. That's a lot of people going up and down, squatting, moving. And what I've really come to understand – this is my own interpretation, and it's basically saying we have figured out now: here are all the things that a

human should be responsible to be able to do. “Can you put your arms over your head? Yes or no? Well, can you do that in a handstand? Can you do that with a dumbbell? Can you do that with a kettlebell? Can you do that with a barbell? Can you go from ground to overhead to do that? Can you press overhead?”

What ends up happening then is we’ve been able to winnow down to say: here are the positions, the archetypal shapes, that are represented in every sport, in every situation, every position. But in the gym, I can say, “Do you have this position? Yes or no?” And then I can say, “Oh, you do? Well, let me challenge it.” And the obvious one for the gym for most people is load: “Let’s make it heavier.” And you know, because you’ve come out of a serious strength conditioning background in the past, in power lifting, that a long time ago our answer to everything was, “Oh, just get stronger.”

Tim Ferriss: Right.

Kelly Starrett: “Oh, he’s got glute weakness.” I’m like, “Seriously? That guy deadlifts 700. You think is glutes are weak?” Or “She plays in the NFL.” People are ridiculous. It’s not a weakness problem. And what I found for a long time was that we were throwing bigger and bigger engines onto cars that couldn’t handle it, right? Well, how much do I need to squat if I’m a runner? 400? 500? 600? Guys like Pavel were like, “You can double body weight your back squat? You’re probably good enough. You’re excused from getting any stronger.” Right? Dan John was like, “Hey, you should front squat.”

A long time ago, Greg Glassman was like, “Hey, look at the overhead squat versus your front squat,” just presupposing that you could do those two movements. “And then look at the difference between them. And that’s a pretty good indicator of how robust your spine is and how good your shoulders are.”

Tim Ferriss: Totally agree.

Kelly Starrett: So now we can start asking a little bit different question. Because what we evaluated was “I put more weight on the bar so it must be better,” right? But now we can say, “What about if I have you run around the building and you start breathing hard, and then show me how strong you are?”

“Show me how that position was. Oh, okay. So now I can challenge your position with cardiorespiratory demand.” And that

starts a lot like sport, huh? Like fighting. Looks like skiing at the bottom of a bump run, or running all the way down and having to cut. It actually feels like to feel like sport. What happens if I start to burn or am fatiguing. Metabolic demand. What happens if I add speed? I make a lot of errors if I go fast. What happens if I'm competing? Like you and I just decide right now we're going to have a push-up contest. Whether you are the world champion in push-ups or not, a little bit of your brain starts to freak out because it's on the spot. So we add the psychological pressure. What happens if I make you change mechanics?

So there's a bunch of block practice. Instead of doing 100 swings, we're going to do a burpee and then into a kettlebell swing. So suddenly I can change the motor programming. And what we've found – and this is my own language around this – is that all of those things are really the definition the intensity. Metabolic load, right? Car-respiratory demand, load, speed. The other aspects of the training are the sort of intellectual piece around programming the training.

But my estimation is that the people who can maintain the best positions are the best athletes and remain the most robust and have the biggest work capacities, and as a side effect, because we teach all these principles, can apply them to things that matter like life and sport, not just more exercising.

Tim Ferriss: I was having a conversation with – you mentioned Pavel. He has a tendency for very short answers, which is fun to listen to. He has a great voice too, for those short answers. But somebody asked him for basic advice related to endurance, and he said, "Fix your posture. Work on your posture. Whether that is running posture, standing posture, or sitting posture." And what I'd love to ask you is: if you look at the CrossFit community as a whole – there are so many gyms, so many boxes – what are problems that are very often not being addressed? So people come in; they jump straight into the workout of the day or metabolic conditioning.

What are some common mistakes of CrossFit instructors or trainees, where they come out six months later and, from your eye, you're like, "A, B, and C has not been fixed"?

Kelly Starrett: Sure. Well, I will correct and just play the devil's advocate around this statement because my experience has honestly now been: no one jumps right into a gym anymore. You can go on the internet and go explore in your own garage. But I think about 100 percent of the gyms I run into have some sort of "Holy crap; you don't

know how to move. You may have a big engine, but you don't have any exposure to this."

Tim Ferriss: Yeah.

Kelly Starrett: Like our cyclists are the worst. They come in with the most robust aerobic engine. They generate huge amounts of concentric force, have no eccentric control at all, right? So that means they can't lengthen under load basically.

Tim Ferriss: Right. For those people listening who are not in the gym much, if you're in a squat position and you move up into a standing position, you can think of that as concentric. Doing the reverse, eccentric, where you're lengthening.

Kelly Starrett: So what we saw was that people were coming in relatively aerobic-fit. I mean, people aren't slouches anymore. They really aren't. They're exposed. They're doing intervals. I mean, the internet has blown – I think people's general conditioning now is much higher.

I'll come back to the question, but, for example, the unofficial CrossFit mascot that everyone loves to show is Pukie, right? Pukie the clown. I haven't seen someone vomit in a CrossFit in eight years. It used to happen all the time: people used to come in, do a workout, and vomit. Because, technically, there's an area in the back of your brainstem called the area postrema. It samples your blood circulation. And what ended up happening was people were generating so much lactic acid that their brains were like, "You've poisoned yourself, *[makes vomiting sound]*," and activated your vomition center. That's the mechanism for vomiting from workouts.

That doesn't happen anymore because people's conditioning, whether you're at SoulCycle – go to SoulCycle; blow your brains up on a bike. You're going to be protected. Not from movement or eccentric load.

But you'll be able to buffer some lactic acid. So I've seen the general fitness go up. But what has happened now is that people have said, "Okay, look: you can't just come in here and train because you're going to wreck yourself. And, more important, you're not going to understand what it is we're trying to do, which is: here are the fundamental movements that are the sort of signature positions of the CrossFit method. And you don't know any of them."

So we force people to come in. And the mistake is, as a coach, that I need to get people moving. And this is why, if you go to a CrossFit Level 1 seminar, they are going to teach you. And they're really excellent: excellent coaches, very thoughtful. The course has evolved in ten years, a ton. We've become more sophisticated in ten years. But we teach you with really low loads, i.e., a PVC pipe or a medicine ball. Because I've never seen anyone die from those things. But the ego gets involved, and pretty soon, there's a barbell in it.

And you can still see people performing a tremendous amount of work in bad positions. And what ends up happening is, as we get people in, we have to give them a little taste of the intensity. And we do that with the rowing machine and some burpees. We get them seeing, "Hey, I need to see what happens when you start breathing hard." And we end up making, I think, a set of decisions about getting people moving.

Because if you're my mom, maybe you don't have the ankle range of motion – you have an artificial hip – the most important thing is that we start squatting. And I have a lot of ways of making that difficult. "Oh, we're going to be on this airdyne and we're going to sprint a little bit and then come back and air squat for me. That's enough for a lot of people." And I might turn your feet out and I might be okay with you rounding your back a little bit. It doesn't have to be perfect. But now at least you're squatting. We can have a conversation about what's next. Right? I can make errors.

The problem is we start loading this inefficient, compromised movement because we've said, "The first thing is let's get moving. Now what?"

And "what" is we need to continue to refine the mechanic for life. And that's the biggest mistake I think people aren't understanding. They're like, "Well, they're squatting up and down now."

Tim Ferriss: Define the mechanic, meaning the movement.

Kelly Starrett: The principles behind the movement. And it's all there for us. And it's always been there for us: "Hey, limit the motion of your spine under load." Everyone agrees. And yet, when I take the average person off the street and just have them squat very fast, I see a ton. I had a young NFL prospect in today getting some advice about his knee. He was going to go to the combine. I asked him to just do an air squat. And the amount of reversal in his spine – he literally rounded into a dumped dog taking a poo position. And he had

massive fins in the middle of his back where his musculature has overdeveloped from him basically rounding underneath.

And I was like, "So, that's not really good. Let's do less of that." And he's like, "What? What are you talking about?" He couldn't even identify that this thing was going on.

And from the physical therapy side of things, from the sports performance side, the highest level form –

these issues that I hammer and hammer people on are the limiting factors to you stopping getting injured. And they're the limiting factors to you being the best in the world and winning a gold medal: these little details. And so we should be constantly refining technique to express what is full physiology.

There's so many voices in fitness now and so many people coming in. But do you know what apologetics is?

Tim Ferriss: I get the first part, not the plural.

Kelly Starrett: Apologetics is basically, in religion, where people come around and explain a phenomenon in terms of the dogma: "This is what that meant now." It's because a lot of it was allegory and metaphor and lesson. In science fiction, apologetics means you can explain any technology away based on some other thing.

Well, I see apologetics happen in human physiology: "Oh, the reason you can't squat all the way down is your hip structure. Oh, some people just don't have long femurs, so they can't take a poo in the woods and squat all the way down."

And I'm like, "What are you talking about?" The issue is that we haven't given people clear benchmarks about what is normal and what is disnormal? Cook and Burton and the Functional Movement Screen have tried to establish baselines for performance. But those don't even go all the way to show me that you have full range of motion in your ankles.

One of the secrets I don't think people understand is that you have good positions. And those positions have protected you for a long time. You can squat with your feet together, ankles together, all the way down; full hip function, full ankle function. But people are coming into the gym basically as demi-human. They have big aerobic engines because that's what someone said they should do. But they don't have even 50 percent of the ranges of motion they

should have. And they don't even have the motor control to start to be able to express this stuff.

What is it? "If you want the great tranquility, be willing to sweat the white-hot beads"? Right?

I mean, Olympic lifters got it right. And you can see why the Olympic lifters are like, "What the hell? Why aren't you Olympic lifting? You can't even put your arms over your head." You know what I mean? And the Olympic lifting demands that we have basic capacities in all of these shapes. The only thing that's missing is the bench press shape. But guess what? Olympic lifters do some bench pressing. So they've figured it out.

Tim Ferriss: It's a lot easier to go that direction than the other way around.

Kelly Starrett: Right. And so, it's interesting: I think that what we have not done a good job of is showing people how far away from normal they are. You should be able to keep your back flat and legs straight and hinge over and pick up a barbell. I know you can do it, because I've seen you do it. But I bet that 95 percent of the people on the street are stiff, don't have the motor control, tight hips, whatever. It doesn't matter. It's not an indictment on their lifestyle. It's an indictment that we don't understand what good function is and the training we've been doing for the last 50 years has not necessarily heightened that.

Now, there are populations – the Jiu-Jitsu guys have been on this a long time, right?

That you have to have these good positions. They're requisite.

Tim Ferriss: Hip flexors the size of camels.

Kelly Starrett: It's true.

Tim Ferriss: Causes a little low back soreness. But otherwise.

Kelly Starrett: But what you're seeing is: a lot of people have worked this out may times. But we haven't applied it to the rigor of modern humans. And that means modern strength and conditioning. And we haven't couched it in the terms. So when people walk into the gym, I don't think people realize, as a coach, it is an enormous fucking challenge to say, "Oh, by the way, you have no understanding of how you move, and if I make you breathe a little bit hard, you throw it away and you move like crap. And, by the

way, you eat like an asshole and you don't sleep. And what are we going to do in this hour?"

We have to start a conversation. So, for me, there's this line of: we have to get people in the door and we've got to get them started. But that's not the end of the conversation. Yeah, you can squat with your feet turned out like ducks. You totally can. You can set a world record in power lifting like that. But you know what you can't do?

You can't run. You can't jump and land. It really causes all these problems. I see it. And I also see people losing performance that way. So the question remains. This dichotomy then is: "Sure, my feet are turned out because that allows me to squat all the way down." Great. That's a beginning of a conversation. But the optimal position is the position that allows me to take my fitness and transplant that into motor patterns. Instead of just saying, "You're really fit now, so you're protected," now I'm going to say, "I've practiced these shapes and this pattern and the theory and the principle, and I can then apply that to whatever I'm doing." And that's what's missing from the gym.

Tim Ferriss: So this is a really fascinating topic for me: the gym-to-sport transition.

Kelly Starrett: Huge.

Tim Ferriss: And whether that is a worthwhile goal also. For me, just as a side note, I've been spending time exploring. Just chanced upon meeting the cofounder of Acroyoga. And I'd never had much interest in yoga –

Kelly Starrett: Well, let's just stop. I mean, Acroyoga sounds really stupid, but it's not really stupid.

Tim Ferriss: No it's not. And it's partner yoga involving gymnastic and acrobatic positions. So if you've ever seen say a Cirque du Soleil performance with two strongmen where they're linking arms and holding handstands overhead and so on, the motions are quite similar. But you spend a lot of time on your back balancing people on your feet and so on.

But coming back to your squatting position, I remember asking Jason Nemer – really excellent coach – why he was recommending that I hold my hands a certain way when practicing handstands. Because I'd been instructed elsewhere, by other gymnastics

coaches, to do it a different way. And he said, "The reason you're holding it that way, even though it's a little more uncomfortable, is because when you go into the actual positions in Acroyoga and you're doing at speed, you're going to maintain that exact hand position. So you want to train that pattern." And I was like, "Oh."

"Got it."

Kelly Starrett: Yeah.

Tim Ferriss: Let's talk about athleticism though, the training versus athleticism conversation. I hadn't heard of this, because I'm not exposed to the CrossFit Games much. But can you talk about the softball phenomenon a bit?

Kelly Starrett: Well, CrossFit, as originally conceived by Greg Glassman – if you look at the original *Fitness in 100 Words or Less*, in there it says, "Regularly learn and play new sports."

Tim Ferriss: Hey, nice middle splits, bro. You started doing the middle splits. We're sitting here on the floor in the gym and I was getting adductor jealousy. Although your ties look like swollen ticks and mine look like – I don't know.

Kelly Starrett: I just woke up and I was like this, bro. I don't know what happened. It came with the kit.

So the tenet always has been, "Hey, you need to keep learning and keep diversifying." They call that lateralization, right?

People have been talking about it. And surfers, or some skill; the big wall-climbers suddenly are doing breath-holding.

Tim Ferriss: Or slap lining.

Kelly Starrett: Yeah. Exactly. Lateralization. Steven Cottler's been all about it. So that's an important piece of saying, "Okay, you have this skill set; let's go challenge it in new domain." What is interesting and is always going to be a problem, for me, with CrossFit, is that CrossFit is, for me, the single best integrated way of training I have ever come across. I've seen it refined. I've seen MacKenzie apply the concepts and principles to endurance athletes. I've seen Welborn apply it to power athletes. The kernel and the methodology is the same.

But I haven't, to date, seen something that looks better at general physical preparedness. Like I want my daughters to have a skill set and a base fitness and strength, and this is the model.

Would I have all of my NFL-ers do something that looks exactly like CrossFit? No. But I can still keep the tenets there. The base code is so good. The problem is sometimes we confuse the ability to perform a lot of work with the ability to be athletic. And one of my definitions of "Who is the best athlete?" is: who picks up the new skill the fastest? This is why your little experiment, the Tim Ferriss experiment about "How fast can I learn?" really piqued my interest. Because I'm like, "That is the limiter. How fast can I apply this base skill set? What does that base skill set look like?"

Remember Robert Heinlein had that little quote? It was like, "A man should be able to" –

Tim Ferriss: "Butcher a hog, captain a ship," etcetera.

Kelly Starrett: Like: plan a war, set a bone, right? Specializations for insects, right?

But the issue here is: what we should be doing is trying to ask ourselves, "What constitutes the right skill set to quickly pick up new skills and to reapply myself as a learning animal?" And what I can tell you – and I believe this in my soul of souls, and I've seen it – that good strength and conditioning programs – and I'm talking about *at all* now, beyond CrossFit – reinforce skills and positions. Ido Portal, for example, is a good example of this. I don't know if many of his guys are going to play in the NFL, but that doesn't mean he isn't right about this concept. But what's the language of creating a ready state in the human so that I can constantly be not limited by my physical capacity?

And that is position too. That's positionally driven. That's my ability to pick up and learn new skills. And I think what you're referring is: in the CrossFit Games, what we saw is that people were freakish about their work capacity.

I mean, very strong; huge aerobic engines. And then they were like, "Just throw this ball." And you were like *[makes awkward sound]*.

Tim Ferriss: What was the event? I didn't see it.

Kelly Starrett: It was a softball toss. "Throw this softball as far as you can." Now, check this out: it turns out that Rich Froning played football in college. Guess what? He's a pretty good athlete.

Tim Ferriss: Yeah.

Kelly Starrett: Graham Holmberg, two-sport college athlete. Oh, what did he do? He was the pitcher and the quarterback. He's a mutant.

Tim Ferriss: He did all right.

Kelly Starrett: Pretty sure these guys throw it. But there're some other kids who obviously had deficiencies in their – have thrived because, in CrossFit, by the nature and the limitations of challenging people's fitness, it's hard to see the aspects of athleticism. It's not always the case. They really do try to program those things in. But it's also limited by: how do we have a pickup game of basketball? You can't really see and judge that stuff. You know, they make people swim; they make people run; they make people bike. The obstacle course was a great example: the expression of just moving through the environment.

I love that event. But there were some people who had some really horrific – they ended up rolling it underhand. And that really begs the question. Because the central tenet of what this experiment was – and it's important for, I think, the average person who is CrossFit-ing – is there's sort of two CrossFits. And I think CrossFit HQ would back me up on this: that we have the highest expression of CrossFit-ing, which is the CrossFit Games. And I just came from an athlete camp that Reebok put on in the Bahamas. I'm not going to lie. It was okay.

Tim Ferriss: Yeah. Sounds rough.

Kelly Starrett: But we did a bunch of training sessions with some of the best athletes on the planet, and the first thing that all of these gamer guys did – these are Rich Fronings, Jason Khalipas, really extraordinary athletes: they all went and played pickup football on some AstroTurf. Boom. Immediately. And you were like, "Oh wow; these guys are pretty legit athletes.

"There was some aspect of athleticism that they carried to CrossFit and then CrossFit allowed them to heighten these functions." And what I think happens sometimes is: because now people can't separate that out, it's easy to put on a pedestal: "If I can just work really hard, then I'm going to be a really good athlete and be able

to pick up all these new sports." And, yes, one of the things that I've seen Greg Cook pivot on, and some people pivoting on around CrossFit, is they've realized that people aren't giving up capacities to CrossFit. Most of us still have full ankle range of motion because we do pistols.

Tim Ferriss: It's additive, not replacement.

Kelly Starrett: Yes. And, for a long time, in the strength and conditioning world, we have seen people get a really big power clean, and then everything else sucks. It all sucks. So what's interesting about the programming here in our gym is that we really ferret out all the crappy movement patterns, you know?

Tim Ferriss: So let me ask you this. This is just top of mind right now. I guess two things.

If someone were to ask you, "Is CrossFit Games really CrossFit? Should the multitudes of people in CrossFit gyms aspire to that as an objective?" – let's start with number one. But I've got a bunch top of mind. But that's the first one.

Kelly Starrett: No. I don't think they should. But I would tell you that the athletes involved and the athletes involved and the experiment involved has been so informative for me as a coach, as a physio. Because I can really see what the deficiencies are at day five, at day three, under these loads. And it really starts to matter when we see that the best athletes refine position, refine position, refine efficiency, and win. That's been the name of the game. It used to be that you could just outwork people. People are training two and three times a day. They are the most meticulous athletes I've ever seen in any sport anywhere. They're on top of the nutrition game, on top of the recovery game, on top of hydration, adaptation, mechanics.

They are really havved up. Rich Froning, he's a little tiny guy.

Tim Ferriss: How much does he weigh?

Kelly Starrett: I think he's probably like 190, 195. Just something like that. Snatches 315. In tennis shoes.

Tim Ferriss: That's amazing.

Kelly Starrett: In Reebok flat Nano shoes. Not Olympic lifting shoes. And he does that in the context of also being able to do all these other things. So the reason, for me, that the games are so important is

that it's changed the consciousness about what's possible: by the way, you can still run this mountain 7K and be brutally strong; in fact, why aren't you? And I think people have been having that conversation for a long time.

It also has gotten us really clear about what works and doesn't work in a very sort of pressure cooker situation in terms of –

Tim Ferriss: You're talking about programming and training load and all that?

Kelly Starrett: A little bit of the programming. But I would say about nutrition. I've never seen any athlete in the history of the world do more work than these kids. I know the Tour de France guys. I mean, I know them personally.

And their wattages are insane. Everyone's putting out hard. But no one – the CNS load, the crazy loads. And that has really made it very clear about the lessons that we've been able to pull out of that. So, as an experiment, as Formula 1. But not all of us should aspire to be Formula 1 drivers or even drive our cars like Formula 1. And very few of us have the genetics, which is also the sort of lie.

Tim Ferriss: Of course. At the highest level.

Kelly Starrett: The lie that we tell ourselves: "Well, I can train like them." No. You're not them genetically. I'm sorry. But –

Tim Ferriss: "Sorry, Tim Ferriss. You're a bad [inaudible]. Sit in the corner. Play Scrabble."

Kelly Starrett: You know what? You are a relatively strong – you're strong-ish.

Tim Ferriss: I'm strong-ish.

Kelly Starrett: You're aerobic-fit. Good thing you're a smart kid. And you're a good dancer. People don't know that about you.

Tim Ferriss: I learned to throw javelins at the people who are stronger.

Kelly Starrett: And I can run away.

So I think that it's vital to understand the role the games have played in terms of raising boat.

Also sort of distilling down the essences of what's important and not important, and the lessons we've learned out of that, and how

to program. Because I think a long time ago even guys like Louis were like, "Well, we're all power lifters. So we'll just apply power lifting." Well, that didn't work at all. And what we're seeing is very sophisticated training; Omegawave, heart rate variability.

Tim Ferriss: What's Omegawave?

Kelly Starrett: It's a way of looking at biorhythms, heart rate variability, and really coming up with a recovery score so you can understand, in real time, the effect of yesterday's training.

Tim Ferriss: Got it. So the HRV would be part of that.

Kelly Starrett: Yeah. Absolutely. But HRV on steroids. And so what's amazing now is we're seeing that level of sophistication. And I've been able to take that and apply it to the NFL. Not, "Hey, we do thrusters; we're going to be good at the NFL." But really the principles. And also it's given me the view of understanding all the corners that we're missing, that you have to have the corners of your range of motion and capacities.

Otherwise we're going to have issues.

Tim Ferriss: What do you mean by corners? Sort of the edge cases? Like this is a ten percent case, [inaudible]?

[Crosstalk]

Kelly Starrett: No. But more: "Show me that you don't have 85 percent-ish of your shoulder range, but you have stability and capacity in the fullest end ranges." So in the corners of your range of motion, right? So all the way overhead is one of those corners; I have my arm over my head. If you can't hold two dumbbells over your head with your arms straight like you're holding hammers, and your ribcage down, that's an incomplete position. And it's that position that's costing you when you swim; it's that position that's costing you when you throw a ball; it's that inefficiency that's costing you when you fall. Now we have a way of really understanding.

And what I've been able to do is: for me, I've been able to repurpose CrossFit into the greatest diagnostic tool ever. And it's independent of you breathing hard. The intensity is an important piece that people don't understand.

So the GPP that everyone has been talking about for a gazillion years, general physical preparedness – the Russians I think

invented that word. And they got into it. They're like, "You have to be able to jump off a ladder without your knees wobbling." Because that was a really simple way of just loading a squat. That's what that was. It's not mystical.

What we said for a long time was, "Get your kid in gymnastics. That's really good. It'll make good athletes." Well, why the fuck does that matter? Really, tell me why. Well, it turns out that the things that you have to be able to do in gymnastics teach you certain positions and principles that you can then apply.

Tim Ferriss: Yeah: use your skeleton and not just your muscles.

Kelly Starrett: Yes. And then we can get away with big musclebound guys who get their asses kicked. Or the little skinny cardio whippet who falls apart, can't lift 60 kilos off the ground when they're breathing a little bit hard. Those are both ends of the spectrum that aren't good.

Tim Ferriss: You mentioned nutrition, and I've got a bunch of questions, but: in brief, what would you say are the most common nutrition mistakes or detrimental beliefs that CrossFit-ers have?

Kelly Starrett: Well, this is a first – for a lot of us, me included. I'd actually heard the Zone was the first thing that Greg talked about.

Tim Ferriss: Back when I was first training in CrossFit – I think I've told you this before, but back when the Santa Cruz guys would come to Mountainview to train at the Helf Gracie Academy, it was all about the Zone. And I remember training with those guys.

Kelly Starrett: So, again, let's get to understanding why that mattered. Because people's macronutrients, their combinations in terms of what they were eating, was way wacky: not eating any fat, barely getting enough protein, massive amounts of carbohydrate. And that was the first way we could just identify the problem, right? But then we started measuring and weighing. So then we had an idea of what we're taking in. And, to this day, I look at a banana; I'm like, "Three blocks."

You know? That's 30 grams of carbohydrate. It's been useful. It's like a metric unit: that's a kilometer; that's a meter. It gives me a baseline of understanding how much food I need to be eating. And it was always about food quality. That was always an important conversation. But then people would be like, "I can eat this bacon and drink this beer and I'm still in the Zone."

Tim Ferriss: [Inaudible].

Kelly Starrett: Like: come on. So what happened then was that we saw this paleo revolution wash over the CrossFit-ers. And the first time I said this to my wife, Juliet, bless her little heart, Googles online. Because Juliet's the biggest skeptic. And she was like, "This is some bullshit." I'm like, "What?" She's like, "The first thing that came up was hornet's nest soup. Wasp nest soup, Kelly? That's what you fucking mean?" And I was like, "I think it means no grains? And we should eat vegetables?" And she's like, "This is some bullshit."

But that was really, again, a conversation about food quality, right? Well, then we saw this revolution –

[Crosstalk]

Tim Ferriss: Free-range hornets.

Kelly Starrett: Juliet literally is just the greatest bullshit detector. Thank you. Everyone, just get yourself a Juliet. But then what we saw was that everyone got super squeaky-clean, like didn't even use salt. And I was like, "Salt is really useful." I saw a bunch of my friends who cleaned up their diet and they literally tanked. They were blacking out because they weren't getting any salts ever.

Tim Ferriss: Yeah. No shit.

Kelly Starrett: Like: "There's this thing called salt. It's amazing. Humans invented the salt routes for it."

Tim Ferriss: I read a study on primates and why humans are so fond of fructose, you know, the naturally-occurring sugar in fruit, and why it's so problematic to have high fructose corn syrup or agave nectar; it's like 75-percent-plus fructose, and we get fatty liver disease. When we were migrating apes, the way that we would sustain higher blood pressure without salt was with fruit.

Kelly Starrett: Oh. Doesn't that make perfect sense?

Tim Ferriss: Yeah.

Kelly Starrett: It makes perfect sense. Salt.

Tim Ferriss: Guess what, folks? Pretty important.

Or like blood pressure: [inaudible].

[Crosstalk]

Kelly Starrett: It's so important. Stacy Sims is a good homie of ours. She's an exercise physiologist out of Stanford. She's been exercise physio to the best athletes on the planet, especially the best aerobic athletes. But she assists everyone. Her company is called Osmo Nutrition. And her thinking about hydration is vital. But she's like, "Hey, there's this stuff called sea salt. Take a pinch of it, throw it in your water, and quit being a jerk and diluting yourself." Not deluding; diluting.

Tim Ferriss: Right.

Kelly Starrett: And what we've seen is that people are not applying the lessons that we have learned in sport for the last 20, 30, 40 years to day-to-day life. So people got really squeaky-clean, and they could not eat enough carbohydrate to support the level of training that we are doing. And all the endurance athletes were like, "Dude, you can't eat 100 grams of carbohydrate a day and expect to thrive." And, sure, just be a keto-adapted athlete. I'm like, "Yeah, that works if I have to do it. But, man, that's not working for me so well.

Tim Ferriss: You have to be very meticulous if you're going to pull that off.

Kelly Starrett: And you have to have the genetics to really support that.

Tim Ferriss: Yeah.

Kelly Starrett: And like boot: "Oh, I looked at some sugar; now I'm not keto-adapted." And the key is: always – and this has always been the CrossFit HQ position number one – eat enough carbohydrate to support exercise. Well, I've finally figured out what that means. And that's a fluctuating norm. And also, in the last ten years we have figured out, for example, through the miraculousness of blood testing, genetic testing – we can actually get that stuff done now pretty easily.

Turns out, for example, I'm an aerobic responder. That means big aerobic workouts cause my body to be in nirvana. And power athlete stuff: I have to train that stuff of course, but that is not where I should be making my money. Why? My genetics tell me. And it's interesting that any success I've had as an athlete, I've basically been swimming against that stream my whole life. Well,

my genetics also tell me that I don't process saturated fats very well.

And they call it lean paleo. Which means: "Eat high-quality food, Kelly, but you don't need bacon every day." I don't eat bacon every day, and I don't eat nuts. Because when I do, my cholesterol goes through the roof. And I know: we can be sophisticated about cholesterol. But when your cholesterol's 400, there's something up.

Tim Ferriss: More points than calories in a Whopper?

Kelly Starrett: That's right. So what we've found is that people who've gone back to rice, they've gone back to – "Hey, I've got to source my carbohydrate intelligently in order to support the amount of training I'm doing." And that was, I think, a reaction. People are less afraid of gluten. I think they really try to stay away from it. Maybe that's just Monsanto that's talking there. Sorry. You're going to have to edit that out.

Tim Ferriss: No. They'll send a letter [inaudible], not mine. It's fine. Just kidding. I love you, Monsanto. That spot's free.

Kelly Starrett: You know what's funny about wheats? Nothing's funny about wheats.

So the bottom line is I think we've seen that correction.

But, once again, we should take that lesson from the highest level of sport. That's what coaches are trying to do: distill principles, not methods.

Tim Ferriss: And also, particularly when it comes to macros, is: know thyself, and know thy sport or trending load, right?

Kelly Starrett: Yeah.

Tim Ferriss: So Dr. Pete Attia – have you ever spent any time with him?

Kelly Starrett: No.

Tim Ferriss: You've have to meet this guy. You guys would love each other. But he was on the podcast, and we talked about cancer research.

Kelly Starrett: He's the sugar-cancer connection guy?

Tim Ferriss: He would talk about that certainly, but is a former oncology researcher. He's also been a surgeon. And he would not want me to say high-level, but he's a high-level endurance athlete. You know, 100-mile swims and things like that.

Kelly Starrett: Yeah. I'm going to call that high-level.

Tim Ferriss: But he's also very strong for his body weight. And he loves doing time trials for cycling. And so he is almost always keto-adapted. He's in ketosis.

For those people who haven't heard my conversation with Pete Attia, all that means is you're utilizing fat – this is highly simplified, but fat instead of glucose, as your primary fuel. When he's doing these intense rides, though, he knows exactly his respiratory quotient, when he kicks over to anaerobic, and how many calories he can consume, and how many calories his liver can store so that he never comes out of ketosis. So he can be pounding gels, but he's like, "Okay, I know that my liver at my body weight, I'm going to store about 400 calories of carbohydrates. Based on this target distance and this target wattage, etcetera, I can end my race and still be in ketosis, or my time trial."

Kelly Starrett: And my probably with that, of course, is that that's true, and he is the freakish outlier with the data.

Tim Ferriss: And very few people are going to do that.

Kelly Starrett: That's amazing, by the way.

Tim Ferriss: So the paleo community. Are there any other common dietary mistakes that you find people make?

Kelly Starrett: Yeah. People are terrible around.

Coffee has been the cult. Like black fluid. What did we call it? The "Cup of fear"?

Tim Ferriss: Cup of fear.

Kelly Starrett: Cup of fear. And people are like, "I don't need to drink water. I drink coffee all day long." And then this Kill Cliff, which is an amazing CrossFit soda. It's not related to CrossFit, but it's sponsored by some – anyway. You get the idea. It's amazing with

vodka too, by the way. Which also can be gluten-free, so you're still paleo. It's fine.

Here's what's crucial: you can be at 80 percent of your function and come in and do relatively okay once you move well, once you've been doing this for a while. You can just be on the edges of your sleep, on the borderline. Eat some extra ice cream, budge a little bit, not deal with stress. But of course we know all of those things I've got to keep an eye on. This is what a physical practice is. And what we've seen then is: for me, it's important that you're actually signing up for a race.

You're signing up for an event. The gym is not the event. This is the place where you train. And, yes, it feels like competition in here. Because it's intense; it's deep practice. Daniel Cool, thank you. It's me really practicing.

Tim Ferriss: Is that the telling code?

Kelly Starrett: That's right. Nice, dude. It's deep intention. It's hard aerobic conditioning. But it's still not the same thing as stepping into a ring or lining up on a 5K or signing up. And what you realize is how important all those aspects are to your training. You have to eat right.

That's why I'm like, "Look: CrossFit does the CrossFit Open," which is the biggest sporting event in the history of mankind. That's what it is every year. More people sign up for the CrossFit Open. They do five workouts. And it's a big international competition.

Tim Ferriss: So it's a virtual Games?

Kelly Starrett: It's a virtual Games basically. It's a feeder to regionals. So whether you like it or not, I'm like, "Why don't you do it?" For no other reason than: why don't you have something hanging over your head for five weeks in a row?

Tim Ferriss: Which also gives you a target other than the next days' WOD.

Kelly Starrett: More fitness. Yes.

Tim Ferriss: So you can actually decide what the optimal diet is, given that five-week goal.

Kelly Starrett: You just make a whole bunch of different decisions. What do they say? "Deadlines focus the mind"? Mr. deadline guy. And you stay up all night because you realize, "Wow." It really does force your thinking about this. And I think that's what sometimes gets lost in the CrossFit gym. Initially it was terrifying. I didn't know if I was going to survive.

Let me give you an example. When I started this thing ten years ago, Adrian Bozman, who is a CrossFit headquarters uber-mensch, was one of our first coaches. I did all the coaching. This was all unknown. We were the 27th CrossFit, I think officially 50th. Now we're 27 on the list.

Tim Ferriss: How many are there total?

Kelly Starrett: 11,000, roughly. Which is a revolution. It's not a gimmick.

And what ended up happening was there was a workout that was: snatch 135 pounds 30 times. Adrian and I didn't know if we could do it. We didn't know anyone who had done it except Olympic lifters who had seriously trained and were strong. And one day we were like, "We're going to do this even if it takes us all day." And we psyched ourselves up. And now they throw that as an after-effect. You can do that in 90 seconds. I mean, things have changed dramatically in ten years. It's like the four-minute mile. Everyone's like, "Oh, you're still running four-minute miles. That's so quaint." You know? "We're in the one-minute mile now."

But ten years ago, we didn't know. And so now we're starting to see that –

Tim Ferriss: What's possible.

Kelly Starrett: For sure.

Tim Ferriss: Now, coming back to the snatch for a second, I've never been a practitioner of Olympic lifts, for a whole host of reasons, but primarily because I had reconstructive shoulder surgery in 2004 doing silly stuff like grappling that made my arms jut out of the front of my chest.

Kelly Starrett: Maybe you should've been an Olympic lifter.

Tim Ferriss: Maybe I should have. So I had a lot of apprehension about that stuff.

Kelly Starrett: Rightfully so.

Tim Ferriss: Like terminal overhead, the last 15, 20 degrees. But I found a lot of value, particularly in the last six months or so, with focusing on overhead squatting movements. Still not to the point where I'm going to do snatches. And I think that's where I've become smarter over the years: recognizing that you can really refine movement patterns. I don't have the "Go big or go home" mentality anymore that I used to because the risk/benefit's so unfavorable to me. But why is Rich Froning so good at the snatch? And what are the common mistakes that people make with that movement?

Kelly Starrett: Well, Rich has excellent mechanics. He has full range of motion in his ankles. He has excellent shoulder range, and understanding of stability. He just does things that are naturally important to snatching; he does them effortlessly. In terms of getting his torso upright.

Obviously it's a lot of training stimulus in these things. But he understands how to create stable shapes, and he's able to get into those shapes. So he doesn't have to work very hard.

The work he does goes into – he gets 100 percent benefit from that. He's not working at 80 percent of 70 percent efficiency. Does that make sense?

Tim Ferriss: That makes sense.

Kelly Starrett: He's working hard on those shapes. What you discovered, though, it's a part of the Functional Movement Screen since 1996. Dan John – all his throwers say, "I wish I had overhead squatted more." Glassman valued it as one of the most important capacities. And, in fact, one of the earliest, best CrossFit workouts – I think it's called "Nancy" – and it's: run 400 meters. So innocuous, right? And then just overhead squat 95 pounds. Fifteen times. That's pinche weight.

Tim Ferriss: 15 times 400 meters doesn't sound pinche to me.

Kelly Starrett: You only have to overhead squat 95 pounds 15 times. Run 400 meters.

Tim Ferriss: Oh, I see.

Kelly Starrett: And then just do that five times. And what you're going to see really quickly is: everyone can fake it for three. But then as you start to fatigue or your positions aren't robust, you bounce off the tent. You no longer have access. The world gets really small, and then you start suffering.

Tim Ferriss: And then you eventually Labrador Retriever in the closed sliding door.

Kelly Starrett: True fact. So I think what is key is understanding what are the salient positions. All we're doing when we say overhead squat is I'm saying: "Show me you can squat with your torso upright." And that looks a lot like sport, doesn't it? And if you have to lean forward really far to do that, then it says you have incomplete hip and ankle function and you don't know how to create stability in your trunk. And that is a very powerful idea, right?

And what's nice about the overhead squat is – I call it a category one movement – I can get very organized.

And I can grind down to a position where, whether we agree that it's full range of motion or not, or until I start to lose position; I can come back up. What I've removed out of it is the element of speed. So, for my nine-year-old, Georgia, for example, the overhead squat is something we do all the time. Sometimes we just bring the little kiddie barbell into the living room before she goes to bed.

Tim Ferriss: Fifteen pounder?

Kelly Starrett: Or even less. Maybe ten pounds. And she just has to do three sets of five. Why? It's practicing the shape, practicing the position. And that's where we're going to get bang for the buck. You don't need to snatch heavy. You should be able to snatch heavy.

[Crosstalk]

Tim Ferriss: Do you think too many CrossFit-ers focus on working out and not practicing?

Kelly Starrett: Well, totally. Let's take it out of CrossFit for a second and let's put it into running.

Tim Ferriss: Sure.

Kelly Starrett: Running is a very technical skill that we should be developing from a very early age. And there are only, what, 30 million runners

in America who run 3 times a week, and only 80 percent of them are [inaudible]? That's like the worst statistic ever. If you're listening to this, do not let your children run.

It's dangerous. Comma, if you're a runner – and running is one of the things that makes us human – you should be able to run. That is one of the tenets of being a good athlete. In fact, look at the NFL combine, for example. They jump; they have to bench press, which is a joke. That's the one piece that's a joke. But everything else is a run drill, change-of-direction drill. It's about fluency and economy of running and changing mechanics. No wonder a couple years ago CrossFit put this big cone drill thing in there. Because they were like, "Hey, look: this thing you should be really competent at, and you're going to get punished if you suck at it." So if we look at most people's running, how much actual skill development do they do in running? I mean, besides tying their shoes.

Tim Ferriss: Next to none.

Kelly Starrett: None. And they just start running.

Tim Ferriss: Unless you're with say a Joe DeFranco, planning on being in the NFL combine. He's like, "Actually, if you're right-handed, you should switch your feet this way because you cut one step out of the shuttle run."

[Crosstalk]

Kelly Starrett: Yes.

Tim Ferriss: And then: wow, now you're a superstar.

[Crosstalk]

Kelly Starrett: And Joe does a whole bunch of stuff about: "Do you have the positions to run?" Like, for me, the most dangerous sport to middle-aged men is a track workout.

Tim Ferriss: Oh my God. So dangerous.

Kelly Starrett: You're just asking for a pulled hamstring. Because you're at the end ranges, and when your back starts to deflect because you can't buffer your huge engine, and then you have a neural mechanical compromise, tear hamstring. It's the same thing that happens in basketball. We don't even talk about: "Do you have the required range of motion to run? Yes or no?" And, resoundingly, the answer

is “Hello no.” And do we do any skills or drills about improving economy? No.

So what ends up happening of course is that we should. And what I can tell you that I see is that I see very intelligent coaches practicing skills, teaching skills, and then challenging those skills in a workout. And that is good programming.

Tim Ferriss: So if I am getting to a point where I’m comfortable with overhead squatting with a barbell, and can –

Kelly Starrett: That never happens, by the way. Because it always gets worse.

Tim Ferriss: Well, I’ll send you some photos. They’re hilarious.

If I’m considering going into training for the snatch, what are common mistakes that I should be aware of, that I should avoid?

Kelly Starrett: We have basically been able to break those fundamental positions down. So how about this? Show me that you can actually put some tens on the bar. Get a women’s bar. Make it really light.

Tim Ferriss: Better for my tiny little midget hands anyway.

Kelly Starrett: Hey, they’re called dwarf hands, all right? And one of the issues is: show me you can keep your back flat and actually get to the bar. And what you’re going to see is that people can’t do that.

Tim Ferriss: Get *to* the bar –

Kelly Starrett: Get to the bar.

Tim Ferriss: – meaning underneath the bar.

Kelly Starrett: No. Just get into the setup position for the bar.

Tim Ferriss: Got it.

Kelly Starrett: And what you’re going to find is that people can’t even get into a decent setup position without rounding their back and dumping their shoulders. And then we start asking the question, “What the hell are we doing? Your setup position is so shitty” -

Tim Ferriss: “Setup,” meaning that bottom position.

Kelly Starrett: Yeah. Show me you can put your hands in a snatch grip, and then sit all the way down on your ankles. Sit down and get into a good position. And what you're going to find is that people universally can't do that.

So suddenly I've learned something about myself. Why do all the best coaches teach from the hang? Well, if I teach from the hang, then I take that portion out of it; I can derive a lot of the benefits from snatching without taking you to these compromised shapes. And the problem is: I know you can snatch from that compromised shape, but that's not the shape we all agree is the best shape. Does that make sense?

Tim Ferriss: Mm-hmm.

Kelly Starrett: So if you can't even get all the way down to the bar, an issue of technique is never – we're never going to solve this because you're making basic type one errors from the first inch off the ground.

Tim Ferriss: Right.

Kelly Starrett: Or in centimeters, because everything's in kilos in Olympic lifting.

Tim Ferriss: I want to put you on the spot for a second because I've always wanted to ask you this and I'm not sure why I haven't.

Kelly Starrett: Yes, these are my real calves. They're not calf implants.

Tim Ferriss: I was curious about your chesticles. Also real?

Kelly Starrett: No.

Tim Ferriss: It's just the left. I noticed you only put one in. Just testing it out.

[00:54:00]

If you had to remove three common exercises from CrossFit gyms, in the interest of safety, what would they be? If you *had* to, gun against the head. It doesn't have to be three. Three or fewer.

Kelly Starrett: Let me deconstruct that for a second. And that's crucial. Because, first and foremost, all the movements in the training language are inherently safe if you have full range of motion and the motor control to do them. Right?

Tim Ferriss: Presumably, though, you get 1000 people come in; there are certain exercises where a higher percentage of those people will lack that prerequisite, or they won't be able to check it.

[Crosstalk]

Kelly Starrett: The No. 1 most dangerous skill: bench press. Why? Because people don't have any internal rotation in their shoulder. They've pinned their back down. You can press all day long: standing overhead military press, strict press. You're going to fail safely. When you fail in a bench press, that shoulder is going to translate forward. There's your labrum. Can you bench press safely? Yes.

Do we love floor pressing in our gym? Absolutely. We floor press a ton. But what I find is that people do not have the basic mechanics. And that's one of the ways that we've gotten in our head that we define strength: "How much you bench?"

My friend Mark Bell benched over 900.

Tim Ferriss: Our friend Mark Bell.

Kelly Starrett: Our friend Mark Bell. And that's an amazing amount. And what I will tell you is that his positions and mechanics: it is so technical.

Tim Ferriss: Hyper-technical.

Kelly Starrett: Yeah.

Tim Ferriss: In all seriousness, the assistance work and everything that he does related to it is so sophisticated.

Kelly Starrett: After knowing Mark and Jesse Burdick for several years, I feel like I finally learned how to bench press. Even though I've been bench pressing since I was what? A man. I came out: my testicles dropped and they handed me a bench press, you know? And so I'd pull the bench out of that.

I also would pull the rings out. And the reason is: what we see is that people can do movements that look like ring dips.

They go up and down. But they don't lock out; their shoulders are in terrible positions. And what we value is them doing work going up and down. But if we put the rings back in for stability work, show me you have a good start position and finish position.

Here's one of my problems. The TRX is a great piece of home equipment. One of the things I'm a big fan of is understanding that if your hands are on the ground doing a push-up, then you can cheat off the ground; you have what I call a closed torque environment. If you grip a barbell, that's closed torque. It's basically a circuit. And I can create stability off that in really strange positions because I can still bend the wrist.

Tim Ferriss: Sure. Like bending the bar.

Kelly Starrett: That's right. I should be bending the bar, but I can still bend the bar even though my body's in really strange shapes. And as soon as I put a dumbbell in your hand, you can't do that anymore.

Tim Ferriss: Different game.

Kelly Starrett: That's why kettlebells are so important, why dumbbells are so important. I call it an open torque system. I have to create all the stability at the big primary engine.

I can't cheat it up through the chain. And so: why are rings so important? Well, one of the reasons dips are important is because they force me to show my hand, what's really going on at the shoulder, in an open torque environment.

So one of the reasons TRX is great is that you're basically taking really simple movements and being able to apply this: I'm in a strap; I'm hanging. And I can't cheat anymore because if I'm disorganized at the shoulder, I don't show any force. But the problem with the rings is that you can still cheat yourself into a terribly internally rotated position, cranking your neck back, and you can still go up and down until you can't.

And remember: the gym is a diagnostic tool. I should be figuring out what's going on. I think the hips will handle a lot more silly BS a lot longer than the shoulder will. If I had to pull out one more movement, gun against the wall, I would say the butterfly kip.

Only because, if you asked me to do a bunch of pull-ups, guess what I'm going to do? Butterfly kip. But I understand the principles, and I have good range of motion. It's a completely safe position. But what we see is that people do not have – I ask them to put their arms over their head, for example, and they can't do it. So suddenly, magically, hanging from a bar is going to increase that range of motion? No. They're going to compensate.

So what we do is we add speed to a bad position, and then that's really the recipe.

Tim Ferriss: Kapow goes the piano wire.

Kelly Starrett: That's right. But, once again, we program all that stuff in our gym. But you'll notice that we have a lot of static ring stations. Because what we saw as well: people can't even get into the start position on the rings, which is elbows locked out, butt squeezed, thumbs turned out. They can't even get into the start position. So what are we talking about?

What we're doing is we end up arguing about bullshit. "You can't even get into the bottom position of a snatch. Why are we talking about your snatch?"

Tim Ferriss: Right. And I'm getting into more gymnastics these days, and I want to be able to do a back tuck. I've never been able to do a back tuck.

Kelly Starrett: Really?

Tim Ferriss: Yeah. Attribute-wise, I have the attributes necessary. But it's a long story.

Kelly Starrett: No. I was obsessed with that too. I totally get that.

[Crosstalk]

Tim Ferriss: Yeah. So I want to get to that point. You can do that safely, but you can certainly do it very unsafely, or attempt to do it unsafely. And I think that the question of sequencing and how you put things in a proper order, from diagnostics to refinement to training –

Kelly Starrett: Totally. We have not given people the background or the language of how their bodies work. I get to work with children like first graders and kindergarteners in our swim team, all the way up to masters Olympic athletes. I see it all. And what I can tell you is that, along the way, no one gets any formal training.

And the mistake has been always – I think CrossFit is doing it more right. The DeFranco's Gyms, the Mike Boyle's, Stan Turley at Stanford – places like that are all pockets of really excellent thinkers who are teaching people how to move. And that's a specific thing. And that's not just jumping back and forth and

chasing a bouncy ball. That's very specific skills, and challenging those skills with the things we talked about.

So what we've seen is – and CrossFit is an example – a decentralized Soviet sports system. We have 11,000 states. And what you'll see is that kids will grow up through the CrossFit system, in a generation, and they'll already be like, "Of course I'm going to overhead squat. What do you mean? Why can't you overhead squat?" You know what I mean? And we'll solve a lot of problems. But the key piece is: we can't confuse exercising for full human capacity. That's the missing link.

Tim Ferriss: So, speaking of full human capacity, if you look at the most elite CrossFit-ers, are there things that they do that the lower ranks do not? Commonalities that you've observed that people can borrow or emulate or incorporate?

Kelly Starrett: You're saying the top CrossFit-ers that the bottom aren't doing? Just the recreational?

Tim Ferriss: Yeah. Like top quartile or decile.

Kelly Starrett: Most of them, I know, are obsessed with mechanics, and really spend a lot of time refining that mechanics. Their positions are more effortless. Like I had this physical therapy instructor, and she taught pediatrics, and she was like, "Let me be fucking clear: muscles and tissues are like obedient dogs." And my mind was like: gadoosh. This is coming from the pediatric physical therapist, who was like, "What the hell's wrong with you? Why are you so stiff?"

And the key is that people aren't spending enough time working on full position. And maybe it's because I have not made the case for it. Because we know you can get by at 80 percent. But show me you have full capacity. Because that's the thing that these top athletes have. I mean, they obviously can work really hard.

Tim Ferriss: Full capacity, meaning the corners of these positions.

Kelly Starrett: Yeah. Full positional. And I always use this example, but squat down with your feet together. Keep your heels on the ground, knees together. Can you do that, yes or no? If you can't do that, knees together, all the way down, chilling out on the bottom, like we're at a campfire, then you are missing full hip range of motion, ankle range of motion. One of those things is missing. And that's the mechanism for your hip impingement. That's the mechanism

for your plantar fasciitis, for your bunion, for your torn Achilles, for your pulled calf. That is the fucking problem. And you should be obsessing about this.

CrossFit or any good modern strength and conditioning system – because we're not the only ones doing it now, but they force us into the shapes that are diagnostic. And if you've been around Pavel, then you probably have done a pistol at some point. That's because you have to be able to have that open torque control on your leg. That's how he gets away with not having to do lots of step-ups: "Show me that you can squat up and down on one leg with that strength." And immediately I can tell if you have the ankle range of motion, hip range of motion to do that. So it's interesting that that got pulled into the language, because it was so diagnostic.

Tim Ferriss: If there were two or three movements that people listening to this could videotape themselves performing for maximal diagnostic value – let's just say it's a busy professional who's like, "I'm probably letting go, but I want to get back into training –

I want to be able to videotape myself at certain points just to see how screwed up I am before I try to do something I did when I was 20 years old" – is there anything in particular you'd recommend?

Kelly Starrett: Well, the problem with that is that you somehow devalue some of the other positions. And in physical therapy school they have this great statement; they're like, "Test something you think you changed and something you didn't think you changed." And I was like, "That is so eternal and amazing." And then I was like, "Well, fuck, it's my fucking shoulder. And if I'm compromised on this end, I maybe don't have the intellectual capacity to understand how that compromises me on the other side."

And so what's crucial is that you can go from the start position – so, for example, you may not think that Olympic lifting is important to you as a swimmer. But Olympic lifting, or swinging kettlebell, forces you all the time into having full internal rotation of your shoulder. So even just doing the Burgener Warmup with a PVC pipe – he's an Olympic lifting coach. You can Google "Burgener Warmup."

Tim Ferriss: How do you spell his name?

Kelly Starrett: B-U-R-G-E-N-E-R.

Tim Ferriss: Got it.

Kelly Starrett: Mike Burgener. And if you just get into this high hang position, like you're doing the robot dance out to the side –

Tim Ferriss: Do that all the time.

Kelly Starrett: – you should be able to get your hand all the way down to your hip, and your shoulder shouldn't twist forward. So people are like, "I don't need to Olympic lift." Well, you should be able to snatch a PVC pipe without hurting your shoulder. But those same people will go to the pull and not recognize that the finish position for the crawl stroke is the same position.

And so what ends up happening then is, in the swimming language, if I'm missing that internal rotation at the end, that means my shoulder comes forward, and that means my neck stroke is compromised.

Tim Ferriss: Impinged. Yeah.

Kelly Starrett: And that's why you have to have full range on both ends of your shoulder. Because I'm going to compromise, and that's going to mess up my next start or my next rep.

Tim Ferriss: I've been amazed how much my entire physiology has changed just focusing on terminal knee extension.

Just: lay on your back; put your legs straight up in the air; pull your toes back; straighten your legs. And if you can't straighten them completely – I was like, "Wow. My legs are shaking like a hamster on meth."

Kelly Starrett: It's true. I handed that over to two NFL-ers today who were coming back from an ACL repair. They sit all day long. They're sitting 14 hours a day, knees slightly bent. They don't have that range. Posterior chain is – why can't you do a long sit?

Tim Ferriss: Yeah. Last time you saw me, I could barely do this, and now I'm out to the –

Kelly Starrett: That's right. One of the things that you –

[Crosstalk]

Tim Ferriss: I was touching my toes first.

Kelly Starrett: PR. Lifetime.

One of the truths is that we're always talking about putting the hip back into the socket. That's the capsule stretch. That's *4-Hour Body* stuff.

Tim Ferriss: Definitely.

Kelly Starrett: But what you figured out was: "Boy, if I have some more load, if my legs are up and I put some load through that," that seated that hip back into the position and reinforced that mechanic. And then you had to be stable in that shape. The same thing happens when you squat, theoretically.

Same thing should be happening when you dead lift. But what we see is that the modern-ness of us is what messes us up. You have to have a movement practice. Pilates is a movement practice. Yoga's a movement practice. Acroyoga is a movement practice. CrossFit's a movement practice. But then I also have to probably breathe hard a little bit on there, and get stronger. And your movement practice can handle that. It can be kettlebells-based. You can go to the Olympics that way.

And then the last piece of course is that you have to be able to take care of your tissues. You have to know how to do some basic maintenance. You know, one of the reasons that *4-Hour Body* spoke to so many people was that it was like you gave them a blueprint, a Betty Crocker cookbook of how their body worked and the things that they could do that were actionable, that didn't require a doctor or a physical therapist. That's the revolution.

Tim Ferriss: Thank you. And thank you for helping with that also.

I have to ask this. This is a common question. It's not that I ask myself much, but I'm curious how you would answer it. Is CrossFit a fad?

Kelly Starrett: I would say: totally; totally is a fad.

Because front squatting and running is a fad. It's a gimmick.

No. Look, gymnastics is not a gimmick. Olympic lifting: not a gimmick. Power lifting: not a gimmick. One of the things that I don't think people recognize CrossFit so much – and you can even go back to Pavel's book. He interviews some MMA guy who was

legendary for his conditioning. He does the 100 kettlebell snatch test. And he does it in like eight minutes, and it destroys him.

I have 13-year-old girls who can do a version of that thing in like 3 and a half minutes. So what we've done is we've gotten a lot better conditioned. And I think people understand that CrossFit has always prioritized conditioning and aerobic engine first. You've got to take care of that stuff, and the bodyweight control stuff is the easiest way, and the most democratized way. Then let's have a conversation about how much you weigh, how strong you are. If you're going to be the best at the CrossFit Games, you're going to have to be really strong and really aerobic. For the rest of us, we can keep putting money in that strength bank, but that aerobic function bank, it goes dry.

Tim Ferriss: I know you've got a bunch of people to train here and business to handle, so I'll let you go in a minute. But, to thin-slice conditioning for a second because – for me, of course, I want to dig into the measurables. When I look at a metabolic conditioning workout, a MetCon workout, is it primarily trying to push up that anaerobic threshold so that you don't get crippled by lactic acid and the hydrogen ions and all that and puke into a bucket? Is it VO2 max? What are the primary components that you can track?

Kelly Starrett: The idea is that we could maintain all these other functions, strength, power, all the things that sort of valued us as powerful, functional people, and I could get all of the benefits of the aerobic, anaerobic training with interval-like training, with high-intensity training. Izumi Tabata proved that a long time ago. But what we found is that probably you need to go long once in a while to make sure you can. And there are some adaptations that only happen at that long, steady state.

I'm signed up for the Molechai. I'm paddling OC1. It's a five-to-seven-hour race. Twenty-minute workouts are not going to do it for me.

Tim Ferriss: This is kayaking.

Kelly Starrett: Outrigger canoe.

Tim Ferriss: Outrigger canoe.

Kelly Starrett: Right. But my point is that I'm going to have to go long. How long we need to go is up to my coach. I'm probably not doing longer than an hour, still maintaining, respecting this aerobic piece. But

all of our energy systems work in concert and at the same time. If you go longer than 2 minutes – 2 minutes is a 50 percent aerobic, 50 percent anaerobic effort. So, running six minutes, eight minutes, you're full aerobic power. That's much more interesting. Do 1K repeats. That's something that people didn't understand about Brian MacKenzie's model: he has me do 5K repeats and stuff, and on the erg. And it's brutal.

Tim Ferriss: This is the standing or seated erg?

Kelly Starrett: That'd be the skerg, the ski erg.

Tim Ferriss: The ski erg. Got it.

Kelly Starrett: Those are terrible places to be, you know, 1K repeats.

And I think people are not afraid of working hard anymore. We've gotten past that. Now let's have a little bit better conversation.

Tim Ferriss: What do you think is the future of CrossFit? And you can answer that any way you want.

Kelly Starrett: It's going to continue to refine itself. I think people are coming in, and all the coaches I know and work with are starting to understand what it is we're doing and how sophisticated it is. We don't just throw a bunch of random shit up and exercise until we puke. It seems like that: a bunch of jerks swinging around the bar. That's not what's happening at all.

Tim Ferriss: There are some jerks swinging on the bars.

Kelly Starrett: Well, that happens. I always point out to the physical therapists out in the world: "You had a business long before CrossFit, FYI." People have been fucking themselves up in every sport for as long as there have been people. Because we're ego-driven people. Because we're driven to perform. So the key is to pull your ego out of this and really play the long game. What do you look like? How fit can you be when you're 50? The conversation changes a little bit.

For me, it's not "Can I dead lift 600?" anymore. It's: "What's this look like when I run an ultra? How effective I am at running a 10K or paddling." Those are, for me starting to be more interesting conversations than just absolute strength or absolute work power. "How does this make me a better mountain biker?"

Tim Ferriss: If there were any sort of parting tips, suggestions, requests that you could make of the people out there who are either currently CrossFit-ing or considering CrossFit-ing, what would you say to them, or what would you suggest?

Kelly Starrett: It's not about who can work hardest anymore. That ship has sailed. If you are in a serious strength and conditioning program, you are very fit. Probably, unless you're a beginner, fitness is not the limiting factor anymore. Your positional quality at intensity is the limiting factor. Because you're going to do the same experiment that everyone has done.

And you will end up in a little tiny box at some point, wondering why you're Georges St-Pierre and you've torn both your ACLs. No one was fitter. No one was more powerful. But his positions cost him his ACLs. And now that consciousness has come at a very high price. And you should be able to do these things forever. There's not a time where you don't need to get up off the ground or do a push-up. But let's become more sophisticated. Let's advance the conversation a little bit.

Don't be a douchebag.

Tim Ferriss: That's a big one.

Kelly Starrett: If I walk into the room and you're rounding your back, I'm going to cock-punch you. Come on. It may happen once in a while at your heaviest loads because –

Tim Ferriss: I was drinking coffee and you tried to cock punch me earlier, which I thought was aggressive.

Kelly Starrett: I think that's the issue: you need to bring the awareness that we're supposed to bring to this. If we're doing not even a five-rep max, but we're just squatting, that fifth rep should look fucking good. You just did four more. Make it look better.

Tim Ferriss: Okay. We've got to run, guys.

Last question: any lesser-known strength coaches, or coaches period, that stick out in your mind that people might want to look up and learn more about?

Kelly Starrett: Joe DeFranco is amazing. If you haven't ever listened to Pavel talk, he solved a lot of this a long time ago. The internet is rich right now. Look at who's been on the podcast. There have been

some serious banner-carriers for a long time. Mark Verstegen at EXOS has been talking about these basic shapes and positions for a long time. Who are on his show? Who's around?

Tim Ferriss: Right.

Kelly Starrett: And I think the working coach piece is it. There are a lot of models, but you just need to start a practice. And then, from there, we can advance ourselves. But there's a lot of really good thinking in the world right now. It's very exciting. This is a good time to be in the world.

Tim Ferriss: Definitely. Yeah. Question your assumptions, folks.

Test your own rules.

Kelly Starrett: And don't be afraid to suck.

Tim Ferriss: Don't be afraid to suck. Find a place where you can suck.

Kelly Starrett: Privately.

Tim Ferriss: Safely. Kelly, where can people find you on the internet and elsewhere?

Kelly Starrett: I'm on your couch. Timferrisscouch.com.

Tim Ferriss: Not to be confused with other couches on the internet.

Kelly Starrett: That's right. We're at @MobilityWOD, and MobilityWOD.com. And, man, I can't believe I've been doing this for ten years. That's a lot of pull-ups.

Tim Ferriss: Yeah. Well, to many more decades. All right. Thanks so much, man.

Kelly Starrett: Thanks. Appreciate you.