

## OZEMPIC: 206 - Exercising for longevity: strength, stability, zone 2, zone 5, and more | Peter Attia, M.D.

Hey everyone Welcome to the Drive podcast I'm your host Peter Attia This podcast my website and my weekly newsletter all focus on the goal of translating the science of longevity into something accessible for everyone Our goal is to provide the best content in health and wellness full stop And we've assembled a great team of analysts to make this happen If you enjoy this podcast we've created a membership program that brings you far more in depth content If you want to take your knowledge of this space to the next level at the end of this episode I'll explain what those benefits are or if you want to learn more Now head over to Peter at MD dot com forward slash subscribe Now without further delay here's today's episode Welcome to a special episode of the Drive Now that we've released over 200 episodes we realize we've covered a lot of stuff across various topics and in a lot of detail that I think frankly for people can be very difficult If you're not someone who started listening four years ago I think even if you were listening from the very beginning it can be really hard at times to kind of piece together all of the information So we thought about trying an experiment for today's episode We've decided to pull a variety of clips from previous podcasts but around a given theme and in this episode we're going to focus on clips that discuss exercise and my framework for it So we put these clips in order of what we think is the best way to listen from top to bottom So think of this as kind of a mash up of a whole bunch of things on exercise but they're organized in a way that I think should make frankly a lot of sense and hopefully provide even more more value than if you were to listen to each of these podcasts in their completeness So the hope here of course is that this is going to allow you to understand this topic better but also to identify some previous episodes If you now want to go back and dive really deep into those first set of clips we're going to look at is what I'm optimizing for with my exercise And why I think training for the Centenary Olympic or Centenary to Kalo as I more commonly refer to it these days is so important The last thing to note here is that some of these clips are actually from A MA S And so if you're not a subscriber hopefully this gives you a sense of what lives behind that pay wall and why we think there's a lot of value there Additionally for the stability in DNS content clips In our episode with Beth Lewis and Michael Rental we actually filmed a lot of instructional videos of them

showing us how to do these exercises I recommend you spend the time to go and look at those videos because I think seeing here is probably better than just hearing So this is the first time we're doing this So would love your feedback So tell us what you think about this and tell us if this is the kind of thing you'd like to see more of and tell us if you think it sucks because it's a lot of work to do this And if you think it sucks I'd be happy to not do this anymore So without further delay I hope you enjoy this special episode of the Drive Mhm Everything we're talking about Bob right now is based on longevity and that's very different than if you were asking this question through the lens of performance Does that point kind of make sense or should I expand on that a bit Yeah I think you should expand a little bit maybe on the performance health and longevity particularly performance and longevity and the possible tradeoff between the two If someone said to me Peter my goal is to break two hours and 40 minutes on the Chicago Marathon next year I would be talking about this in a totally different manner That is a very difficult performance goal and that requires training at an energy system that I'm not even really gonna talk about in the context of longevity If someone says I want to break 10 hours on the Iron Man if someone says I want a dead lift 3.5 times my body weight if you start to really look into the far recesses of amazing physical performance everything I'm saying needs to be modified and I'm not going to talk about what those things look like What I will say is they are generally not co linear with longevity and at times they can be outright orthogonal And I realize as that's coming out of my mouth it sounds pretty freaking stupid if you're not a math person So let me explain what that means in English Something is collinear when it's directly in line with something is orthogonal when it is completely at odds with or at 90 degrees too So trying to run the fastest 10-K is training at an energy system that is very demanding of the cardiovascular system It is pretty much maximum cardiac output just beneath vo two max above functional threshold It puts an amazing strain on the body and frankly while doing that is better than sitting on a couch all day that is generally past the point of optimizing longevity returns and it actually comes at some longevity cost relative to something more at a slightly lower energy system So everything I'm talking about is geared towards this Centenarian Olympics which we've talked about in the past this idea of being the most kick ass 90 year old possible And that's really based on two energy system So it's got the stability and the strength piece we talked about and then it's got this low end aerobic energy system which is zone two that we'll talk about in a second

And then I think it's punctuated with brief bursts of generally zone five And the reason I think those two matter is that's generally where life takes place Life is zone one zone two and zone five And so by training zone two and zone five obviously much more in zone two than zone five we're really teeing ourselves up metabolically and also structurally to do these things based on what you know today what do you wish you would have implemented when it comes to physical conditioning slash training when you were at the age of 25 To make the question more general What do you believe is typically overlooked in this realm among very active 25 year olds who wish to be in the race for the gold medals in the Centenary Olympics Well that's a question from my heart Have I spoken publicly about the Centenary in Decathlon in the Centenary Olympics I didn't realize I had but obviously there's a number of questions that talk about the Centenary Olympics unless there's a Centenary Olympics I don't I honestly don't remember talking about this So but I did let me restate what I'm talking about and that will put this question in context about I don't know nine months ago maybe a year ago I just sort of had this epiphany which was that the system's gonna fail first in body for most people which isn't to say always right So some people just die suddenly you know their mind and their body are fine but they get struck with the disease and they die for another subset of people Unfortunately not that small their mind is taken from them first So cognition gets robbed of them and then eventually you know either they die or their body also breaks down and the way they go But but as I really reflected on what's going on I think that for most people the decline of mind body and then the burden of disease seems to be one by one in the wrong way meaning body seems to fail first So it got me thinking that at least for me how would I mitigate that So I came up with this idea of back casting instead of forecasting what I want to do in the end And I borrow that term back casting from Annie Duke who wrote Thinking in Bets a book that I love and Annie will also be a guest on the podcast Soon I hope so The idea of back casting is instead of trying to say well if I'm 25 what do I need to be doing tomorrow when I'm 26 And then what do I need to be doing when I'm 30 And what am I doing this morning An easier way to do it is say what do I need to be doing when I'm 100 And then how do I work backwards from that And so for me as a ripe old 46 year old 45 year old when I started thinking about this the the question was ok Well if I want to live to 100 and again genetically speaking I probably won't because I don't have the genes to to get there But let's assume that I can eke my way out to 100 that's 55 years away What do I have to physically be able

to do to be satisfied with my life So as I went through that exercise the way I did it was doing it through the lens of my kids So I took the ages of my kids and I projected them forward to How old will they be when I'm 100 And that's an easy calculation to do Obviously anybody can do that for themselves And then I said well probabilistically how old will their kids be So I said well you know my kids are this this this their kids will be approximately this range And then you realize wow their kids are gonna have kids by the time I'm 100 So by the time I'm 100 I'm going to have great grandchildren that will likely be between like one and seven or eight That's basically my calculation Ok So then I thought OK well what are the things I'm gonna want to be able to do when I'm 100 to just be happy So it goes without saying I would love to not be you know bedridden with disease per se It also goes without saying that I would love to have the the cognitive faculties that I have or at least a high enough amount of them that I'm able to sort of have the executive function processing speed and you know memory that's necessary to sort of function But then I really kind of double clicked on the physical part of this So there are a bunch of activities that I want to be able to do I still want to be able to shoot a bow and arrow I still want to be able to actually exercise Like I do enjoy you know some people exercise because they have to I think there are a number of us who exercise because we actually enjoy it And it's fortuitous that it provides benefit But the one I really focused on was the real simple stuff the activities of daily living and among them is like playing with kids Right So I started thinking about well what would I want to be able to do with great grandkids when I'm 100 And they're 345 And in going through that I made a list and there were 18 things on my list And I just began to refer to that as my Centenary in Decathlon which is problematic because Decathlon has 10 things and my list has 18 things but not within that tiny little detail What's the Latin origin of 18 I assume Decca is Latin for 10 or something right Anyway well whatever Ok So we'll come up with a fancier term for it or I'll figure out a way to consolidate make let us know So my Centenary decathlon has these 18 things that I want to be able to do when I'm 100 and uh some of them seem so trivial that you'd be like how is that even on your list Like for example I want to be able to get up off the floor with a single point of support which means I want to be able to using just one arm get up off the floor Now it's not that it's the end of the world if I need to use two arms But like I want to hold myself to that standard I want to be able to drop into a squat position and pick up a child that weighs £30 I want to be able to lift something that

weighs £30 over my head because that's about the weight of my little roller board suitcase And I would really be bummed if I couldn't put that in the overhead compartment of an airplane Presumably I'll still be flying on airplanes and you know those will still exist You'll be flying yourself Yeah Yeah Right We'll all have little jet packs or something You know I want to be able to get myself out of a pool without a ladder Simple Right Again how trivial is that to do today where you have you know four inches between the concrete and the water and how how easy is it for us to just pull ourselves out today without the ladder You've seen the guys that can jump without support they can jump out of a pool just jump out of a pool onto the platform No Yeah I think there's some videos for that So when I go through that whole thing I then say OK what are physical tasks that would approximate those things So for example like picking up the £30 kid who comes running at you could be approximated by a £30 goblet squat lifting £30 above your head in the form of a suitcase is also pretty easy to approximate with these things Goblet squat just uh for the uninitiated I usually think of it as like a kettle bell but almost like you're holding a goblet in front of you It's like a front squat That's right You're going down coming up That's right So picking up a child then I've just been working backwards from there Which saying well if I want to be able to do these things at 100 there's going to be a decline I have to be able to do these things at 80 I'm gonna need to be able to do it at this level at 60 I need to be able to do it at this level today Again given the inevitable decline So most of my training today in fact I would argue all of my training today centers around that I no longer train for anything that's not related to that So I don't do any training that's related to racing or competing in anything which is not to say it's bad to do those things I'm just saying that that's the point I'm at in my life So this is kind of a long winded answer to what I think is a great question which is a 25 year old who's frankly thinking of something that I most 25 year olds I can't imagine would be thinking of Certainly I wasn't thinking of this at 25 I mean at 25 you're sort of immortal But whoever asked this question is presumably realizing that hey in 75 years the world's gonna look different and I want to be able to do XY and Z So I don't know the answer because I don't know what that person's limitations are today So rather I would just say what is the framework and my framework for thinking about this is four components of exercise One is stability The second is strength The third is aerobic performance The fourth is anaerobic output And I didn't go through all of my 18 but each of my 18 touch at least one of those and many touch more than one For example the

goblet squat requires both strength and stability walking up one of mine is being able to walk up three flights of stairs with £10 of groceries in each hand Again You and I could do that today blindfolded and backwards That starts to become harder when you get older Well that's got a little bit of aerobic that's on the threshold of aerobic aerobic and it's also got strength So what I would be looking to do is say how well am I doing on each of those things Now that said in my experience the one where most people start to fail first is stability because as a species we usually begin to fail that once we enter school And I think I've talked about this before and I've certainly posted pictures of like my youngest son squatting It's it's just incredible like the way that they can do this is so beautiful You don't you don't have to be a Kinesia just to look at them and go wow they're so natural when it comes to these movements everything they do And the field of dynamic neuromuscular stabilization is in fact built on this principle which is you know there are about 13 or 14 movements that are completely innate to us And by the time we're a year and a half old or so we do them all perfectly and then it's basically all downhill from there accelerated significantly by school Once you start sitting that's when we lose so much of that stability and we you know lose the ability to maintain tension through our pelvic floor And throughout the entire I hate the term core but core of course describing the diaphragm the obliques the transversalis fas and the entire pelvic floor So my two cents would be spend as much time as possible working on dynamic stability static stability static first then dynamic And as long as you incorporate those principles into what you were doing strength wise that's great because at the age of 25 you can do a lot of dumb things and get away with it incorrectly I think I've always squatted and dead lifted somewhat incorrectly I don't think I've ever fully e in fact I know I've never fully engaged my pelvic floor doing those And I think I got away with murder for a long time though I now realize the damage that's occurred as a result of it Do you want to talk about your I think it was your squat routine I think you mentioned this to me one time Way back when my high school Yeah The breathing squats Yeah Yeah Amazing routine I don't know that I recommend this but again if it was once a week so we lifted six days a week in high school three hours a day I mean we just lived in the gym and on Fridays we would do this routine of breathing squats which was you took your best 10 rep weight So a weight that you were gonna absolutely fail at 10 reps with you loaded it on your back and you do a rep and that the so you go down and up at your normal cadence at the top you took three of the deepest breaths

you could take each breath taking 10 seconds So that takes 30 seconds So it's a five in five out three of those and then do another rep and you do 20 reps So the set takes 10 minutes and by the end it's the only thing I've ever done since that rivals That degree of discomfort is like an air bike Tabata And this was like one of these knucklehead things we got out of like our bodybuilding magazines for power lifting magazines And the idea was like nothing will stimulate more strength and growth than that activity And the reality of it is it worked I mean in the course of one year of doing that I added over £100 to my squad and that was starting at a level where I was already pretty strong And just but you know what's so funny about it is like it was so painful that on Thursdays I'd start getting up tight Like knowing that we were going to do this the next day It was just you just dreaded this pain so much Yeah we might get into this too There's slow it's called super slow or slow training Doug macguff is one of the guys at body by science is one of the proponents and he talks about lifting lifting slow and basically accumulating time under tension of maybe 90 seconds which I don't think people realize is like an eternity And you're talking about what you're talking about that if you actually calculate when you when you lift if you're bench pressing or squatting or something like that if you ever timed yourself and realize when you're working out like that and you're lifting weights how actually actually little the time is that is spent under tension and then you compare it to that Which is yeah because in that 10 minutes I'm not under the same tension the whole time when you're standing you're under much less tension I mean in many ways my recollection of that was your upper body hurt as much as your lower body Again It fortunately it's been so long since I've done it But honestly I I think that your traps your lats because you know when you're squatting you're really trying to wrap the bar around your neck you have to engage your lats to squat So the fatigue here the fatigue there I mean the whole thing's a mess but you know your legs are getting a bit of a break during that period of time because you're locked out So yeah I mean 90 seconds of totally being under tension is an eternity If the weight is heavy enough which is the principle behind that whole lift Yeah And on that on the note of a Centenarian decathlon we should call it the Olympics since there's 18 events Yeah Yeah I was thinking about it and I think one thing too is that if you're thinking about doing a goblet squad it's almost like a checklist of things that you want to be able to to achieve So it's not necessarily like going to the crossfit games and you're going to see how many goblet squads you can do for time compared to other Centenarians you're basically checking

something off that you would hope to do And one thing that I think like once this is refined down to maybe less than 18 or maybe it's 18 events is maybe put it in front of there's a lot of ongoing Centenarian studies There's the New York the Einstein one which is the Ashkenazi Jews uh long lived Centenarian study I got that wrong but there's the Thomasas Pearls where I think they actually have like an aggregate Italian Centenarians the Okinawans and things like that And I wonder how many of those Centenarians or even you give the list to near Barcelo or Tom my guess is how many of them could do it None of them that And here's the reason this is why I think this is different Anyone who's a centenarian today I'm willing to make an extreme statement which I know is a dumb thing to do Anybody who's a centenarian today is a centenarian because of their exceptional genes They haven't hacked their way there What we're talking about people our age is we're talking about hacking our way into being centenarians So that is going to be very deliberate Now again I'm not taking away from the odd centenarian who's also lived like a monk But you know we know this really well because we've done all this research on it for the book Most Centenarians I mean they haven't done anything necessarily better than or worse than their peers They're in fact on average they tend to smoke more exercise less and eat worse So what we're really talking about is a completely new model which is actually forcing your way to become a centenarian rather than just sort of gliding your way into it And therefore I think it's going to require much more deliberate attention around what your mind and body are doing at that point Now that we've set the stage for what we're optimizing for with our exercise these next two clips are going to focus on strength One of the pillars in my framework for exercise The first clip is from a recent A ma on the importance of preserving strength and muscle mass as we age And the second is from an older episode where I speak about the importance of dead lifts and why I think they're so beneficial to our longevity If we're able to do them safely Let's kind of just put some numbers to this So what does it mean You know how much lean mass and strength are people losing by time Because I think this is another thing I try to communicate to patients a lot which is it goes back to that idea of what I said about the gravity of aging you know what is aging kind of robbing you of as time goes on and you have got to fight like hell to avoid it But basically you look at multiple studies they're gonna say mean the lowest rate of decline that I could see is 1% per year another study And we we we can post these studies in the show notes you know 1.3% per year others are sort of putting it 1 to 2% per year after 50



35 to 40% between age 20 and 80 and the strength losses might even be greater right We're talking about 2 to 3 some studies even showing 4% strength loss per year I mean it's very difficult to put that in context right When you understand what compounding does it gives you a sense of what it means to sort of be average when you're 50 If you have the aspiration of kind of kicking ass when you're 85 you can't afford to be average when you're 50 And that's just the bottom line There's no other way to describe that either through cardio respiratory fitness strength or probably even muscle mass to some extent given its association with strength So I know it sounds like we're kind of harping on this point right That like you've you've got to be strong you've got to have muscle mass to accompany that strength Probably because at some point when you lose enough of it you lose the strength and you've got to have the cardio respiratory fitness So there was another study that we looked at Bob that had the I think it went out 10 years on the Kale Meyer Curves didn't it Yes Let me see if I can pull that up Ok Yeah this is the one I thought this was a very interesting study So you have to refresh my memory but I'm pretty sure this is the one where they looked at men and women leg strength versus grip strength They measured these in sort of Newton meters doing I think a leg extension and a grip exercise Correct correct the leg strength they did in Newton meters which I know that's that's those are the units that you like to use in your workouts And then the um the grip strength is in kilograms Ok So men here average age about 54 women about the same I think 53 So you evaluate people in their sixth decade of life and then they were followed prospectively for 5 to 6 years Now remember this is all cosm mortality So looking at the men's strength leg strength specifically it's definitely not subtle right So obviously with time every Kale Myer curve moves down as you go to the right But the weaker you are the quicker it goes down what this analysis showed for the men If you if you look at quad strength basically for every 0.2 unit reduction in quad strength and they normalize this for muscle size it's important to point that out here I think is that they they took their strength metric and they normalized it by muscle size and they did it in two ways which I think made this study a little more complicated than I would like because you get the same answer both ways I think But I guess it speaks to the rigor of it They used actually CT cross sectional area and then they used Dexa But when you when you take that normalized unit of strength per ct area and you reduce that by 0.2 units which can seem somewhat you know I think for the listener that's not the important point or Dexa reduced by 0.34 units you're seeing this increase in

mortality a 26% or a 39% increase in mortality And with a reduction in grip strength which was normalized by Dexa Arm measurement it's at 23% All of these were statistically significant Now for women it's worth noting that they were statistically significant but they had a basically a higher confidence interval or a larger confidence interval meaning they came close to crossing unity In fact Bob I think it's probably worth including table four in the show notes because frankly I find the table to be an easier way to appreciate the statistical relevance of this So I think the figure is great because the figure shows you the magnitude of the gaps between it But it's you know nobody can look at these figures and tell what's statistically significant and what is not But again I think the point of this is using a pretty rigorous way to quantify strength normalizing strength by size of muscle and prospectively following people We again see this trend And I think that this goes hand in hand with the previous analysis which showed us that strength is the more important parameter which again I I don't think we're gonna be able to say that enough today The importance of dead lifts as an adult How has your thinking changed on this I like your history on this one So maybe even take it back to in school when you were you were doing power lifting before it might have been in vogue Yeah Yeah Long before it was in vogue one of my best friends in high school who was also involved in boxing and martial arts we would go to the Scarborough campus of the University of Toronto every day and lift weights And it was it's still one of the fondest memories I have of what a gym could be like It would certainly be the it was certainly not the sunny warm Golds in Venice but it had some of those features which was old school Lots of iron nothing fancy of course unlike a nice gym This was like two stories below ground So there were no windows poorly ventilated So in the summer it was staggeringly hot in the winter It was so cold You felt like you were getting frost bitten by touching the iron And aside from me and my friend there were no kids there We were 14 15 16 years old And it was this group of men who to this day I think back and like can't believe how strong they were And most of them competed in power lifting And so that sort of got us interested in power lifting and that's how we sort of started putzing around with it And as most people know who are listening or I guess people who might know who are listening Power lifting is different from Olympic lifting Power lifting is three lifts the dead lift the squat and the bench press And so yeah make a long story short Grew up doing a lot of dead lifting A lot of squatting A lot of bench pressing was always very horrible at bench press Much better at squatting and dead lifting Fast forward to I don't know a

few years ago maybe three years ago I had an injury where I kind of tore or partially tore one of my obliques I don't even remember how I did it I remember it was very stupid whatever I did and everything in my phone book that would be great but everything went kind of sideways after that And I really was never able to fully dead lift again without some discomfort And so again this is now take it back to maybe 2016 I sort of decided you know what maybe the dead lift has reached its point of futility and maybe I've extracted all I'm going to get out of that and there's no denying what a wonderful movement it is in terms of being a total hip hinge compound movement But I was like look I could probably get most of the benefits of a dead lift doing things that place me under less load And also again in the spirit of thinking about longevity I thought why does one need to subject themselves to twice their body weight or more in an axial load So I sort of got away from it And then I think all that kind of changed when I started DNS dynamic Neuromuscular stabilization which I started about 18 months ago And we're gonna have a podcast on this topic because it's just there's so much I want to talk about here And so actually I think today we got an email about how we're trying to make some time for this podcast So we'll definitely if you're listening to this and you don't know what DNS is Dynamic neuromuscular stabilization by all means you should go read about it but we're gonna have at least one solid podcast on this But it was through that process that I realized actually the dead lift for me was going to be beneficial not because of the metabolic benefits I was not gonna be doing Tabata dead lifts like I used to or even by trying to set records for how much I could lift or anything like that But rather because it becomes a beautiful audit for everything working perfectly So I dead lifted this morning So today is a Monday I dead lifted on Saturday I dead lifted a few days before that Like I dead lift at least twice a week often three times a week both straight bar and trap bar and Bob I don't go that heavy I don't know The last time I maybe I've had £400 on one of those on the trap bar in the past year But I usually sort of stop at about 350 to 375 on the straight bar I'm even lighter Maybe 185 I do a lot of slow eccentrics I film every single rep of every single set and I study it and I send it to Beth Lewis who is my coach and we do so much around making this dead lift Perfect And I'd rather take a light weight and dead lift it perfectly several times a week And I'm not doing like killing crusher sets like I mean it's today was four sets of 10 5 sets of 10 maybe And at no point was I like past my limit So again I can push myself harder doing other things But what I could get out of doing that dead lift perfectly is do I have just the right

amount of thoracic extension Do I have just the right curvature in the lumbar spine Am I activating my glutes Am I activating my hamstrings Am I pulling back instead of pulling up Am I wedging correctly Like all of this little stuff translates biomechanically to the activities of daily living that matter to me like getting up off the floor picking up one of my kids lifting a piece of luggage or something like that And so if I can do the dead lift and it feels right then I know I'm ready to do everything correctly And when I'm dead lifting and I feel like hey this isn't correct This doesn't feel right Well first of all now I've really learned what that feeling is And secondly I've now learned the steps that I can go back and reconstruct what needs to be done And so one of the things I definitely want to do is actually put together kind of a video on dead lift and dead lift preparation because I think that there are probably 10 exercises that I do as a way to get ready to dead lift and they don't take long like this My dead lift checklist is like 10 to 15 minutes So it's not so onerous it's almost like ketosis the way we were talking about it in the past right Which is it's not even clear if it's the ketones themselves that can sometimes be the benefit versus the metabolic conditions that allow you to make them Right In other words I'm not even sure how much of the benefit is the actual dead lift versus all of the things you have to do to do the dead lift correctly And one of the most exciting things just on this the last thing I say on this is it never occurred to me up until a year and a half ago that you could actually dead lift in a way that puts your spine under traction That's very counterintuitive You would think that any time you're lifting under an axial load your spine is under compression But it turns out when you learn the right positioning and you understand how to create intra abdominal pressure and you know how to elongate your spine You can actually dead lift and create traction in the spine actively And that's why dead lifting is the most important thing I do before I get on an airplane because when you're on an airplane and you're sitting there for five or six hours what you really want to do is not let your spine be compressed and the dead lift primes me to then go and sort of maintain that activated form of traction Yeah it's a significant investment but I would say it's worth it that you'll bring your hex bar to the gate before your flight and pump yourself up and then bang out a few sets I mean I don't know what it is about the TS A guys they get so wigged out when you have your hex bar there is a gate that overhead If you're ts A pre they don't mind as much But if you're not ts A pre they just lose it Stickler they're sticklers The next set of clips is from a topic that we've covered on a lot of episodes and of course is a very important pillar in this

framework of exercise This is aerobic training and specifically looking at low end aerobic efficiency or zone two training This was most recently covered again in our second episode with In You Go So Milan this is a training zone I spend a reasonable amount of time in not as much as I used to when I was a cyclist And I probably spent I don't know 10 to 12 hours a week in this zone today I spend three or four hours a week in this zone But I still believe this is incredibly important and I want to make sure that you understand this all I'm doing is swimming I'm not doing workouts I'm not looking at the pace clock I'm not doing intervals I literally just get in the water with no agenda other than to get wet and hear the sound of water going by my ears Probably I'm not even swimming hard enough to get in the zone too Truthfully I doubt my heart rate's above 120 That's the next topic That's where I think this is a good segue Oh if you think about it and you can talk about it But I think that's one of the things is like a governor putting a rate limiter on your performance when you do zone two that it's almost like for a lot of people It is for me doing this reminds me kind of of stillness although I might read on the bike or things like that But can you talk about zone two importance and how your thinking has changed on that Yeah when I stopped riding a bike with a purpose which was for me a time trial So that would have been late 2014 early 2015 I kind of really just stopped doing any low intensity aerobic training So anyone who does ride a bike or swims a lot has plenty of that activity in them So even if you're training for the 200 m individual medley which is a race that's very short very quick and very painful You still put in hours and hours a week of aerobic based training Similarly if you're training for a one hour all out time trial you still put in hours a week of low end aerobic based training But when I stopped doing that I was like well I don't need to do this anymore and I went from cycling to rowing and running and I was sort of obsessed with just being as efficient as possible So everything was all out I mean I was if I was running it was going to be a six minute mile it wasn't going to be a nine minute mile I think especially through the interactions that I had with Indigo who I met about a year before I had him on the podcast which was just recently it was sort of meeting him and kind of going back through the literature on that type of training and the benefits that it could have both from the standpoint of metabolic benefits such as glucose insulin dependent and insulin dependent glucose mediated disposal Looking at just sort of mitochondrial function mitochondrial health density and then looking at sort of the the sort of neurotropic factors the BDNF secretion that can come from this type of

activity I mean all of these things were just pointing towards this was a glaring hole in my training that I needed to get back And so that has been great And like you said I mean one of the things about zone two that I really enjoy is it's just not that hard you know like frankly sometimes it's just nice to get on the bike and I probably spend three or four hours a week doing it And that is my time to listen to podcast and audio books and I really enjoy it I can't wait to get on that bike as sort of boring as it seems to be sitting on a stationary bike for that long There's never been a day when I've been like I don't feel like doing this I just I always look forward to it And I think in large part it's because I also get to combine it with learning which you wouldn't be doing if you're out there crushing intervals and not that there's something wrong with that I think each of these things has this time and a place but I think that we can do zone to our entire lives We can do it safely and it just yields enormous dividend Your question if I recall was if you want to do your own two training at home what's the best type of device to do it on I don't think there's a best device but I would say it's one where it's very easy to reproducively produce the same output So I am hugely fond of a bicycle because it has a very clear metric that I can adjust which is the wattage watts are super easy to track I'm riding on a bike that is an ergometer So I put my road bike on a device called the Wahoo Kicker and it is hooked up to a computer where I'm telling it the numbers of watts that I want and it's putting that resistance into me and I generate it Now my wife conversely likes to ride a Peloton I don't know why I think it's the worst bike on the face of the earth But on the Peloton it works a little bit different which is she goes into like a mode where she's not doing a class but she basically sets the resistance with a little knob and then the amount of RP MS that she can put to it spits out a wattage but it's actually in my mind a little harder because she has to kind of control like she has to be titrating her cadence to stay the same so that she can hit a wattage number So it's the difference between being in erg mode and spin mode But the point is regardless of how you do it on a bus like wattage becomes the metric that matters We of course are always measuring heart rate as well And we'll talk about this in a second in terms of how you tweak it treadmills are also a great way to do this in my experience Unless you are a really good runner which is to say you're very efficient at running for most people running gets them out of zone two a little too quickly So for treadmill with our patients we prefer brisk incline walking Most treadmills will go up to 15 degrees and we generally start people between 10 and 15 degrees is somewhere between 2.5 and three MPH maybe less And again it's

very empirical It's sort of how quickly can you figure out where somebody is by those two metrics I have a very clear sense of my zone two I know exactly how many watts my zone two is I also know what heart rate I should expect to see And if I'm vastly outside of that there's usually a physiologic reason then I have to make an adjustment on the wattage So if my heart rate is significantly higher than that it might mean I'm a little bit sick dehydrated something else is going on and I might have to back off to get the heart rate down even if it means bringing the wattage a little bit below And I'm checking my lactate every single time I do this and I do it four times a week We'll discuss frequency Same thing on treadmill I know on a treadmill Exactly what incline Exactly what speed and what heart rate and it's a comparable heart rate too on the bike That's an easy way to sort of make that happen The other thing my wife loves is a rowing machine Now I'm not fond of the rowing machine for zone two I like the rowing machine for zone five but that's because I'm not a very good rower So again my wife's a better rower than me and she has better form than me Someone like Beth Lewis we've had on the podcast who's an amazing rower She's more efficient She can get his own to work out on the rowing machine I love rowing but it's just cycling for me is second nature Cycling is a very efficient thing for me to do I'm not hugely fond of ellipticals personally But again if you have one that works for you where you're able to get your heart rate high enough and you're able to move quick enough then Great The key is how much energy do you have to put into maintaining a sustained dose And that's the biggest challenge Bob would zone too is you don't want it to be vacillating And that's why ultimately I love being on an erg mode of a bike which is I don't actually have to think about it It's putting 200 watts to my wheel no matter what I do even if I slow down or speed up it's just always keeping the watts the same Frankly I can just tune out and listen to podcasts and audiobooks which is what zone two is for in my book The next set of clips look at another pillar in my framework of exercise which is now that upper end aerobic verging on anaerobic exercise So we sometimes talk about this as zone five But again I would be less concerned with the terminology The zones really are a function of the underlying system that you are referring to Whether you're talking about a heart rate based training or a power based training I think of zone five as basically your  $VO_{2max}$  training And I think a lot of people sometimes spend too little or too much time in this zone And we want to kind of help you understand what that sweet spot might look like assuming that you're not training specifically for athletic events that

require unusual levels of fitness around that energy system But again if you're really just talking about being the fittest healthiest person you need to be to be kind of a kick ass 90 year old Then I think we don't need to be spending quite as much time there as you might think to harness the benefits So in these clips I'm going to talk about how I train there and how I think about VO two max Now we talk about VO two max in a ma 27 and that's where we're going to talk about how the benefits appear to comparing someone of low fitness to elite fitness with respect to these metrics And it's kind of staggering the difference between someone at the bottom 25% of VO two max versus someone at the top 2.5% is about a fivefold difference So this shows the importance of vo two max and why I think you ought to be spending more time there We've got a zone zone wait for it Five Question not two What is Peter's approach to Zone five training What about other aerobic training protocols I love this So my zone five is mostly done on my Stairmaster which is my absolute favorite piece of equipment that's not a bicycle other than the elliptical Yeah I can't stand the elliptical So basically my zone five workout which I really only do once a week is three minutes of zone two with one minute at VO two max because I know what my VO two max is I know how to convert it into Mets which is VO two max divided by 3.5 And the stair master allows you to work in watts and Mets So basically I'm doing three minutes at my zone two and then I go one minute at what my VO two max is which truthfully is quite difficult to hold your VO two max for one minute And then right back to three my recovery is then the three minutes at zone two And so that four minute pattern I just repeat for 20 to 30 minutes And I usually do that on the tail end of a zone two workout So that's kind of my longer aerobic day other workouts that I liked when I'm outdoors on my bike I I also like doing kind of a more vo two max training type ride which would be kind of like a four minutes at call it 100 and 25% of FTP functional threshold power followed by four minutes recovery So 1 to 1 work rest but obviously at a lower intensity than the 3 to 1 rest to work that I just described So yeah there's lots of ways to hit zone five and it's a very important zone as well My view is most people spend too much time there and not enough time in zone two though I've got a few follow up questions which it'll give you more time too on this I went almost to my two minutes on that one I was like staring at my clock One's I think Simple So the Stairmaster are you is it a Stairmaster or is it I don't know if it's called a stair climber Do you have the one where it's like literally you're going up steps or is it the one where you just have like two levers and you're pushing them



back and forth Oh sorry No mine is like the fancy gym one where it's like an escalator steps No no no no no it's not a Jacob's Ladder It's it's a series of eight inch steps that roll up and down a machine So the higher the intensity you set it the less resistance is in those steps and the faster you have to go to not fall off the back So if I set it to like eight Mets it's moving quite it There's actually quite a bit of resistance So I can step quite slowly without falling off when I set it to like 20 Mets It feels like there's no resistance and I'm running up the stairs to not get thrown off the back I think we could do a podcast on a lot of this stuff vo two and and all that other stuff But one of the things that sticks out to me because you know when you got like a coach or anybody and they they they want you to give 100 10% and you think like what the hell is this You know I can give 100% maybe But when you're talking about your vo two max and you're saying I'm you know I'm going at 100% I think some people might just think like oh this person you must be going all like balls to the wall all out However when we're looking at like what's my workload to my VO two max You can actually you can exceed 100% of your vo two max in terms of the work you're doing right And Alex Hutchinson who is going to be on the podcast very soon writes about this very elegantly in his book endure basically the limits of human performance in terms of quote unquote going all out is about 10 seconds So really no human has the potential to go all out for 10 seconds You might think you are but you're not Wait wait wait wait II I take spin class I've taken spin classes before and I'm going all out for like 80% of it you know or at least the instructor wants me to go all out in The instructor is playing games with your mind and if that helps you so be it But look you only need to look at the difference between 100 m and a 200 m sprint So take the best explosive athletes on the planet And even by the time Usain Bolt is running the 200 he is slowing down in the second half of that race The force with which he's able to hit the ground in the second half of that race is slower He can go faster in the second half because he gets a flying start But the 100 m which is basically a 12th race is about the true limit of what all out means So I even find this interesting when you consider two variants of Tabata As you know there's the 2010 Tabata and the 10 20 Tabata And you and I both have air bikes which have you know which are great tools for doing that when I go through cycles of Tabata which these days I'm not I'm focusing much more on zone five workouts on both the rowing machine which I didn't get into and also in the stair machine But sometimes I just do like a couple Tabata a week I mean anybody who's tried both knows you can go so much harder for the 10 20 than the 2010 The 2010

is generally favored because that's the one that was studied by Ursa and Tabata Fun fact by the way Tabata are not named after the guy who developed the protocol He was the guy that wrote the paper Ursa developed the protocol They should be called Ursa So the problem with a quote unquote 2010 Tabata is whether consciously or subconsciously you're actually pacing yourself to complete it which is what it is But I I think it actually poses a little bit of difficulty OK I'm surprised you don't actually just say I do or saw was and then have people have people look it up look at you and dude Mondays and Fridays Mondays and Fridays is I just do our you see people nodding their head So with that let's just start with sort of something you've already alluded to Let's explain what it is talk about how much it matters and then kind of get into some examples So let's start with a term that many people have heard before But I I don't think most people understand what VO Two max really means And eventually we're going to talk about running efficiency and lactate threshold and we're gonna get into all this stuff But let's let's make sure people understand what Vo Two Max is both in an absolute term and then in a manner that we normalize it by weight and what it is and what it isn't how it's measured how it matters And maybe we'll even talk about some notable exceptions So VO two Max is the one physiological parameter that anyone who's involved in endurance has heard of and has some sense of the first order analogy is it's kind of the size of your engine physiologically V two max is telling you how quickly you can take oxygen from the air into your lungs get it into your blood pump it to your muscles and then have your muscles use it in the metabolic processes that will provide energy to move you to do whatever you wanna do So it's a rate it's how much oxygen per unit time can you process Absolutely flat out Now the sort of back story here is it was first sort of discussed or measured in the 19 twenties by a guy named Avey Hill who was actually a very good runner The observation that he made is if you have someone you you ask someone to go out and run at a at a gentle pace they'll consume let's say two liters of oxygen per minute then you tell them to speed up Now they're they're doing three liters of oxygen per minute You tell them to speed up again and now they're going pretty much maybe not as fast as they can but they're going fast and they're losing four liters of oxygen per minute And so you tell them to speed up again and you measure it and you're like oh they're only using four liters of oxygen a minute just like last time speed up again And they're still just using four liters of oxygen in a minute There's a plateau there's a point at which even though you're working harder you're not using any more oxygen

And so this plateau looks like it's a physiological limitation and it probably is in in some sense you know it's a controversial thing but basically you've reached a point where no matter how hard you push yourself you can't get more oxygen And so you can still go faster because you're starting to use other forms of energy But this is the limits of your aerobic system This tells you what it tells you We can get into it It's not clear what it tells you It tells you exactly what I just said It tells you how much how much oxygen you can use Does that tell you exactly how fast you can run No there are a lot of other factors but it's that tells you what sort of aerobic engine you have to play with I remember in high school I mean we would sort of talk about well which athletes have the highest  $\dot{V}_{O_2 \max}$  Is it the Norwegian cross country skiers Is the professional runners and cyclists and things like that But people are usually used to hearing these numbers reported not in liters per minute but in milliliters per minute per kilogram So give an example So people understand those differences because we usually talk about the outliers is a number that's a bigger number than two liters or five liters It would be you know sort of 75 80 mL per you just explain to people how how those are different Sure So I'll use my own numbers I when I you know typically when I was tested I could get about a little bit more than five liters per minute So 5.15  $\dot{V}_{O_2}$  if I remember correctly Now if you compared me to a rower the rower would make me look pathetic because the rower would be using seven liters a minute or or or more but the rower is also huge twice my size or whatever And so that doesn't necessarily mean that that rower is better at using oxygen for me because the rower has way more muscle And so the rower is the amount of oxygen reaching any given muscle cell may be lower So if you want to compare apples to apples between athletes of different sizes you divide at least for a crude approximation you just divide by weight And so the numbers we usually hear are rather than liters of oxygen per minute It's milliliters of oxygen per minute per kilogram of body weight So for me five liters of oxygen per minute works out to something like 80 mL of oxygen per minute per kilogram of body weight There's a whole rabbit hole to go into is to say well why are we dividing by whole body weight Because you know there's a bunch of things like skeleton and organs and stuff that don't scale the adipose tissue doesn't matter I mean you could argue a better comparison would be total liters per minute divided by lean mass divided by time or normalized to time And then you're you're at least getting the the metabolically active tissue presumably Yeah And there's papers where they do things like let's divide by weight to the power of 0.68 or 0.7 which is

another way of getting effectively It's a way of approximating just the lean mass the metabolically active tissue and you can go down that rabbit hole But I I suspect you'll want to get to it It's like at a certain point it doesn't matter that much anyway So we don't need to you can't just measure someone's  $\dot{V}O_2$  max and know how fast they're gonna race So it's it's it's useful but it's not it really especially for comparing between people Now comparing within yourself it it tells you something if if you've increased your or if your  $\dot{V}O_2$  max has decreased But in that sense it doesn't matter what you're dividing by I remember there was a guy that I used to ride with and this was not that long ago maybe five or six years ago when I was still you know somewhat competitive at least with myself actually it's funny my number was just like yours except I was heavier So I was about 5.1 to 5.2 liters but I weighed more So that worked out to about 70 ml per kg per min was my  $\dot{V}O_2$  max His was 55 to 60 But there was never a day that I could ride faster than him Not one There's simply and and I always felt like although we did the test so many times I kept feeling like the machine must have been broken on him Like I knew my 70 was about right because I'd been tested so much and that was lower than it had been when I was younger So it seemed appropriate But I was always convinced that that there is no way he's only 55 The reality of it is he may well have been and he may have simply been a far more efficient athlete which we we're gonna get into before we get to the story of Oscar Svendsen Let's talk a little bit about historically what people have believed the limits are of  $\dot{V}O_2$  max We don't even have to go very far historically to get into a whole mudslide of confusion and debate and disagreement There's a lot of places along the way that could in some circumstances be the bottleneck Normally people tend to assume that what is it that causes  $\dot{V}O_2$  max to plateau is essentially what I think what we're talking about And just one thing I should add here it's like why is that interesting It's because you think well if you want to measure endurance just have someone run a mile or whatever you know as hard as they can But any test like that depends on motivation depends on whether you pace it Right There's all these factors that come into it The nice thing about  $\dot{V}O_2$  max is that in theory it's independent of motivation That's why scientists like it because it doesn't matter if the subject doesn't really care about the study If you see a plateau you know that's a property of their body and not a product of whether they were excited about the study So the question is this plateau what is it that causes it And it could be in the lungs it could be the heart it could be the circulation it could be the muscle's ability to extract it I don't

want to pretend that I know the answer because it's still controversial that the picture that emerges is that almost every part along this cascade is engineered more or less to what it needs to be And so if you perturb any of those elements you can get limitations So for example the conventional wisdom is that your lungs are not a limitation you can always breathe enough in And so then the question is can you diffuse enough oxygen from your lungs into your bloodstream and so on and so forth There are situations where and it's been for decades it's been conventional wisdom that the lungs don't respond to training because they're overbuilt There was just a paper published a big review in the last month or two arguing that you know in some cases the lungs aren't overbuilt And one of the situations is highly trained endurance athletes they can be limited by their ability to get enough oxygen in And you can also run into situations where an athlete is so fit their heart is so strong it pumps blood past your lungs so quickly that it doesn't have time to fully stock up on oxygen You get something called exercise induced arterial hypoxemia So this this is usually an issue at altitude But in elite endurance athletes is actually about half of them exhibited even at sea level So they're already running into a limitation just in getting oxygen from their lungs to their bloodstream And then at every stage of the way there can be limitations if anything is knocked off kilter and certainly right down to the ability of the muscles to first extract the oxygen from the bloodstream and then to make use of it metabolically in the in the mitochondria So it's there there isn't one single answer which is why you get these debates because everyone is I have evidence that this is the limit It's like yeah but I have evidence that this is the limit and that's the limit and they're all the limit Yeah I've always wanted to see the experiment where you took a group of athletes maybe this has been done You run them all to max and then you reduce the  $F_{iO_2}$  of the incoming oxygen So normally we do it with room air So you're getting uh the fractional inhalation of oxygen is 21% And the way of course just for the listener the way these things work is the way they're calculating how much oxygen is being consumed is they're measuring the concentration of oxygen on the way out So you're calculating the delta And so I've always thought well wouldn't it be interesting to start selectively dropping  $F_{iO_2}$  21% 20% 19% 18% Now presumably if the lungs aren't the limitation you should still see the same absolute delta and you could at least start to eliminate one of those variables which would be  $F_{iO_2}$  and capillary exchange and then you start pointing to some of these other variables Again I'm sure somebody has done this experiment but I don't know what it yielded

Probably not with the fine tooth comb that that you're suggesting people have compared 21% to 10% or whatever and 15% I mean it's interesting when you go to altitude or the equivalent when you reduce the amount of oxygen funny things happen like the first thing you would think would happen is like you can't get enough oxygen So you're gonna be go anaerobic sooner you're gonna produce more lactate And yet the opposite happens There's something called the lactate paradox If you try and exercise to exhaustion at lower levels of altitude you actually give up when your lactate levels are lower than you would at sea level And there's debate about what causes this and even whether it's a real thing But the picture that makes sense to me is is that these things are not just about how much oxygen is making it to the muscle It's also like what is your brain oxygen level And so you're you're getting these other circuit breakers that are starting to come down that aren't even on this path from mouth to lungs to blood to muscle There's other factors that are saying whoa wait a second Oxygen is getting a little low So we're gonna actually cut off the supply to the muscles or reduce it in order to make sure that we don't get stupid This next clip is going to focus on stability as I mentioned at the outset with Beth Lewis and Michael Rental We filmed a bunch of instructional videos to go with this I can't recommend them enough It's one thing to hear us talk about these things It's quite another thing to see the exercises and be able to do them yourself Stability is the cornerstone upon which you do everything It is the cornerstone upon which your strength is delivered Your aerobic performance is delivered and your anaerobic performance is delivered and it's the way that you do so safely So stability is a way that we transmit force from the body to the outside world and vice versa from the outside world to the body in the safest manner possible across the muscles which are designed to carry that load as opposed to seeing the dissipation of force across joints that are not fit to do so So for example when you're picking something up let's say you have to pick up something and it weighs 60 Well you have to exert 60 of force on the world around you That's Newton's laws Tell us that that's what it means to pick up 60 The idea is you want all of that 60 to be transmitted from your muscles to the ground lifting this thing up and you don't want anything dissipating out your back out your knees out your hips And while we're most of us are born with the ability to do that naturally it generally gets lost by the time we're in grade school in response to many things but probably chief among them is a relative lack of activity and a relative abundance of sitting And when I look at my 2.5 year old move it's a perfect clinic in forced

transmission safely across the body When you look at me move prior to sort of becoming obsessed with and schooled in these disciplines of as you mentioned one of them dynamic neuromuscular stabilization or DNS it's always a little bit of an inefficient way to get things done and it results in a lot of force leakage or seeping out around my scapula my elbow my knee my back my hips And this is sort of one of the root causes of a lot of the chronic injuries A lot of us have So stability then is probably what I think of as the foundation upon which everything should be done vis a vis exercise Just yesterday I was actually talking to a patient and she was asking me if she needed to do DNS or if she could continue to work on the Pilates that she has been doing for many years And my response was that I think a great Pilates teacher is already teaching many of these principles So I think this is somewhat discipline agnostic but it's heavily dependent on the practitioner and the student So I've seen really good Pilates teachers who even though they are using a very different vocabulary than the one that I use or that the DNS practitioners use the results speak for themselves And those patients do have the correct patterns of movement They are able to get air fully into their lungs They're able to get their diaphragm low into their abdomen They're able to flatten out their pelvic floor generate concentric robust intra abdominal pressure that stabilizes every aspect of them There are other people who either the teacher doesn't have the skill to do that or the teacher does but it's just not being presented in a way that the student can understand it And so this is also one of those things that's iterative And I think one should always be searching for this So postural restoration Pr I DNS Pilates these are all different ways that one can come about trying to learn these principles I think unfortunately of the four pieces of exercise we're going to talk about This is the one that probably will take the most tinkering for people to find the right type of practitioners Probably sometime next year Bob as you know we are going to start to put together some material on this for people outside of our practice Currently all of the work we do on this front we've put together many video courses those are exclusively for our patients at this point But as our knowledge expands and our footprint in this space expands My hope is that we are able to start to create digital curriculum on this type of stuff that can help people who again don't have access to somebody We'll end this week's episode with a clip from one of our recent A ma si believe episode 32 where I talk about the macro structure of my current training routine As we come to this end as I want to mention in the intro it's the first time we've done this So we'd really like to hear your

feedback positive and negative Is this something you want to see us do again with other topics If so maybe even suggest some of the topics you'd like to hear And if not please be honest with us and tell us not As I said it's a lot of work to do this and we only want to do this if people find this valuable So thanks so much I thought it might be helpful for people before we get into some of those specifics Just what does your current exercise routine look like each week I know it's always changing But if you can give people a rough overview I think that will be helpful as we get into some of these other questions Yeah I mean the actual macro structure of what I do has not changed much in the last year The microstructure has changed a lot meaning the exercises have changed a lot But the macrostructure is that on let's see Tuesday Thursday Saturday Sunday our cardio days So Tuesday Thursday Sunday our zone two Saturday is either a zone two followed by a zone five as kind of a separate workout So each of those are 45 minute zone twos and then kind of like a 30 minute zone five as a separate workout that's done almost immediately after So basically getting out a bike clothes and putting on stair climbing clothes Alternatively I might just do a longer bike ride on Saturday and make it more of an anaerobic workout Uh then from a lifting standpoint it's Monday Wednesday Friday Sunday is lifting and about I don't know nine months ago I switched to an upper body lower body split I used to lift three days a week and do upper body lower body every day So each day I was doing kind of pushing pulling and hip hinging And now the lower body component I think is Monday Friday The upper body is Wednesday Sunday And I always lift after doing cardio because I think the reverse has been demonstrated to erode strength training gains Peter What happens if you miss a day Because I noticed you didn't say day one day two day three you were very distinct on the days of the week I know you typically don't miss a day But if you miss Wednesday do you just scrap those exercises and then just continue with your program or are you trying to make up in the interim No like yesterday Sunday would have been a a ride followed by lift day but I was on the track the whole day and I knew you know I knew that in advance So I just ended up doing that lift on Saturday but obviously was short changed on the zone two for yesterday So I will pretty much will never compromise a lift I will always get those four lifts in during the week no matter what And sometimes it just means moving the days around or doubling up on a different day And what about timing Do you have a preference Morning afternoon evening is that flexible as well within kind of your schedule A little more flexible on weekends But Monday through



Friday and pretty much no flexibility those lifts have to be done first thing in the morning and not first thing in the morning So morning routine is kind of more about the kids and stuff like that But once they're out the door to school it's around 7 15 7 30 That's when I'll typically live Thank you for listening to this week's episode of the Drive If you're interested in diving deeper into any topics we discuss a membership program that allows us to bring you more in depth exclusive content without relying on paid ads It's our goal to ensure members get back much more than the price of the subscription to that end membership benefits include a bunch of things One totally kick ass comprehensive podcast show notes that detail every topic paper person thing we discuss on each episode The word on the street is nobody's show notes rival these monthly A MA episodes or ask me anything episodes hearing these episodes completely access to our private podcast feed that allows you to hear everything without having to listen to spiels like this The qualities which are a super short podcast that we release every Tuesday through Friday highlighting the best questions topics and tactics discussed on previous episodes of the drive This is a great way to catch up on previous episodes without having to go back and necessarily listen to everyone steep discounts on products that I believe in but for which I'm not getting paid to endorse and a whole bunch of other benefits that we continue to trickle in as time goes on If you want to learn more and access these member only benefits You can head over to Peter at MD dot com forward slash subscribe You can find me on Twitter Instagram and Facebook all with the ID Peter Atia MD You can also leave us a review on Apple podcast or whatever podcast player You listen on this podcast is for general informational purposes only and does not constitute the practice of medicine nursing or other professional health care services including the giving of medical advice No doctor patient relationship is formed The use of this information and the materials linked to this podcast is at the user's own risk The content on this podcast is not intended to be a substitute for professional medical advice diagnosis or treatment Users should not disregard or delay in obtaining medical advice from any medical condition they have and they should seek the assistance of their health care professionals for any such conditions Finally I take conflicts of interest very seriously For all of my disclosures and the companies I invest in or advise Please visit Peter at MD dot com forward slash about where I keep an up to date and active list of such companies