Unstress HEALTH

with Dr Ron Ehrlich

Podcast Transcript

Dr Ron Ehrlich [00:00:00] Hello and welcome to Unstress. My name is Dr Ron Ehrlich. I'd like to acknowledge the traditional custodians of the land on which I'm recording this podcast, the Gadigal People of the Eora Nation, and pay my respects to their elders, past, present and emerging. And I do this because I truly believe we have so much to learn from our First Nations people in Australia, the oldest living, surviving culture here for 65, it's even maybe 80,000 years. And we have so much to learn about respect and connection with both land and people.

Dr Ron Ehrlich [00:00:43] Well, today my guest is Paul Taylor, and I had the pleasure of listening to Paul give a workshop in Brisbane at a conference recently at the Health Coaches of Australia and New Zealand conference. It was a fantastic conference and I believe health coaches are really an important part of people being healthier moving forward. But Paul was just fantastic and I really, as soon as I heard him, he's a neuroscientist, an exercise physiologist, a nutritionist, a dynamic speaker, an author, a podcaster. And as though that's not enough, he's also doing a PhD in psychology with particular reference to stress and resilience. Look, we talked about so much here. There was so many wonderful takeaways, and I learned so much from my discussion with him. I hope you enjoy this conversation I had with Paul Taylor. Welcome to the show, Paul.

Paul Taylor [00:01:42] Thank you for having me, Ron. Pleasure to be here.

Dr Ron Ehrlich [00:01:45] Paul, You wear many hats, as I alluded to in the introduction, but I wondered if you could just give us a quick rundown of it, which has been quite a journey, I believe.

Paul Taylor [00:01:56] Yeah, well, I originally was in the British Armed Forces. I used to fly in helicopters and did anti-submarine warfare and then helicopter search and rescue to better combat survival and resistance to interrogation training, which is all fun, should prepare me for this podcast. And then I left the military and I became a geek. Well, I was a kind of a half geek before I joined that, done a master's in exercise science. Then I did another masters when I was

in the military, and we had a lot of 24-hour duty sitting around waiting. So, I did another masters in Nutrition, then moved over to Australia, started as a nutritionist, an exercise physiologist in and private practice, then realised having dealt with lots of clients, it's not so much about the science, it's about the headspace. So I did another post-grad in neuroscience and now I'm finishing it off probably, hopefully, maybe with a PhD in psychology.

Dr Ron Ehrlich *[00:02:58]* Wow. With a particular focus on stress, I believe.

Paul Taylor *[00:03:01]* Yes. So in that sort of stress resilience space, I actually call it stress 2.0. I talk a lot about stress, fitness. No, sorry, resilience 2.0 once you get that right. So I show resilience. You know, most listeners will that they think resilience. Most people would kind of think of bouncing back. And that's really what resilience is about. Whereas stress fitness is about... If we think about a physical fitness continuum, you can be low fitness, moderate, high fitness, but you got to work at it. And when you stop working, you go backwards. So Stress fitness is about the ability to effectively deal with stress and become better because of exposure to it. I have a kind of a definition that I've created with my PhD supervisor if you want to hear it.

Dr Ron Ehrlich *[00:03:56]* Yes, I do. Absolutely.

Paul Taylor *[00:03:58]* So it's the malleable capacity, which means trainable, that malleable capacity to engage maintain and disengage the stress response and flexibly adapt to physical and mental challenges or advantages to enhance tolerance and or performance. So you see there's both a physical and a psychological component to it and it's about becoming better, not just bouncing back to where you were.

Dr Ron Ehrlich *[00:04:33]* Yes. Wow. There's so much in that statement that we really should unpack. I love... I mean, engaging in stress is something we do inevitably and probably far too much in our world. But it's the disengaging from stress and being able to come back better. Yeah, that is... You know. Well, I want to talk to you more about your PhD, but just going back a

a wonderful, wonderful presentation. It was terrific. I loved your delivery, your message and the whole energy I wanted to share with my listener. But you are very passionate about exercise and I get it. I mean, we all get it. But can you... And I know this, people will have heard this. Maybe they will not have heard all of it, but I don't think we can hear it too often. Why is that so important?

Paul Taylor *[00:05:38]* Look, exercise is fundamental to our biology and one of my favourite quotes and I've ever read in any research papers from Professor Frank Booth, Journal of Applied Physiology in 2012 and in this research paper he was talking about the human genome and here's what he said. Said "The human genome has not changed in over 45,000 years. The current human genome requires and expects us to be highly physically active for normal functioning." So what he means by that, you know, our hunter-gatherer ancestry and really adapted to exercise. It's so influential in our biology and it's what we call a gateway behaviour, which we can unpack a little bit. But what we now understand is that every time you're exercising, so you're contracting your muscles and it doesn't matter whether you're walking, running, lifting weights, dancing, doing housework, gardening, those muscle contractions produce these chemicals called myokine. These are messenger molecules that are a type of a cytokine, which you don't know what they are, but they are messenger molecules and they're called myokines because they're produced in muscle. And what we now know is that these myokines actually get out of the muscle and they have a positive impact on every single organ and every organ system in your body, including the brain. Right.

Paul Taylor *[00:07:20]* And so we... First myokines was identified maybe 50, 60 years ago, and we knew for years that these myokines would help the muscles become bigger, faster, stronger. That would help it to, you know, turn glucose and fat into energy and then become bigger, faster, stronger. And we have now identified, Ron over 600 myokines, and we only know what 60 of them or so do. But we know they improve the health of your immune system, your gastrointestinal system, help your pancreas to secrete insulin, your liver to dispose of glucose. They remodel your blood vessels and they remodel your bones throughout your life. And then in the brain, these myokines trigger the release of BDNF that helps you to create new brain cells and connections between brain cells and actually minimises the damage from head trauma and stress. So all around the body, these

myokines are doing wonderful things. And here's one of the issues. When people get to their seventies, it is not unusual for them to have lost 50% of all of their peak muscle mass. So this is like you start off in your twenties and thirties with a full dose of the world's best medicine, and by the time you're 70, you're down to half a dose. And it's been shown and there's Bender Petersen is a legendary exercise physiologist and Saltin who... They both are Scandinavian they have... They released a research paper showing that exercise can prevent and or treat 26 of the most common chronic diseases. Can you imagine if the pharmaceutical industry created a pill that could do that? How much would this thing sell?

Dr Ron Ehrlich *[00:09:17]* Hmm... Well, I mean, you know, I think part of the pharmaceutical industries business model is that we don't hear these kinds of stories or at least engage with them as much as we should. But it's such a compelling, compelling argument on so many different levels. And I must say, these myokines are, you know, I mean, I've heard of some of the myokines as individuals, but I've never heard the word put together like I've heard cytokines, myokines. Yeah. Really. When I was reading your, your wonderful book, death... death by... Death by Comfort, you know you go into those there and of course the BDNF for our listener?

Paul Taylor *[00:09:59]* Mm-hmm. Brain-derived neurotrophic factor and neurotrophic means nerve growth. So we know... I know Ron said that the prevailing thinking used to be until 1997, the thinking was you're born with a heap of brain cells and all that happens is progressively you lose those brain cells throughout your life. We now know you can create new brain cells even in your nineties if you have BDNF. And the best source of BDNF is physical activity and it is related to exercise intensity so and BDNF peaks at around lactate threshold. Right. So that's where you're accumulating lactic acid and a lot of people will know of that more people will know of the feeling that heaviness you get in your arms and legs when you're exercising intensely, it makes you feel a little bit sick sometimes if you have a lot of it and your brain and says, "Why are we doing this shit? We can just stop here, right here, right now." Right. That is lactic acid. That's uncomfortable, but that is when BDNF peaks. Right. And really interesting studies on rats showed that you put them in a water maze and rats do not like water, so they try very hard to

get out of that water maze and then older rats don't do as well as younger rats because of cognition at those drops in cognition. But then when they put the older rats on a running wheel and then pop them in, they do as well as the younger rats and it's because of the spike in BDNF.

Dr Ron Ehrlich *[00:11:37]* And it's so interesting to hear you say we lose 50% of our muscle mass by the time we're 70 because one of the most common I think, causes of death really are falls and fractures and falls as we get older. So...

Paul Taylor *[00:11:52]* Absolutely. And yeah, it is the... They are the sixth biggest killer of people the age of 65 is falls. And the fifth biggest killer of people the age of 75 and older. And you know what? Why we fall Ron, so preferentially we lose our fast twitch muscle fibres. So they're the explosive ones that are to do with quick movements and I used to certify personal trainers, and I would always say to personal trainers, when you're training older adults, the most important thing to focus on is muscular power. And people say, "But isn't that just for athletes?" We think about power. I don't pronounce that word very well that power equals work done divided by time, taken force times distance divided by time. So that can be moving a heavy weight reasonably as quite slowly or a lightweight quickly. So if you trip that ability to quickly put your hand out or put your foot out and recover your step requires those fast twitch fibres. They're the ones that we lose first. So then when we trip, we fall over and often we break a hip or we break a pelvis, and you've got a 50% chance of being dead within a year. If you're in your seventies and you break a hip or pelvis. And it really is shocking. And the other thing about sorry, the only other thing I'd say about losing that muscle mass is that when you lose the muscle mass, you start to lose your independence. So you see a lot of old people, they walk around the street and they're very unsteady on their feet, and it's because they're losing that muscle mass. And then maybe they have one fall and then they withdraw. They don't go outside and then their brain really atrophies. Because when you're not out interacting, you know that is terrible for the human brain. And they lose more and more of that independence. They're socially withdrawing and a lot of it is precipitated by that loss of muscle mass. And so I am... I'm so passionate about people maintaining it. And when people get to our age Ron, you know,

once you had north of your fifties, one of the most important things you need to do is lift heavy shit. That's what I say to people. It's like resistance training is most important for older adults. The people who do it tend to be younger males, the people who need it are all older adults.

Dr Ron Ehrlich *[00:14:21]* Yeah, well, that was going to be my next question because I think the argument for or the case for doing exercise is so compelling for so many reasons, but... Then we get into the type and quantity and what is age-appropriate, what are some of the things we should be focusing on, what some of the exercises we should be doing? And you mentioned weight as we get older, but how does... How... Tell us type in quantity and quality, you know what we should be doing.

Paul Taylor *[00:14:53]* So, look at it... It's very individualised. And so if we're thinking about our longevity and health span, which I'm sure a lot of your listeners are very into, and that's what I want. I want to live into my probably early nineties and be active at that day and then go to bed and not wake up. Right. That's the ultimate way to go. Not living the last 10-15 years with a whole heap of chronic disease. So if you want to do that, one of the most important things is regular exercise. So we know the single biggest factor in longevity is your cardiorespiratory fitness, right? So... And it's been shown that the elite people in their fifties with the late levels of cardiorespiratory fitness have only got a 20% chance of dying in the next 15 years compared to those in the low-fat category. Right. So this is the most important thing is to have good cardiovascular fitness and anybody who's got any type of a smartwatch and they will measure it with pretty good accuracy. So for me, it's a combination of cardiorespiratory or cardiovascular training. Cardio is what a lot of your listeners will be familiar with and strength training, and especially as you get north of 50 and 60, a bit of balance training as well. And you can combine those like if you're doing, I recommend that everybody above the age of 50 is doing 2 to 3 full body resistance training workouts a week, just circuit based training that will give you really good strength, that will preserve your muscle, but it will preserve your function. And then 2 to 3 dedicated cardiovascular sessions a week. And look, a lot of the research is now talking about zone two exercise and which is... It's actually related. They talk about heart rate and it's generally 60 to 70% of your max heart rate. But unless you know your max heart rate, heart rate

training isn't great, right? The... It's really about where you start to accumulate lactic acid and it's just staying under that. Right. So the best thing I'm into practical stuff. This is where I can call you up. You're on an exercise bike or you're outside exercising and I go, "Oh, you're exercising. Aren't you, Ron? Because I can tell because your breathing's a little bit laboured, but you can still hold a conversation, right?" So if you can't hold a conversation, you've gone above that. So doing a fair chunk of that is actually good because it helps with your mitochondria, the little batteries of your cells and doing one or two high-intensity interval training. And this is the stuff that is difficult psychologically, physically it is difficult. That is where you go very, very hard for a short period and then you back off. So you can either do depending on your fitness levels and you go hard... As hard as you can for 3 to 5 minutes and then back right off for a couple of minutes and then do that 3 to 5 times, depending on your fitness level. And it's uncomfortable, but it is a really quick way to improve your fitness level. Or you go hard for 30 seconds to a minute. Yeah, back off for about the same amount of time and then you repeat for about ten of those intervals and you can do this on an exercise bike, you can do it walking and if you're unaffected condition, you can do it running, you can do it on a rowing machine. I think any type of cardio equipment, you can do that. But it is about getting yourself right up to that 80 to 90% plus of your max heart rate, where it's basically, you know, the best thing for people is perceived exertion. So out of ten naughties, I'm sitting on the sofa, ten is, oh my God, I think I'm going to die. Right. So you need to get up around that eight or nine where it's really uncomfortable.

Paul Taylor *[00:19:07]* Now, if you are over 50 and you haven't exercised for a while, let's go in and get some medical clearance before you engage in that sort of stuff. But they actually do high-intensity interval training on cardiac rehab patients these days. Right now, they're being observed under exercise, but are being observed by a physiologist or some sort of a physician. But and, you know, we can't all do that. And, you know, an easy way to do it just for the lay person is go out tonight for your walk. So depending on your fitness and it's all about lampposts. So between the first two lampposts, you walk normally and then between the second two lampposts, you walk really fast. If you're not that conditioned or you run, if you're if you're well-conditioned and then you walk between the next two, then you run. Right. And look, it

depends on your starting fitness level. For some people, they're not fit. They'll have to walk two lampposts and then run between the next one. And so it's just all about that. And as you get fitter, you'll find that you might start off with a bit of a shuffle. And then as you get fitter and fitter, you're running faster, you're actually breaking into a run and then you're going faster and faster. So I love the idea of lampposts and just, you know, measuring it and seeing, seeing how far you get in a certain time because that gives you feedback that, hey, this is working and you know, the brilliant thing. Sorry the last thing Ron, the biggest impact on longevity is going from the lowest 10% of fitness to the lowest 20%. So just moving up that one category is the biggest impact that you can have on your house. So it's great news for people who are sitting on, Oh shit, I haven't exercised for a while. You know, unlike a lot of people like that, anything they do, they're going to move the needle really, really quickly.

Dr Ron Ehrlich *[00:21:07]* Yeah. And once you have moved that needle, you can't help but feel better and it encourages you to maintain it. And I love that walk, run. Oh, I actually think the Walk Run is a really interesting and great exercise to do because it's so achievable and so adjustable according to your fitness level. And it actually goes with... Going back to our hunter-gatherer times, you know, running for 20 kilometres or ten kilometres was not what we did. I don't think. I think we did it in short bursts and kept on going, walking down our prey and eventually wearing them down. That's what's interesting. It's interesting is that when you. Talk about genes not having changed for 40,000 years. That is genetics but epigenetics is how those genes express themselves and I think that's where we've really come off. That's why we were in so much trouble, because the genes may not have changed, but the way those genes express themselves has. And that's what we've got a lot of control over, hasn't it?

Paul Taylor *[00:22:09]* Yeah, whole... hundred percent. I often talk about the big five in terms of gene expression. So this is stuff that affects how your genes express themselves every single day. Yep. The first one is movement, and we've talked about that. So the amount and the intensity at which you choose to move on a daily basis. The next one is what you choose to put in your mouth. Several, if not dozens of times a day. Most people don't realise that everything that goes into mouth affects their gene expression. And then the third thing is how you choose

to view and deal with potential stressors in your life. And I choose my words very carefully there. And then it's about what you choose to do about sleep and sleep hygiene. And then the last one that's come to the four more recently is all of the social interactions. And we know that being lonely is about as bad for your health as smoking 20 cigarettes a day.

Dr Ron Ehrlich *[00:23:09]* Yeah. Which kind of puts the whole lockdown story that we all endured into a broader perspective. Interestingly, you know, when we talk about sleep, we talk about the two drivers of sleep, which is sleep pressure and circadian rhythm. And sleep pressure is driven by adenosine and adenosine is the ATP that is produced when you exercise so... You know, it's all connected, isn't it?

Paul Taylor *[00:23:35]* It is, and the research shows on that exercising in the morning has a bigger positive impact on your sleep that night than exercising any other time during the day. And you know why I like morning. You do it in the morning. It gets done. Like how many people have the best intentions of exercising after work and then life gets in the way. So I would say to people, get your baseline stuff done in the morning, and then anything else you do later in the day is bonus stuff. But we can't leave the exercise thing without talking about the importance of movement snacks. I recently did a podcast on. Basically, are you active but sedentary? So what has been shown is we've separated those things out that people can be meeting the physical activity guidelines, but they're sitting for ten, 12, 14 hours a day and it's really bad. So these are now two independent variables so you can be active. I said, I'm heading those though those recommended amounts, but I'm sedentary because I sit a lot of I have a desk job or you can be inactive and sedentary or inactive, as in you're not heeding the guidelines, but you're moving lots through the day, but you're not accumulating that amount of exercise. It's really, really important. Not only do we have those physical activity guidelines of a minimum of 150 minutes of moderate or 75 minutes of vigorous, and by the way, their baseline and but also...

Dr Ron Ehrlich *[00:25:08]* That's per week, Paul.

Paul Taylor *[00:25:09]* That's per week.

Dr Ron Ehrlich *[00:25:11]* 150 of moderate...

Paul Taylor *[00:25:13]* 250 to 300 of moderate or 75 to 150 minutes of vigorous. Vigorous is a two-for-one and spread over at least five sessions and incorporating at least two strength training sessions. Thankfully, that is and I come into the recommendations because they've realised not the importance of it, that next to your cardiovascular fitness, the single next biggest predictor of how long you're going to live is your muscle strength, right? So that's why I say you've got to lift heavy shit and... but it's these little movement snacks that we do throughout the day, right? So right behind I don't know if I can tilt this, although you can see my kettlebells and club bells sitting right behind my desk. So every half hour or so, I get up and do some kettlebell swings and do some club bouts. Right. Now, if you don't have stuff, you can get up and your listeners can do this, pause this now and sprint on the spot as fast as you possibly can for 30 seconds and just see the impact that that has. So let's say I'm having a stressful day. I'm sitting. All of these stress hormones are being released. What are they there for? To help you to fight or to run away? And when you don't move, that's when they build up and it switches that it flips the switch to cortisol, which can be really, really bad for you. But if you get up every half hour or so and do a short burst of intense exercise. You burn up those stress hormones. Now, not only do you do that, but you increase blood flow and oxygen to your brain that makes you function better. So it means that you're actually more productive. So it's a win-win. So I really can't underscore the importance of breaking up sitting. And you will accumulate a massive amount of physical activity over the year. If you're just doing 4 to 8 little 30-minute, 30 seconds to one-minute shot snacks of exercise throughout the day, every day, it will have an amazing impact over your lifetime.

Dr Ron Ehrlich *[00:27:25]* So say again how often? You know, we're sitting at a desk for hours and hours on end. We shouldn't be doing that every 30 minutes.

Paul Taylor *[00:27:32]* Ideally every 30 minutes, you're getting off your back and moving. Right. Worst case scenario, every hour. But we know, Ron, that after about 25 to 30 minutes of sitting, there are significant changes in gene

expression that impact your blood glucose, your blood pressure and your brain function. So it's just getting up and moving. Ideally, at least every 30 minutes.

Dr Ron Ehrlich *[00:27:53]* I love that. I love that movement snacks. We're encouraging you to snack with movements. And just to give our listener a little bit of a guide on strength. I mean, push-Up is a strength exercise?

Paul Taylor *[00:28:05]* It is push-up as a strength exercise. And you can absolutely start with that. You can start with, you know, if you don't want to go to the gym, you can start with push-ups, you can do squats, you can do push-ups off a table if you're not that strong. And if you haven't done a lot, you know, that will just start to develop your strength. But at some stage you then lead to add in external resistance. Right. And you know, you can buy yourself something like some kettlebells and a TRX, one of those suspension trainers where you can do hundreds of exercise. You can get yourself a very cheap home gym if you don't want to go to the gym and then you're out walking, running, walking fast, uphill, all those sorts of things. You know, you don't need to spend a lot of money on this stuff. You just need to get creative.

Dr Ron Ehrlich *[00:28:52]* Yeah. At the risk of borrowing a term, that's just do it. That's basically it, isn't it? Just do it. It's the sort of thing that, you know, you never regret. You never regret having done exercise.

Paul Taylor *[00:29:04]* And here's the thing. Here's the thing, Ron. When people and there's a lot of people who are sitting waiting for the motivation fairy to come along and give them a big dollop of motivation that just do it, saying what we know, motivation follows action, not the other way around. When your brain knows that you are in forwards motion towards a goal, that is when it releases dopamine. And dopamine is the chemical of motivation and goal-directed behaviour. Right? So it is really key that we are doing stuff on a daily basis in here right beside my desk. Here for the listeners who are watching this. This is my ritual board. Right. Checking off stuff so I've got stuff on here. Doing a workout five times a week, right. And doing a mobilising... That's a bit of mobility stuff. I zoned to run. I've got a

V02 session, which is the hard one. I've got meditation, I've got sauna, I've got dips, you know, just doing those little things and lots of those little reminders, you know, taking my supplements so that it's there. It sits right beside my desk and it's a trigger. It's a reminder to do it. And then whenever I take it off, it gives my brain feedback that I'm achieving, which then releases more dopamine to do it again.

Dr Ron Ehrlich *[00:30:29]* Fantastic. Fantastic. I love this cut. You know, this is what I loved about meeting you, Paul. You know what a combo neuroscience with exercise and nutrition. I mean, you know, you covering all the bases you talked about, you mentioned the word gateway behaviour. And I just wanted to just hear a bit more about that. Well, give us some examples. What is a gateway behaviour?

Paul Taylor *[00:30:51]* So what appeared in the literature from the sixties onwards as they started to notice that when unhealthy people, when they would engage in an exercise program and maintained it for 3 to 6 months, they started to then adopt healthier behaviours, right? So they started to maybe reduce or stop their smoking or their drinking or improve their diet or their sleep. And psychologist had a field day on this. Right. They said it was all about self-concept. So initially I have I'm Paul. My self-concept is I'm a bit of a slob and I'm hard-drinking, you know, eat crap, that sort of stuff. Then I start to exercise and all of a sudden I've got another self-concept that, Oh, I'm now fit Paul who exercises and now I've got tension in my brain about my self-concept. So I need to resolve that tension. So one of two things would happen. I'd stop exercising, so I'd revert back to my old self-concept or I'd start to adjust those other behaviours that were more in line with fit and healthy Paul, then neuroscientists came along and imaged the brains of these people pre-before and after and find that volume grows in the frontal lobes. Preferentially the right frontal lobe, which is the seat of willpower in the brain. So they... Now we're actually seeing the neurobiological reason why exercise is a gateway behaviour. Because every time I'm exercising, I'm doing it regularly, I'm building up that strength, that muscle, that willpower muscle. So I know I have more willpower to be able to affect my diet or those sorts of things. And the real answer might be a bit of a combination of both of those things. But we see it consistently and this is why I always say to people, start with exercise. You want to get healthy?

Diet yes, has the biggest impact on weight loss. But if you want long-term stuff. Train your brain first, get your brain in the right step, build your willpower muscle in your brain, and then start to tweak your diet and stuff like that. That would be my advice, just based on the research.

Dr Ron Ehrlich *[00:33:17]* I love that and I love that gateway behaviour as well. You know, one of the things about stress is that we engage with it every day, and I know we talked about this a few days ago, but intentional stress, building stress intentionally into our lives has a really positive effect. And I wonder if you could just share with us what some of those effects are and what some of those intentional stressors could be.

Paul Taylor *[00:33:46]* Yeah. So that a lot of things with people, particularly nowadays who are a bit more sensitive to stress. Often it's just avoidance behaviours. Right. There's a lot of people who talk about resilience and self-compassion in South Korea and I go yet necessary but not sufficient. You have to earn it as well. Right. And it's this idea of the stress fitness continuum. In order to build your stress fitness, you've got to expose yourself to it. Right. You want to get physically fit. You got to expose yourself to exercise. It's as simple as that. And when you understand the biology and the neurobiology, that... And there are a few things that are very, very strong in the literature as what we call hormetic stressors that are evolutionarily conserved and what that means is that you see positive impacts across timelines of evolution and across different species. So fruit flies, worms, rats, mice, monkeys, dogs, and humans all adapt to the stress of exercise and become better because of it. They also all adapt to cold exposure and heat exposure. And the one thing that they have in common are things called stress response proteins that whenever you exercise vigorously are expose yourself to cold water, whether you're getting in an ice bath or just doing a coach are getting in the cold ocean. And also, we know, I know getting in a sauna or a really hot bath for about 20 minutes, you activate these heat shock proteins they're called, and they get inside your cells and they look for damaged proteins inside the cell and they fix the damage. They're like the janitors of the cell. But then they trigger the release of a whole host of metabolic priority genes, that these are genes that are activated in response to stress that actually makes you better. Right.

Paul Taylor *[00:35:53]* They make you be able to handle stress more and they just basically toughen you at a cellular level. And then we get these other things released called mitochondrial enzyme genes. So your mitochondria, they're like the batteries of your cells. And so we see that with exercise, with heat, with cold exposure, you get improved function of your mitochondria and even mitochondrial biogenesis, which is a big mouthful. That basically means brand-spanking new batteries for yourself. So we actually now I can describe the changes in gene expression that are positive that by small intermittent and exposure, deliberate exposure to these hormetic stressors. So hormesis, just to define that is sublethal exposure to stressors or toxins which at high levels can kill you, but at low levels, low to moderate levels induce stress resistance. Right. And that's really key. You've got to expose yourself to that in order to become resistant to it. What's the best therapy for anxiety? It isn't avoidance. It's exposure therapy. Right. You gradually expose yourself to the stuff that makes you anxious. You build up a tolerance. You build up your stress fitness. And so these are things that with all our new environments and remember, the last 30 to 50 years, is that the blink of an eye in the timeline of evolution. We're not exercising anywhere near as much as our ancestors. And we know this from looking at hunter-gatherer tribes that live today like the Hadza. You know, they move to between two and ten times the amount of people in modern societies, particularly when you talk about intensity. So we are not exposing ourselves to the stress, the beneficial stress of exercise. We're not exposing ourselves to those temperature extremes because we live in these thermal-neutral environments. And that's why I talk about death by comfort. So it actually gives us a soft underbelly when we actually need toughening. And you know what? One of my favourite quotes is from the Greek philosopher, stoic philosopher Epictetus, and he said that we must all undergo a hard winter training and not enter in lightly for that for which we have not prepared. And he was actually wasn't talking about battle. He was talking about life.

Dr Ron Ehrlich *[00:38:26]* Mm hmm. Yes. And which... Which, you know, so we are so ready to acknowledge that stress is a part of our modern world. And yet the paradox is if we introduced stress intentionally into our daily lives, of which exercise is one example, cold. I mean, how simple is it to turn on a cold tap and stand underneath it for 60 to 90 seconds and actually...

Paul Taylor *[00:38:53]* Physically, it's very simple, you just turn it. Psychologically, it's difficult. Right?

Dr Ron Ehrlich *[00:38:59]* And it's empowering. It's empowering...

Paul Taylor *[00:39:01]* It's empowering. And this is why I'd like to position it to people. Ron, Every time you're engaging in vigorous exercise, and that's all relative to to your fitness level, right? So you're getting uncomfortable or that heat from the sauna or a hot bath or the cold exposure, your training, your stress response system. This is what I want people to understand. You're training it, the ability to remember my definition, to engage, maintain, and then disengage the stress response system. That's the thing. And the research shows people who are fitter handle psychological stress better.

Dr Ron Ehrlich *[00:39:41]* Yeah. No, no, terrific. I love that. And now, you know, another hat that you wear is the nutrition one, and you've kind of alluded to it. And I think, you know, well, I heard you talk. I used this expression, the HI diet. Mm hmm. Tell us about the HI diet and why we should avoid it.

Paul Taylor *[00:39:59]* Yeah. So here's the thing. It doesn't matter. There's all these diet wars out there, right? And, you know, vegetarian, vegan, carnivore on the other end, Paleo, low fat, high carb, high fat, low carb. And the... I like to simplify things. Most people have heard the GI, the glycemic index. And because I think the most important rule is to either low HI diet where HI stands for human interference. And how it works is you look at a piece of food if you can recognise that it has been alive recently. See, they're grown out of the ground off a bush or a tree to run around them for legs or it swam recently and it's been minimally interfered with by humans. Eat it. It's fine, but if you're looking at a piece of food and you're going Mister Krispy Kreme doughnut, I don't remember seeing you running around on four legs, then it's in your treat food. So I'm not saying you should never eat this stuff. 80-20 rule is the one that goes with that, and most people get that right. 80% of the stuff that you eat on a daily basis should have been alive recently and minimally interfered with by humans. And the other 20% is your treat food. And if your treat food is ice cream or

chocolate, it doesn't really matter a burger, buy by the best damn quality that you can afford and enjoy it guilt-free, savour it in the knowledge that 80% of the time you're eating real food. How do I know if it's real food? It doesn't have ingredients. It is ingredients. And this actually I've been talking about this for more than a decade, and it's actually been backed up by recent research that's come out of the University of Brazil called the Nova Classification of Foods and classifies foods into unprocessed, then processed culinary ingredients you used to cook with, then minimally processed foods such as canned fish and vegetables, artesian bread, yoghurt, milk, that sort of stuff, minimal processing. And then you have everything else that's ultra-processed. And the research shows that for every incremental amount of ultra-processed foods in your diet, your risk of pretty much every single chronic disease, both physical and mental, increases very significantly. And when people get to about 50% of their calories from ultra-processed foods and they increase their risk of all-cause mortality by 62%, that's like smoking 40 cigarettes a day, if not worse. Right. And you know, the scary thing, Ron, Australia, New Zealand, United Kingdom, Canada and the USA all have more than 50% of calories from ultra-processed foods in a population. The United States is the worst 66% of kids. I say 66% of all calories consumed by US kids and teenagers are ultra-processed crap across a population. It's 59%. And that was years ago. And it's getting worse. And that is the major role of people. Just follow that rule. Don't worry about the bloody fat, the carbohydrate, the protein. Just eat real food.

Dr Ron Ehrlich *[00:43:09]* Yeah, yeah. No. And I think that finding out what your percentage is or not finding out, but establishing it and sticking with it, I think 80-20 is a good number. I know in my own life when I've really been on fire, I've been a 90-10 kind of person. Yeah. And when I have on the rare occasion been 100% to my family, didn't really want to have anything to do with me and I didn't have my friends left either.

Paul Taylor *[00:43:34]* That's the thing, you know, people can go to extreme on food. You still need to enjoy food. And you know, there's a new condition Orthorexia, which is around obsessive exercise and eating. And that's not good for you psychologically either. Not good socially as well...

Dr Ron Ehrlich *[00:43:52]* Well that's actually.... We've talked about exercise coming back to that just for a moment because you can overdo it as well. I know that's not a problem for too many people. Yeah, but I know, for example, a friend of mine who in his... Just turned 60 and he started to get into triathlons and I just shook my head and I actually... I was his dentist. And I could see that his actual oral health was deteriorating because of this extreme form, which, I mean, you go off, you do a 3.6-kilometre swim, a 160-kilometre bike ride, and then just finish it off with a casual 42-kilometre marathon. It's just, you know, we can not do it...

Paul Taylor *[00:44:39]* Yeah, we kind of... The research has no bearing that out. And particularly endurance athletes like triathletes and marathon runners can actually damage their hearts and start to negate the longevity benefits of exercise. Now that is a very small percentage of the population and, but... And it's hard to work out exactly what's optimal in terms of exercise because really hard to do those studies. We're kind of left with observational studies and... But it would seem to be from a whole heap of observational evidence that more than 10 hours of exercise a week, you start to lose those gains. Right. And but that's a pretty extreme amount and maybe we're starting to see now I think it's going to be another 10 to 20 years with stuff like CrossFit athletes who people who are doing like an hour a day of really high-intensity resistance training. They may also be creating some damage because what you tend to see in this, this stuff of athletes where they get atrial fibrillation, which is a kind of fluttering of the heart and not good for your longevity. Endurance athletes and people like rowers who do the repeated sets of high-intensity work, right? So and it just seems to be a bit too much stress on the heart, you know, And the heart, like any muscle, will take a fair bit of stress and will get bigger, faster, stronger, better. But there's a point where it starts to be overdone and it kind of we have sort of like white flag.

Dr Ron Ehrlich *[00:46:22]* And I think there's a paradox, too, about you can be cardiovascularly fit, but your immune system could be compromised.

Paul Taylor *[00:46:31]* Yeah, that's right. You know, we know that with that chronic stress and exercise is a source of stress. That's why it's good for it. But this is hormesis again. So all hormetic medic stresses follow this curve, right? It's Goldilocks curve. Can't be too much. Can't

be too little. It's got to be just right. Right. So you can... Or even good things. You can overdo cold exposure. You can overdo it. Right. The heat exposure. You can overdo it as well.

Dr Ron Ehrlich *[00:46:56]* Yeah. Yeah. And I think intermittent fasting comes into that hormesis...

Paul Taylor *[00:47:01]* Yes, it does. Yeah. Yeah, it does. Now, really interesting and is... And the answer to your question of should I fast should always start with it depends. So depends where you are, what stage of your life and what your health is. Right. So if you're metabolically unhealthy, if you're overweight, you've got diabetes, those sorts of things. Regular intermittent fasting is really, really good, right? However, if you are pretty fit and healthy and some people may include this, I've stopped intermittent fasting is that I was starting to lose muscle so it can actually create you to lose muscle. So it's all about, you know what? Where are you right now? What are your goals? And that should dictate whether you do the stuff and how often and how much you do this stuff. Because we know that some of that intermittent fasting can eat into your muscle mass, and particularly as you get into your fifties and sixties, you got to hold on to that muscle mass. However, if you've got diabetes or you're really overweight or got other issues, that then becomes a priority. And there are certain things that you can do, like if you're lifting weights while you're doing it, you're going to minimise the muscle mass loss. So it's always just kind of be aware of this stuff in the background. If you're in your thirties and you're overweight, you need to lose weight, bonk and knock yourself out. All right. But you should always add in any type of restriction of calories. You should always be doing resistance training because that will attenuate minimise the loss of muscle mass.

Dr Ron Ehrlich *[00:48:43]* Yeah. It's interesting too, that use... That we've said strength training becomes more important as we get older, but also so does protein consumption, doesn't it?

Paul Taylor *[00:48:53]* For sure.

Dr Ron Ehrlich *[00:48:54]* I mean a gastroenterologist, a colleague and...

On our advisory panel and an integrative doctor, I used to... Suggested that this was really important. I'd always put a figure of about 0.8 or say one gram of protein for every kilogram of weight as a guide, but I was told that could actually be too low. They were thinking more like 1.4, 1.5 grams per kilogram, which really takes some doing.

Paul Taylor *[00:49:25]* Yeah, and this is the thing, right? So as you age and muscle protein synthesis becomes less efficient, so it's harder to recreate muscle, right? And when you're asleep at night and you've you're not eating for hours and your body is tearing down your muscle to provide amino acids for your organs, because amino acids are the building blocks of life, people don't get this. Me and you Ron, could now stop eating carbohydrates completely and we would be fine in 20 years time. As long as we are covering the nutrients. Right? We could stop eating fat. After a few months, we'd start to see some issue. But you stop eating protein completely, you'll start to see issues within days and within weeks you start to fall apart. Right? So protein has been an underappreciated nutrient. These RDA, the recommended daily intakes, were never designed to be optimal. This is what people don't realise it was how much do you need to avoid a deficiency? And they didn't take into account the fact that when we age they didn't understand that they had that muscle protein synthesis ability declines. The now the recommendations are 1.6 grams per kilogram. That's the one I...

Dr Ron Ehrlich *[00:50:45]* 2...

Paul Taylor *[00:50:46]* Up to over 2.2, right? And that is a lot of protein, as you pointed out. It's a bucket load of protein. And then if you're vegetarian or vegan, you've got to be really careful about your food combinations to make sure you're getting the entire amino acid profile. So I think particularly when we know frailty and sarcopenia loss of bone and muscle is a massive consideration. We need to be upping the amount of protein for older adults. And then when you look at older adults, they eat less protein and they end up in a home, a residential home. The protein is super low. Why? Because it's expensive. So they don't feed them protein and then they lose muscle and bone at an accelerated rate. Then they lose daily function. Then they just sit in the room and then their brain declines rapidly and so it's again, it's another gateway thing.

You need to be able to ensure that you're keeping your body strong and functional. Right? If you don't think about strength, think about daily function and your eighties. Do you want to be able to pick your grandkids up? Do you want to be able to go and travel independently and lift your suitcase and put it above? And the Europeans, you want to be able to walk up and down stairs, get in and out of cars without anybody helping you? Well, if the answer is that to this, then you need to work on muscle now. A big part of that is making sure that you're having adequate protein amounts. And so I would say the bare minimum is 1.5 grams per kilogram, particularly if you're over 50.

Dr Ron Ehrlich *[00:52:22]* Yeah. Yep. Totally. I so agree with that. Not, you know, that was a real aha moment for me about five years ago when someone said that to me and I and it's a really important focus now listen...

Paul Taylor *[00:52:34]* Ron, this one little rider that nobody talks about here, even the experts in protein, that if you're significantly overweight, don't use that weight used what a healthy weight would be for you, right? Yeah. So I'm 90 kilos. I know that this is a good if I was 20 kilos heavier, it wouldn't be 1.5 of 100 kilos that's 150. It'd be 1.5 of what my ideal weight is 120 grams. Right. Per day. So that's just one little rider for people who have significant extra weight on them.

Dr Ron Ehrlich *[00:53:10]* Yes, that's a good one too. Now, listen, you're doing your PhD in stress... Well, stress resilience, Resilience 2.0. What have been some of your... I mean, you're doing five different research articles. I think that's how the PhD goes... Some of the things you've been working on that you could share with us, you know?

Paul Taylor *[00:53:31]* Well, I just published my first paper and looking at... We took a bunch of naval aviators and frontline guys in a weight squadron. They were basically helicopter support. So they had everything to do with the floods in New South Wales years ago. Then they had the fires as well and massively overworked, overstressed. We went in, ran a resilient mind program was 3 hours of of psycho-physiological education, the sort of stuff we've talked about today. And then they went on my app for four weeks and we measured their mood to mental well-being. We measured their

resilience and their risk of burnout, and we had statistically significant improvements in all three of those things, which was great to see this working in a... An elite high-stress profession. So if it works on those guys, then it's going to work on, on everybody really. So my next study is diving a little bit deeper into that and actually looking at heart rate variability under stress. So that is basically the best measure of your autonomic nervous system. So there's two parts that are sympathetic and your parasympathetic nervous system, and it's basically looking at stress reactivity. And is there a biological signature of stress fitness? So we're going to we're going to we're developing a stress fitness questionnaire and we're going to test that against a biological signature of it and then performance outcomes. And so we're looking at doing a bunch of people going through military training and seeing how doing a randomised proper controlled trial, half of them getting time-matched control stuff, half of them getting the intervention. See, does it impact on their pass rates at the end as well as markers of stress, fitness, both questionnaire and physiological markers through heart rate variability, responses to stress.

Dr Ron Ehrlich *[00:55:45]* Now that heart rate variability is... I just love you to do a little bit of a heart rate variability 101 because I think it's such an important concept and people hear about it. But I'd love for you to explain it to us.

Paul Taylor *[00:55:59]* Yeah, So, so I'm going to give the pracademic version of it, right? So that people can understand. So let's say me and you have a, a resting heart rate of 60 beats a minute just to make it easy. Most people think that heart rate should be metronomic one beat a second. If that's the case, we are either not recovered from a heavy workout yesterday, are not recovered from a day of stress, psychological stress. And then if we see that over a period of days and a couple of weeks, our variability is low. So it's metronomic so what variability means. So rather than being one beat a second, maybe the first one, it's like 1.05 and then it's 0.93, then it's 0.87 is 1.1 seconds between the heartbeat. Stopping that variability in a heartbeat is actually shows and it's a measure of what we call vagal tone. And so to take it a step back from that, your autonomic nervous system has two branches and it's like a seesaw, your sympathetic nervous systems, one side of the seesaw, that's your fight or flight stress response parasympathetic we call that rest, digest, recover. So we need that to be in balance and when

we're in sympathetic overdrive, we have low vagal tone. This has to do with the vagus nerve when we're in a good step, were well recovered. We have high vagal tone and our parasympathetic nervous system is dominating. So this is heart rate variability is the best way that normal people can measure the cumulative stress load on the body. And as I was about to say then, if we see that our heart rate variability is low over a period of months and consistently low is one of the best predictors of an impending heart attack in an impending death. Right? So it is a great measure that people can use not most tracking devices. Now Apple Watch, Fitbit, Garmin, Work Band, Aura ring. All of those things will track your heart rate variability. So it's not so much the number that's important, but it's your trend over time. Now, if you get really pithy and focussed on it, it's your waking heart rate variability that's really important, right? So anybody who wants to to measure this, I suggest the cheapest way and probably the most accurate is get yourself a polar monitor. And you know, those chest bands are hits ten... Polar hits ten. It's about 130 bucks. And then get yourself a free app called Elite HRV stands for heart rate variability and you power it and then basically you will keep the chest strap beside your bed and you wake up in the morning and you put your chest strap on you start the app and you just lie there for a couple of minutes and it'll give you your heart rate variability in the morning and it land track that over time. And what you start to see is if you go and you have a few too many beers one night bomb it'll drop the next morning. Or if you've had a stressful few days it'll drop of your diet crap or your sleeps crap, it'll drop. And then when you're looking after yourself, you'll see it increase and it's really, really useful biofeedback for people just to then go mange dropping. You know what? I need to not drink alcohol today. I need to be really on my game 80-20. Maybe it's a 90-10 day and I need to make sure I'm doing sleep hygiene. I'm doing my breathwork on a made to make sure I'm exercising. So that for me is probably the best guide that we have today for people to be able to self-manage their health.

Dr Ron Ehrlich *[00:59:54]* Yeah, that's brilliant. I actually do have an aura ring, and I've noted that it's so interesting to see. I don't drink very much alcohol, but if I do, even if I have two glasses of wine in the night my heart rate variability is almost flat line, like the first for the first three or 4 hours of the night. And then thankfully, it recovers, you know, in the early hours of

the morning. And I start to see quite a range. And I'm pleased to hear you say that it's your heart rate variability in the morning. You know, because what I've noted is that it really picks up in the morning whether I've had alcohol or not.

Paul Taylor *[01:00:33]* Yeah, and look one for me... And so another really interesting thing that people can use if they have a tracker and it's just looking at your your nightly average heart rate. And I find that if I drank alcohol my average heart rate throughout the night is at least ten... Ten beats a minute more. Why? Because alcohol's a poison and you got to get rid of it. And the heart works extra hard and your sleep is disturbed and all sorts of stuff. But it is an eye opener when you look at your heart rate response at night, whether it's just your average resting heart rate or your average heart rate overnight or your heart rate variability, which is a bit more sciency, but both of them are really good indicators.

Dr Ron Ehrlich *[01:01:23]* Brilliant. Paul, we've covered so many great things here today. I knew we would. I was so looking forward to talking to you. I have so enjoyed your book, Death by Comfort. I've been you know, I've been... It's a very easy read, but it's a very powerful read. Where else could people find you? And I know you've got your own podcast as well, so tell us a bit more where people can find you.

Paul Taylor *[01:01:45]* Yeah, So, so probably the best thing is that is the podcast too. It's just the Paul Taylor podcast and that just makes it really easy. I'm also on Instagram. I'll send you the link for Instagram and my website is paultaylor.biz so anybody who wants a corporate speaker and just jump on the website, I also do have a newsletter as well so that people can go and sign up to.

Dr Ron Ehrlich *[01:02:12]* So that's Paul Taylor dot...

Paul Taylor *[01:02:13]* Biz.. BIZ. Somebody I think who makes sunglasses has got Paul Taylor dot com.

Dr Ron Ehrlich *[01:02:21]* Okay. Okay. Paul, thank you so much for joining us today.

Paul Taylor *[01:02:26]* Absolute pleasure, Ron. Thank you. And thank you for being on my podcast the other day. I said that's been a good share this week.

Dr Ron Ehrlich *[01:02:34]* Well, I told you there was a lot in there and I loved his movement snacks. You know, what a great idea. And I know... Such an important reminder because let's face it, and I need reminding of this myself because I sit at my desk too, for too long without interruptions. And those interruptions could be movement snacks. And I'm... And we need to be reminded of these things. Doesn't matter how many times you hear it. I think it's... I think wellness and health and well-being is about tapping the hoop along or the hoop being life. And that's why being part of a community I believe is so helpful, and particularly when we are subjected to the gravitational pull of culture every single day. The other thing I loved was this gateway behaviour, and that exercise was a gateway behaviour to so many positives. It's something you never regret doing. Now Paul mentioned HRV heart rate variability and he also mentioned vagal tone and vagal tone is the activity of the vagus nerve, that's the 10th cranial nerve. There are 12 cranial nerves and the vagus nerve is one of the biggest. It is the biggest nerve in the body and a fundamental component of the parasympathetic rest and digest branch of the autonomic nervous system. It's not under conscious control, although it's largely responsible for the regulation of many body functions. But we can improve vagal tone, a higher vagal tone means you've got a higher capacity to deal with stress change and challenge and a higher capacity for rest, recharge and recovery. So and of course, a low vagal tone means the opposite. So this is really a continuing theme that we're going to be exploring a lot more in the year and years ahead. And that is how we all face daily challenges. What kind of mindset do we approach those challenges with? Is it a growth mindset or is it a threat mindset? And lastly, and probably most importantly, how do we recover each and every day so we can show up the best we can be, whether it be at home or at work, to be the best we can be. So another great episode, all the links to Paul's website, his book, his podcast are in the show notes. Until next time. This is Dr Ron Ehrlich. Be well.

Dr Ron Ehrlich *[01:05:00]* This podcast provides general information and discussion about medicine, health and related subjects. This content is not intended and should not be construed as medical advice or as a substitute for care by a qualified medical practitioner. If you or any other person has a medical concern, he or she should consult with an appropriately qualified medical practitioner. Guests who speak in this podcast express their own opinions, experiences and conclusions.

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