

(TC: 00:00:00)

Dr Hazel Wallace: Hey everyone and welcome back to another episode of The Food Medic podcast. I'm your host, as always, Dr Hazel Wallace, medical doctor and nutritionist, author and founder of The Food Medic. Now, today I am super excited to be joined by Dr Marc Bubbs, who is the Performance Nutrition Director for Canada Basketball and Performance Nutrition Consultant for a portfolio of professional and Olympic athletes, preparing for Tokyo 2021. How exciting. Marc is also the author of the highly acclaimed and bestselling book, 'Peak: The New Science of Athletic Performance That is Revolutionising Sports' which highlights the tactics and strategies of elite athletes and performance staff in professional sport. His upcoming new book, 'Peak 40: The New Science of Mid Life Health for a Leaner, Stronger Body and a Sharper Mind' has actually just come out this May and Marc is also host of The Performance Nutrition podcast. So, what better guy to have on the podcast, to talk all about maximising recovery in sport and exercise. So this episode covers Marc's background on his current projects but we also talk about over training versus under recovery, the recovery pyramid, recovery nutrition, exercise and immunity, and popular recovery strategies. So, things like cryotherapy, cold and hot therapy, massage guns, CBD oil and of course, we can't talk about recovery, and not talk about sleep again. So, sit back, take notes, and I hope you enjoy this episode.

[AD break]

(TC: 00:03:16)

Dr Hazel Wallace: So, I guess, first of all Marc, I would just love to hear a little bit more about you and your background and also what you're doing at the moment, because I know you're doing some really exciting things.

(TC: 00:03:27)

Dr Marc Bubbs: Yes, absolutely. Listen, thanks for having me on and it's been quite a journey over the last, sort of, twenty years of working in sport and nutrition and for me, it was really being at university, thinking about nutrition and exercise and how it impacts health and of course, at that time, nutrition wasn't really at the forefront of a lot of people's minds, whether it was in medicine, even in sport. You know, the sport dieticians weren't even a thing in the-, this is the late '90s, early 2000s and so I pursued more studies in nutrition and exercise and worked as a trainer and started working in the field (ph 04.00), working with Canada Basketball now, as a performance director and getting our team ready for our Olympic qualifiers this summer for Tokyo 2021. And I also consult with, you know, various athletes, professional athletes, a group called Altis out in the USA, which is an elite group of sprinters and so there's that performance side of things and then work in general practice as well. So, helping people feel better and lose weight and improve their blood pressure and things like that.

(TC: 00:04:29)

Dr Hazel Wallace: Cool. And just before we started recording, we were chatting about your book. So you already have one book out. You've got another one coming out this month.

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

(TC: 00:04:38)

Dr Marc Bubbs: Yes. The first book was, 'Peak' and that was a deeper dive into athletic performance and, you know, what we see on the front lines of, again, elite and professional sport and the new book is really on the other side of the spectrum. The impetus was around a lot of the coaches and performance staff, being in mid life, and how busy and stressful things can be, and trying to find, you know, more simple rules and heuristics to guide people through that busy period and so that's where-, Peak 40 is the new book and we look at how to simplify things and support people in that really hectic time of life.

(TC: 00:05:11)

Dr Hazel Wallace: Yes. Absolutely and probably a time of life that gets less attention when it comes to sports and performance. So, it's good to have that available. So, obviously you have this wealth of knowledge that I'd love to tap into but for the purpose of this podcast, it would be great to focus around recovery from sports and exercise. And I think that's something that people really undervalue but I think, first of all, I'm just going to ask you the question. Why is recovery important? And what are some of the signs that we are under recovering or over training?

(TC: 00:05:48)

Dr Marc Bubbs: It's a fascinating area and definitely one that's exploded over the last decade, in terms of the science of recovery and when you ask researchers and recovery experts, like Dr Shona Halson, down at Australian Institute of Sport, the general working definition is that, recovery is what allows athletes to train at their highest level and also to compete, you know, at the best of their abilities. And, so, it's not just the recovery from the training session that you've just done, but also, you know, the nutrition, the recovery modalities etc. that you're going to do in order to prepare for that next session. And, so, when we look the elite side, we can definitely get into-, I mean the goal is to stress the body in training and so we elicit that adaptation and that's what we call functional overreaching, which is pushing the body just beyond what it can do, so we can elicit that positive adaptation. But, of course, we can push a little bit too far over the line and we can get into some, what's called non-functional overreaching, which is when we're pushing a little too hard and that if you do that long enough, then you end up in this over training situation where, you know, that impacts mood, immune system, energy levels, all these types of things. And that's something that we're going to, you know, see more in those elite, recreational elite, type athletes. Whereas when we swing over to the general population, it can definitely feel like we're over training but typically what we see is just under recovery.

And, again, if we think of all the things that go into someone's training plan, well, the rest of your life, the busyness of your life, how long your work days are, the amount of sleep you get, mental emotional stress, all these things add up as well. And, so, that idea of-, and since we know, you know, most of the general population, unfortunately, is getting less than seven hours of sleep. You know, I think it's up to 30% are getting less than six hours of sleep and so that notion of under recovery, is really at the crux of it with the general population.

(TC: 00:07:44)

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

Dr Hazel Wallace: Yes. That's a very good point. We often forget about the other, kind of, things that are happening in our life and the external stressors that exist as well, outside of training. So, what are the fundamental principles when it comes to recovery? I know that you talk about the recovery pyramid in your book and I think that's a really great way to frame the conversation.

(TC: 00:08:08)

Dr Marc Bubbs: Yes. I mean, when we think of recovery, I think automatically, you know, even athletes will start to think of the tip of the pyramid, which is the recovery modalities. You know, whether it's using a NormaTec or massage or hot and cold tubs, things like that, but really when we think of recovery, the idea of a pyramid, and this comes from-, I mean it's used extensively in sport, but one of the experts that I interviewed for the book, Lachlan Penfold, who was the Performance Director for the Golden State Warriors in the NBA and, of course, works over in Australia for the Melbourne Storm, you know, this idea that sleep, nutrition and mental emotional health, and that third one being something that's actually quite new in the performance space, is really accounting, you know, how someone's actually feeling, because that is a load on the body. It is a stress load and so those are really the big buckets in the base of that pyramid and if we're struggling with sleep, you know, if we're not getting that minimum seven hours, for athletes we try to push up towards that eight hours a night, or 50 to 56 hours per week, if we want to think about it that way. If the nutrition's not on point, in terms of the total energy, protein etc. If we're struggling to cope with the stressors, then, you know, it doesn't really matter at that point if you're doing hot versus cold, or these other recovery modalities, because we've missed those bigger rocks in someone's regime.

(TC: 00:09:30)

Dr Hazel Wallace: Yes. It's so important. It's very easy to get bogged down by, you know, the minutiae, which we'll come onto a little bit later on, in terms of popular recovery strategies. But focusing maybe on recovery and nutrition first, talking about, kind of, the main macronutrients, micronutrients, and then maybe some supplements that you'd recommend, when it comes to just the fundamental recovery nutrition principles.

(TC: 00:09:57)

Dr Marc Bubbs: Yes. Absolutely. I think the biggest one is just energy intake (TC 00:10:00). You know, a.k.a. calories and typically with clients, I like to reframe that conversation a little bit away from the term 'calorie', because it does bring a lot of baggage with it, depending on the individual and what not. So, when we talk about energy, I mean, yes that's the amount of fuel that we're consuming and that is the biggest signal. You know, if we think about signal versus noise, and right now we can hear each other really clearly, but if there was lots of background noise, then all of a sudden that signal isn't heard and so, when we're thinking recovery, we want that signal that's going to promote that recovery best and that really is the total energy intake. And so, again, at the highest level, if we're talking basketball players, you know, football players, etc, all that stopping and starting, accelerations, decelerations, the amount of energy required is tremendous and so you're getting up to 4,000, 4,500 calories potentially, on certain days of the week. And so that's one where, you know, if we're not eating frequently through the day, inherently anybody, if general population or athlete, if you start to get run down or tired, it's tough to-, you know, your appetite tends to follow. And so we can fall into what we call a state of low energy availability, which is basically saying, you know, 'We're not consuming enough calories to meet those demands.' and that's where things can start to go

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

wrong. We can start to experience some dips in immunity and be more immunocompromised, potentially catching more colds and flu's. You know, muscle soreness can be more prolonged. These types of things.

So, that first one's definitely that total caloric intake. From there we want to think about protein. Use the analogy with athletes, if they're a house, then the protein is the bricks and so the more active somebody is, the more bricks we're taking out of the house and we've got to put those back in, with the protein intake. And so, you know, the minimum intake being around 1.2g per kg per day and, again, when you're in an energy surplus, you can get away with that minimum. As you're training more intensely and you know, more elite athletes are getting ready for, let's say a national competition, or an international competition like the Olympics, that's when we start swinging that pendulum up higher towards that 1.6 or up to 2.2g per kg per day. Now, for your listeners who are on that sports side of things, this is where it can get a little bit tricky, because sometimes our athletes tend to focus so much on protein, that then it fills them up, right, because it's more satiating and now we can actually struggle to get enough total fuel in. And so, it does take a little bit of having that coaches eye on the nutrition intake, to be able to see generally where athletes are at. And the last one really, is carbohydrate, and that's the one that's providing the bulk of the energy, and of course, the one that online these days is the most polarising around, you know, whether it's low carb, high carb, etc. and for athletes, this can swing anywhere from 3g per kilo, all the way up to 10g per kilo, which is a massive, massive swing. And so, at that point, it really depends on the individual, the sport, if there's body composition requirements etc.

(TC: 00:12:59)

Dr Hazel Wallace: And then, I guess, moving into any particular, like, supplements that you'd recommend on top of that is-, I know that we touched on protein, as one of the, kind of, big three and I guess when you're talking about people who are at elite level, you're probably going to utilise supplementation there to make sure that you're getting good sources of protein. But is it something that you think is essential in recovery for recreational athletes? You know, the gym goers that might be listening to this podcast.

(TC: 00:13:30)

Dr Marc Bubbs: Yes and that's where, even if we circle back to the big three there. I mean, I think this is where if clients are-, you know, right now, two thirds of the population in Canada, of the US, or the UK, are unfortunately overweight or obese, and so the training is to get fitter and to build muscle but it's also to lose weight. And so, this is where we need to be strategic with trying to get into a little bit of a deficit, so that we can facilitate that weight loss, but not so much so that we then start to impact energy levels and progressions, really, because one of the things that's always tricky with clients, is we're so focused on the scale that, you know, the steeper you reduce caloric intake, the more muscle mass you're going to lose. And muscle mass weighs a lot. Right and so this is where the scale will move down but unfortunately it's not the kind of weight we're really trying to lose and with that, of course, comes glycogen and water and so really having that long view is so key, when we're looking at improving body composition and weight loss, because even if you're losing 0.5% to 1% of your body weight per week, that's a really nice clip for weight loss and it's always going to be that distinction of, you know, 'Who are we talking about in the conversation? Is it more that recreational? Or that athlete? Or is that person who is trying to lose fifteen, twenty pounds and improve their health?'

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

(TC: 00:14:42)

Dr Hazel Wallace: Yes. Of course. Context is really important there. But I guess, thinking about (mw 14.47) in the recovery period, which I guess extends in the 24 hour window anyway, is there any supplements that you think are key? Like magnesium for sleep or anything like that? Is there anything that you'd recommend for the general population or focus on food first, then worry about supplements later?

(Advert 15.07-15.37)

(TC: 00:15:37)

Dr Marc Bubbs: I think a great place to start is to think about supplements as portable nutrition. So, again, if we're trying to achieve, you know, that minimum protein intake of 1.2 or as you go up that curve, that sweet spot, where you really get the most bang for your buck without having to go all the way up the ladder, as that 1.6g per kilo. All of a sudden it makes it a much easier if you can have a protein shake, whether it's whey or plant based, it's going to give you 30 or 40g, to provide a nice dose all at once, and it's convenient and it tastes nice and so, you know, that's probably the first place to start, would be protein. And if we circle back to even dietary protein, when you increase protein in your diet, one of the overlooked things is that you then get, you know, a concurrent (ph 16.18) and increase in your vitamins and minerals. And so, it's like consuming a multi-vitamin, as you increase that intake. So, protein would be one. From there, you know, more on the athletic side, we would think more carbohydrates and that could be in a supplement form. It could be the use of things like even juice, which again this gets to be a little bit polarising, in a sense that for athletes, it can be quite essential and important, yet for the general public, we would probably tell them, 'Well we don't want juice. We don't want those extra calories. Let's consume water only.' depending on the, you know, the exercise etc. And then, you know, one that gets often overlooked really in its impact on recovery versus actually-, we always think of muscle mass and building muscles when we think of creatine, but it's tremendous for our recovery.

And so for clients who are training for a marathon or training for a triathlon or an Ironman or what have you, creatine can be really beneficial for reducing exercise induced muscle damage, for reducing inflammation, for reducing these things that are going to make it feel as though you're not recovering well and make it harder for you to get out there the next day and compete and train again for those types of long events.

(TC: 00:17:25)

Dr Hazel Wallace: Yes. Interesting. And then, I guess, before we move on from nutrition, I want to quickly touch on alcohol. I think, you know, a lot of people I know who go to the gym and even people are quite big into CrossFit and maybe compete at local events and things like that, still love alcohol and love going out at the weekends and things like that.

(TC: 00:17:46)

Dr Marc Bubbs: Yes for sure and live a little.

(TC: 00:17:49)

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

Dr Hazel Wallace: You know, you've got to live a little. Personally, I feel like as I'm getting older, I really don't recover after drinking even one or two drinks, in terms of my sleep, my heart rate and I guess I wanted to touch on that. How does alcohol impact recovery? What's happening in the body?

(TC: 00:18:06)

Dr Marc Bubbs: This is a fascinating one. With all the new technology that we have, to assess one's, let's say even heart rate overnight, because we know that alcohol is a powerful suppressor of REM sleep, which is that deeper form of sleep where even cognitively you're making all of those connections and synergising a lot of the information that we've taken in in the day, but from that central nervous system standpoint, when we look at your resting heart rate through the night. So, let's say, you know, a client might have a resting heart rate of 60, let's say and then after a glass of wine, they realise that through the night, after that, their resting heart rate was 70 or 72 beats. So, we had an increase and more demand on the nervous system and of course, it gets even more pronounced when we start to see that two or three glasses and now, rather than 60 beats per minute, you're up to 80 or 85. And so we can then really start to appreciate and clients can-, you know, it turns the lights on pretty quick, in terms of the realisation, that yes it is having an impact on how well you recover and so, you know, it's about finding that middle ground so that certain individuals who like to have that one glass of wine every single night of the week, they might start to realise. Often times when we get them to maybe try, Monday, Tuesday, Wednesday, no alcohol and all of a sudden we can stack a few nights in a row, some better sleep quality and then start to make those connections around, you know, finding the right balance, because definitely that work hard, play hard and taking the edge off in the evening with some alcohol, which we know is a nervine, so it will help to have that sensation of relaxation but of course, once we go beyond a glass and all of a sudden it's going to compromise recovery.

And then next morning, all of a sudden we're waking up, and now because we're groggy and we're slow, we're going to be looking for more caffeine. And some really interesting research out of Bath University there, Dr James Betts found that if you've had a really bad nights sleep, if you reach for that coffee first thing in the morning, it really exaggerates your, you know, glucose response and your inflammatory response. So, it's interesting how, you know, our natural reaction if we've had a bad night is to (TC 00:20:00) reach for that pot of coffee but if you can actually delay that a few hours, and maybe it's a green tea or maybe you just have a bit of breakfast beforehand, you can actually improve that response.

(TC: 00:20:10)

Dr Hazel Wallace: Yes. So interesting. You know, it's interesting that you mentioned the straps (ph 20.14). I recently only started wearing a Whoop, over the last couple of months, and during our last lockdown here, I wasn't drinking alcohol at all and then as things started opening up, I started meeting friends for a drink, here and there, and the impact it has had on my recovery and my sleep, that I'm, kind of, measuring via my Whoop, has been just every single time, you can predict that it's going to be RAD (ph 20.42) recovery. My heart rate will be higher. My heart rate variability will be lower. And so, it's so hard to ignore that data. I mean, it's kind of encouraged me to take a step back and, you know, if it's a weekday night and I know I've got a big day of work the next day, I'm like, 'I'm not going to have a drink tonight because I know it's going to impair my sleep.'

(TC: 00:21:04)

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

Dr Marc Bubbs: It's going to make it tough the next day, right. Yes.

(TC: 00:21:06)

Dr Hazel Wallace: Yes. Absolutely. And so, kind of, speaking of trackers like Whoop and I know that lots of smart watches now track sleep and heart rate and things like that, what do you think are the best strategies for monitoring recovery? Do you recommend getting these devices? Or you've seen any biomarkers?

(TC: 00:21:26)

Dr Marc Bubbs: I mean it's a great question and definitely one, you know, at Canada Basketball, we use a variety of tools over the years and so we have objective measures like the HRV or subjective metrics like just asking the athlete or the individual how they feel and it's interesting, because when we look at the science around recovery, there still is no one biomarker that's going to tell us, for certain, that an athlete's recovering. So we're always looking at this constellation of blood biomarkers to give us, you know, the best possible chance of seeing of what's going on and of course we need to pair that with the subjective perception, which is actually, pound for pound stacks up pretty nicely still, against the objective. So it's really interesting to see that we've got to marry the, sort of, art of the practice of the coach's eye with this objective data that we're also getting, and so it is valuable to know what your resting heart rate is in the morning or if people want to measure HRV, I would suggest, and when you talk to experts, like Dr Andrew Flatt, I had on my podcast a few years back and talking about whenever we're tracking, of trying to start with the question, 'Why?' Like, 'Why are we wearing this device? What is it that we're trying to improve?' So we can always have that North Star, because it's easy once we get into looking at these things, to start making acute decisions. You know, like one night of bad HRV and all of the sudden the next day we're going to change our training plan. And so, the experts recommend that we do take a couple of months and just observe. Right. See what's going on. Don't make any changes.

Try to see if you notice any patterns that emerge and they'll tend to use, if we use the example of HRV, a seven day rolling average. So you're looking at your weekly averages to see how things are playing out, and of course, you know, HRV does track nicely with longevity and so it is a valuable thing to look at but it does have a bias more, obviously towards the cardiovascular system, and endurance sport. So when we look at the data round team sport, it gets much more noisy. And so, we've always got to check ourselves a little bit, with some of these things and make sure that we're not over interpreting and I think that's probably more cause for concern in the general population I think, because at elite sport they've been doing these things for so long. It's probably one of the lessons they've learned of tracking too many things and now you see a lot of teams and organisations trying to pare that down to saying, you know, 'What are the few key markers that we really need to keep our eye on, without overwhelming even the data collection staff and everything else?' So, I find it fascinating that that objective markers and still the subjective of just asking an athlete how they're feeling or how they recover. You know, on a scale of one to ten, it's still a pretty darned good way to see how you're doing.

(TC: 00:23:59)

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

Dr Hazel Wallace: Yes. I completely agree. And just before we move on, for people who aren't, maybe, familiar with HRV or a heart rate variability, what actually is it measuring and what does it tell us? And what are some of the things that might impact it?

(TC: 00:24:15)

Dr Marc Bubbs: Yes, so HRV, heart rate variability, if you think of, if someone had a heart rate of 60 beats per minute, so that's one beat per second for a minute, there's actually quite a bit of variability between each of those beats. And so, you know, as we're more recovered, and this sounds a bit counter-intuitive, but as we're more recovered, we get greater variability and that is generally a reflection of better recovery. You know, as we're lacking sleep, as we're pushing quite hard in training or if we're not consuming enough energy in the diet, then that's going to be a bigger stressor and we start to see, you know, lower scores in terms of HRV. Now, again, on a day to day basis, there can just be some noise in there, because it impacts, you know, 'Did you get a nasty email from someone? Or did you have a tough day at the office?' or what have you. All these things can impact and so, you do have to take, you know, a longer view of it, but it is a nice thing that can collect passively these days. You know, you can just be having it on your ring or your Whoop watch and then preferably, if you have a coach or a practitioner or doctor who can help you make sense of some of that data. It just (ph 25.17) has another piece of information to add to what you have, to then say, 'Okay. What does this tell us about the individual? What is the picture that it's starting to paint?' and then we might be able to say, 'Okay, that training plan. You're pushing to hard.' or, 'Perhaps we have a lack of fuelling (ph 25.31) here or there.'

(TC: 00:25:32)

Dr Hazel Wallace: Yes. Absolutely. And then, earlier on we mentioned some, kind of, recovery strategies that people are really becoming fascinated by, at the moment, like hot and cold therapy, cryotherapy-,

(TC: 00:25:46)

Dr Marc Bubbs: For sure.

(TC: 00:25:47)

Dr Hazel Wallace: You know, the list is endless and I'm seeing them more and more and I'm being asked about them more and more, and when I told everyone that you're coming on the podcast, and we were going to be discussing recovery, these were the topics that were coming up. Like, 'Is there any evidence for this? Should I be doing this?' and so, I think it'd be interesting to go through them, maybe, one by one. Perhaps starting with cryotherapy, which has recently become quite popular in London.

(TC: 00:26:15)

Dr Marc Bubbs: Yes. Cryotherapy is definitely, you know, in the last five years, it's exploded in North America as well and this is where you're standing up in a tank and effectively being blasted with sub zero temperatures. You're getting into, like, the -100 Celsius. Now this only lasts for a couple of minutes but you do get this effect of seeing the steam rising up and so it has a real, sort of, visual impact. The interesting thing with cryotherapy is that's actually happening-, you know, that's air that's being displaced, and so when we think of conductivity, so thermal conductivity air doesn't conduct nearly as well as water and so the

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

interesting thing is, despite these really ridiculous temperatures that we're being exposed to, the core temperature is no different than taking an ice bath. And, whilst we've seen some-, there is a little bit of data that'll show three sessions, four sessions, five sessions, of cryotherapy, we can get reductions in perception of pain. We can improve things like muscular strength and you know, it's a short session. It only lasts two or three or four minutes. So that might be a benefit and at the highest level, you know, in the EPL, the English Premier League, you do see some teams that have had the cryotherapy devices. I would say, you know, the ultimate stumbling block for the rest of us, so to speak, in the general population, is the cost as well, right. So you're having to pay a lot for this recovery therapy and when we look at how it stacks up head to head against something like cold water immersion, which is, you know, that scientific term for just taking an ice bath, the ice baths tend to come out on top and you see better results around things like muscle soreness.

When we look at those biomarkers of muscle damage like creatine kinase, CK (ph 27.53), if we look at muscular power indices in various exercises, and so from a cost perspective, it's a lot more cost effective to be doing a cold water immersion and, you know, in eleven or fifteen degrees Celsius water, which the toughest part with that is always getting people to actually do it. So, I would recommend, you know, having friends or people around or making a bit of an event of it, because it's not always easy to dip yourself into those temperatures and maybe you're lucky enough to have a lake or a sea or something near you, where you can just really just run and dive in. But it does have some really nice benefits on that pain front, inflammation and when we look at cold water immersion on even mood, you know, obviously coming out of lockdown life, mental health is front and centre and that can be a really interesting way of rewiring the nervous system and helping to lift mood.

(TC: 00:28:43)

Dr Hazel Wallace: Yes. Absolutely. And there's some evidence for, you know, boosting immunity as well, isn't there?

(TC: 00:28:50)

Dr Marc Bubbs: Yes. It is pretty fascinating and actually, you know, when we look at the other side of the coin, even of hot water immersion, which is going for a hot tub which is, from a behaviour change standpoint, I'm always a little bit-, that gap's a little smaller. It's easier to tell someone to take a hot tub than it is even an ice bath and for someone that's struggling with high blood pressure or poor glucose control, that's actually a pretty nice method as well. And again, it's, you know, eleven to fifteen minutes in the temperature of 100 to 104 Fahrenheit, and you can also get some pretty nice changes. So, if someone is struggling with those, you know, that can sometimes be a place to start before they muster up the courage to go for a polar dip in the sea.

(TC: 00:29:29)

Dr Hazel Wallace: Is there, kind of, instances where you choose cold over hot? Or is it, again, down to those kind of factors that you mentioned whether it's what someone can tolerate?

(TC: 00:29:40)

Dr Marc Bubbs: Well, this gets really interesting when we get down to (ph 29.42), you know, a bit more granular around what we call periodised recovery, which is depending on where someone is in their training

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

plan, 'Do we apply cold? Do we apply hot?' Now, you know, again, for the general population, just being consistent with whatever you're doing is always the first place to start but it is interesting that we see, immediately after a training (TC 00:30:00) session, if you're adding in cold bath, that can actually blunt some of the training adaptations. So, when you're trying to build up an aerobic base or build up your training volume, you know, that's typically not a therapy you want to be going to. You want to be going to more heat based. And as you-, you know, those really quality sessions, where you're really going to push yourself hard, or competition, again if we use the NBA or the Premiership as an example, if you're playing multiple games in a week, we do need to just really blunt that inflammatory response. That's when the cold therapy can be really helpful. So, those quality sessions, those competitive, really high intensity sessions.

(TC: 00:30:38)

Dr Hazel Wallace: Yes. Okay. Interesting. And, next up I've got down (ph 30.43), like, percussive massage guns which are really trendy at the moment and I guess this is just mimicking normal massage or foam rollers, except obviously a bit more intense.

(Advert 30.57-31.27)

(TC: 00:31:27)

Dr Marc Bubbs: Yes. These are definitely popular and it's a-, you know, if you think of how foam rolling and using lacrosse balls and what not, has gained a lot of popularity over the last decade, this is almost the next level up, if you will, of just being able to sit there, relaxing a little bit, if you will, and being able to use one of these massage guns on your quads or your low back or your upper neck and traps, just to help dull some of that tonicity. You know, that tension that builds up typically for the most of us, because we're sitting all day in that position, and so we're not taking our muscles through full ranges of motions and I think people, again, obviously the day to day nine to five we feel it, but I think with all the Zooming everyone's done in the last year during lockdown, it's amplified the impact of sitting because there's no more walking to the water cooler at work or chatting with friends and standing up with colleagues. You know, you're really just almost sat for even longer periods of time and so, you've definitely seen the massage guns seemingly making the rounds more. So, those can be helpful as well. I wouldn't say they replace. You know, if you can still do a bit of mobility work, taking your body through some different ranges of motions and dynamic or some static stretching, all those little pieces really help, and the nice part is you don't have to commit half an hour to even these things. Even if you can start with five minutes and start to feel those beneficial effects, then you can start to build up from there.

(TC: 00:32:51)

Dr Hazel Wallace: Yes. Do we have any research on the effects of, kind of, massage guns versus normal massage therapy?

(TC: 00:32:59)

Dr Marc Bubbs: I mean, I haven't seen anything to date but yes I'm sure there'll be a lot coming down the pipeline. That's for sure.

(TC: 00:33:06)

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

Dr Hazel Wallace: Yes. The only reason I'm asking is because lots of the brands make big statements. I was just wondering if they could back them up but-

(TC: 00:33:14)

Dr Marc Bubbs: No, no, for sure and the benefit they always have is that initial, 'Ah' feeling you get when you, you know, when you go for a massage or use these kind of things and if people still have benefits or like to go for a massage-, I mean, the one big benefit you get with a massage, as well, is just the fact that you're basically taking a nap for half an hour or 60 minutes so you, kind of, get double bang for your recovery buck there.

(TC: 00:33:34)

Dr Hazel Wallace: Yes. Absolutely. I guess, and then the final thing that I wanted to cover, in terms of kind (ph 33.39) of popular recovery strategies, is CBD oil and your thoughts on it there. Obviously there's-, you know, CBD oil is promoted for multiple different benefits but if we just focus on recovery, because it's a minefield if we go into everything else.

(TC: 00:33:54)

Dr Marc Bubbs: Yes. No, it definitely is and I would say at the highest level, with professional sport or Olympic sport, the challenge is just in finding products that aren't potentially cross contaminated and so there's only a handful of products that are NSF or informed for sport and so this makes it challenging, even beyond, you know, and we'll get the level of evidence, but that in and of itself, makes it difficult to want to implement. When you look at, again, the research around recovery, it's still pretty sparse and unfortunately the doses that you see in the studies where there is an effect, the doses are actually quite high. You know, to the point where when you start again running the numbers of how much you're spending on the oil, then again, as a performance nutritionist, you always think to yourself, 'Well, wait a minute. If we spent that £100 on your grocery bill, what could we get in terms of the foods we could buy? And how would that impact your recovery?' and so that cost balance there doesn't really add up for CBD oil. Now I know people get excited about it and potentially (ph 34.52) really believe in it, and so if it's someone in the general population, and they feel better and there's no real potential harm, then they obviously may want to, like, give it a try but it's still really early days when we look at the research.

(TC: 00:35:05)

Dr Hazel Wallace: Yes. Absolutely. I think I, kind of, have the same line and, as you mentioned, in terms of regulation and just making sure it's not contaminated is actually really difficult because the supplement industry is very poorly regulated and doesn't go under the same stringent checks that a medicine would.

(TC: 00:35:23)

Dr Marc Bubbs: 100% and, you know, there's certain stamps of approval that people can look for with supplements and again, things like the NSF or informed for sport, but it is just really difficult then for the consumer, because it's hard for them to navigate but at least those stamps will let people know that it's going to be free of contaminants. It is, again, hard to find a CBD specific product that has those labels.

(TC: 00:35:44)

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

Dr Hazel Wallace: Absolutely. And, I guess, we already touched on sleep but I'd love to, kind of, circle back to it, because it's so important for recovery and performance and basically general wellbeing. Are there any sleep strategies that you implement with your clients or your athletes, you know, to help maximise that area of recovery?

(TC: 00:36:05)

Dr Marc Bubbs: Yes. I mean, sleep's a fascinating one, because when you go back to the middle 0s (ph 36.08) when, again, an interview I had with Dr Cheri Mah, who did a lot of this initial research at Stanford. They were actually investigating the cognitive effects of sleep extension in athletes. So, adding more sleep to athletes, how would it impact their decision making and cognitive function? And as a side effect of that, they would come into the lab with Cheri and say, 'Hey, I just lifted a personal best.' or 'I just swam a personal best.' or 'I just had to (ph 36.32) score the most points I've ever scored in a game.' and so, all of a sudden, you know, the lights went on and they said, 'What? We've got to study these performance outcomes.' And so, all of a sudden we're seeing, you know, sprint times, shooting accuracy, reaction time, all these things improving and so it is really compelling when we think of sleep is free. You know, it doesn't cost anything and then, yet, despite even the last decade of sleep science really showing us what it can do from a physical and mental standpoint, it's still difficult to actually get athletes and even, frankly, the general population, to get enough sleep because it's always that thing that just if we're struggling to get enough hours in the day then, of course, sleep takes the brunt of it. So, I think for, again this would be for athletes or the general population, is almost thinking of your sleep, you know, weekly total versus just that nightly total.

So, you know, sometimes depending on your work, or commitments at home, you can only get six and a half in one go, and despite that recommendation for seven to nine from the National Sleep Foundation, we say, 'Well, how could we squeeze some little naps in, in the week, potentially?' Even very short naps of twenty minutes or so, you're not actually falling asleep but we see that Alpha brain wave activity goes up, which is restorative brain wave activity, and Beta brain waves, which are the more stressful, start to decrease and so that's a nice way to refresh yourself and be more sharp at work or home. And then maybe on the weekends, if there's a chance to carve out naps that are, you know, longer in duration, to be more towards that 90 minute mark, you can start to add towards your weekly total, you know, combined with maybe reducing the alcohol that we talked about earlier, it's amazing how those things can really add a benefit, because I know working with clients who have young kids at home, once you start, and with young kids at home myself, once you start losing sleep for not only months at a time, but years a time, you can start to really realise the impact it has and all those effects.

(TC: 00:38:24)

Dr Hazel Wallace: Yes, absolutely. And then, I guess, finally I would love to chat a bit about whether there's any sex differences when it comes to recovery. You know, do we need to take the menstrual cycle into consideration? Do we see any changes across that, with fluctuating hormones? Or, what's the research saying?

(TC: 00:38:44)

Dr Marc Bubbs: This is a really fascinating area of research and it's amazing that it's only just coming on now, really. You know, historically, especially in sport research, the added dimension and variables of the

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

menstrual cycle was something that was-, we wanted to eliminate that, to just to be able to see what caffeine was doing to the system and so, what we get by proxy, is just all these studies on men, really. And, of course, you know, again, as a dad with three daughters at home, I think this is pretty fantastic that when we actually see what's happening in female athletes and in women's physiology, because we are seeing changes in hydration status from pre and post menses. We see, even in terms of how you might lay out a training plan. So, if you have a client or athlete who struggles with pre-menstrual symptoms, then that's potentially not a week that we want to be-, a training plan we don't want to be increasing that volume or intensity as much or we don't want to be pushing as hard, whether it's tracking body weight or progress in the gym or some of the pieces of tech that we just talked about. You know, we need to be able to give ourselves some permission to just observe what's happening in the system here, so that you can, you know, better plan month to month, because that's ultimately always the toughest thing. (TC 00:40:00) And, again, regardless if it's an athlete, regardless if it's in the general population, it's just being patient. It's just saying, you know, 'We're going to take, not 30 days to lose weight and improve your health. Let's take six months or a year.'

Let's build the habits, because those are always the most challenging thing to do is to just repeat things enough, that it just becomes automatic because ultimately, you know, we can't be making food decisions all day long. We can't be making training decisions at the last minute. You know, we need to be able to ingrain these things. And so, you know, in terms of the research side of things, it is pretty exciting when we look at even the research on low energy availability, that we talked about earlier, classically that would just be endurance athletes but now we see female sprinters, male sprinters even, around this idea of not really fuelling to the level that we need to be able to recover effectively but then ultimately perform when it's competition day.

(TC: 00:40:52)

Dr Hazel Wallace: Yes. Absolutely. And, I guess, with that low energy availability, that often manifests as menstrual disturbances, which is one of the tell-tale signs in females. So, that's another, I guess, marker if we are under fuelling, or under recovering, and thinking about sleep and recovery as well, and we see that increase in body temperature after ovulation. I can imagine that, as well, would have a knock-on effect on how people are recovering, especially, like, when you're at that really high level and you want everything to be perfect, that I'm sure there's changes going on there and something that we need to factor in.

(TC: 00:41:34)

Dr Marc Bubbs: 100%. I mean, it's great, Dr Susan Kleiner works a PHD in the west of the US, renowned dietician, performance nutritionist. You know, we have data now that'll show that women who maintain menstrual function throughout their training at the highest level, perform better on competition days (ph 41.50). So, to your point, if we're experiencing changes in menstruation or amenorrhea, then that's definitely a sign that, you know, we need to circle back to how we're fuelling (ph 42.00) and the training plan and everything else, because that's a key sign that we've got to make some changes.

(TC: 00:42:06)

Dr Hazel Wallace: Yes. 100%. What a lot of information that we've just gotten through and that's just one small section of your book and some of the things that you're chatting about. So, if people do want

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*

to, you know, learn more about the things that you're talking about and your work, where are the best places to find you?

(TC: 00:42:25)

Dr Marc Bubbs: For sure, yes. For the, you know, athlete side of things, the first book's called 'Peak' and so you can check that out and there's a podcast called The Performance Nutrition Podcast, where we dive deeper into these things with experts from around the world and my website, for the general population, is drbubbs.com. My new book's called 'Peak 40' and, again, this is where we dive into just those simple rules and heuristics that we can use to be able to make the changes, build the habits that we need to field (ph 42.50) to feel better, so you can perform at work or at home or whatever your performance goals are. And so, you know, if people have questions on social media, I've got a unique last name. So @DrBubbs, you can find me on all those social channels as well.

(TC: 00:43:05)

Dr Hazel Wallace: Yes, it is a unique second name (mw 43.08), and I also always see you popping up on my Instagram, doing IG Live's, all the time. So, clearly you're very active.

(TC: 00:43:15)

Dr Marc Bubbs: Yes. This has been a new thing. So, I'm learning. I'm learning as I go. So, people could jump on and we'll actually be launching a Peak 40 podcast, as well, which is going to be a short form podcast. So, again, that idea of the hurricane of mid-life, when time is short, what can we do to be able to improve ourselves.

(TC: 00:43:32)

Dr Hazel Wallace: Yes. Absolutely. I'm sure lots of people will be tapping into that. Well, thank you so much for giving us your time today.

(TC: 00:43:38)

Dr Marc Bubbs: Appreciate it. Yes, thanks so much for having me on.

(TC: 00:43:42)

Dr Hazel Wallace: Okay, guys. That was Dr Marc Bubbs. Hopefully you're going away from this podcast feeling a little bit more confident in identifying when you may be under recovering from your training sessions and how to improve that from nutrition, sleep, and all of the other strategies that we discussed. If you did enjoy this episode, you know the drill. Please leave a review, a rating, and share it with your friends or family. If you want to find out more from me, you can find me on Instagram, Twitter, or Facebook @Thefoodmedic or www. Thefoodmedic.co.uk and I'll see you again next week.

- *The information here should not be taken as medical advice. The content here is for informational purposes only. Please consult your usual healthcare provider for any medical questions. While we make every effort to ensure that the information we are sharing is accurate, we welcome any comments, suggestions, or correction of errors*