(TC: 00:00:31)
Dr Hazel Wallace: (Advert played 00.00-00.29) Hello and welcome back to The Food Medic podcast. I'm your host, as always, Dr. Hazel. This week I have one of my very first guests back on the podcast, Dr Brendon Stubbs. I think he was episode two from season one and I will make sure to drop the link in the Show Notes below if you want to go back and listen to that episode first. Brendon is a Physio and a leading researcher in physical activity, exercise and mental health and the relationship between the mind and the body. He has published over 650 international academic papers which just blows my mind and his research has had substantial impact, for instance in forming several World Health Organization guidelines. Brendon is currently an invited expert, advising the World Health Organization on their global response to mitigate the mental health impact from the COVID-19 pandemic, so super important work. Since 2019 he's also been recognised by the Web of Science as being a world highly cited, i.e. one of the world's most influential researchers from over 8 million in the field of mental health psychiatry psychology. Brendon and I stayed in touch since season one and since then he's obviously continued to just to incredible research and do great work in the field of mental health. Personally, I really admire him and his dedication to research, so I'm super grateful that we could just grab him for an hour of his time to have this chat today. We've obviously discussed the link between mood and our mental health and the relationship between exercise before in the podcast and I want to pick that conversation back up and expand into other factors that influence our risk of poor mental health. For those listening who are keen to get into research, Brendon also shares some helpful advice on how to do this also.

I mean, first of all I'd just love to start by asking you a little bit more about you. I know we've done this before, but for people who don't maybe know who you are, what you do, tell us a little bit more about you and your, kind of, professional and academic background.

(TC: 00:02:32)
Brendon Stubbs: Sure. So my professional background is a Physiotherapist and I've taken an extremely unorthodox route and path in both my clinical and research work. So I've on and off been in mental health services for almost twenty years and that was very unorthodox back then as a, sort of, newly qualified physio to and work in inpatient mental health service. But it was great and I was immediately hooked toward the value that physiotherapy and movement helping people could bring. And I've gone off and done, you know, standard physio type things in the interim like musculoskeletal physio, helping people with aches and pains, sports physio, hospital-based physio, that type of thing. I kept coming back back to mental health because it's just a place where I feel really at home and I can help and add value to people who are in hospital. It's an enormous privilege to go in and help people and somewhere really randomly along that journey, quite early on, I got involved in some, sort of, lunchtime and evening research and then it's just grown from there. And if you ask my, sort of, friends and colleagues at university who is the least likely person to be involved in any academia, any science, it would be me and that's what I do now. So I'm in a position where I do a day of clinical work and then I'm mainly funded to do research, looking at the relationship between the mind and the body by the NIHR, which is the NHS research arm. And then I do various other studies, primarily looking at movement and how it can help keep us healthy and happy. That's always been my, sort of, primary interest. We started recently research on how exercise can help cognition or

development of new brain cells, an exciting project we've got, and we're looking at can we improve neurogenesis within the brain and does the gut microbiome play a role in that. And then I just get involved in all sorts of places that I didn't expect to be in.

(TC: 00:04:25)
Dr Hazel Wallace: Yes and so when you first came on the podcast I think you had published over 300 papers. Now what number are you on? Dare I ask.

(TC: 00:04:35)
Brendon Stubbs: I've stopped counting Hazel, but I know it's over 650. But I really want to emphasise, although it's, like, quite a big number and it is quite a big number, research is a team endeavour. So it's very much reflective of working with good, efficient teams. You know, when you're doing stuff you're passionate about it's just really good fun and you're working with people who are fun to work with.

(TC: 00:04:54)
Dr Hazel Wallace: Yes. That's really good to hear and also, like you said, you know, maybe a couple of years ago or when you were in uni you wouldn't have thought that you would be someone who would be publishing all these papers. I guess for people listening who may be on that journey or they're just doing clinical work and want to go into research, that's reassuring that you don't have to be doing this from a very young age or in the beginning of your academic journey.

(TC: 00:05:18)
Brendon Stubbs: Absolutely not. I struggled at school. I wasn't allowed into sixth form. I got into college. I just got into university. But, you know, the key thing is I found something which I was really interested in and fundamentally for me that was really important and that was exercise and mental health, and mental health more broadly. And then it clicked and I thought, 'This is really interesting. I would really like to understand and know more about this particular area.' I didn't have much research training, but some very patient mentors would listen to me with all of my balls of ideas and just say, 'Okay let's try and bring this into an actual research question,' and walked me through the process and mentors have been enormously key for that. So for anyone who does not have a great deal of research experience or is daunted by research or reading research, I was all of those things. And if you find your passion then you can absolutely get involved too. No doubt about it.

(TC: 00:06:09)
Dr Hazel Wallace: Amazing. So, let's go back to what we first spoke about on the podcast a couple of years ago and that was the link between our mood and physical activity, which is I guess your primary area of research and interest. And I imagine that the research has moved on a little bit, maybe not so much, but let's have a recap as to where we are and what do we know in terms of the link from a preventative point of view and maybe curative point of view or from a treatment approach.

(TC: 00:06:39)
Brendon Stubbs: Yes it's been such a wonderful journey and this is kudos to people all over the world. Many collaborators who I could just keep talking about and fill all of our time, so I won't. But to gain any traction and credibility within, sort of, healthcare systems policy we really had to push quite hard and look at the evidence base across both prevention and also management. And key areas really are that we've, you know,

quite strong and convincingly shown when we look at cohorts of people. So we look at people who are not depressed or not anxious and we follow them up over long periods of time. We've done big met analyses now showing whether you're a child, you're an adult or an older adult, that there is a direct relationship between being more active in your daily life, there's caveats around that for certain populations, can help protect and nudge the cards in your favour to prevent possible mental health conditions. And I don't want to come on here to say that if you move more, this is going to solve all of your life problems or prevent having a mental health condition. It won't, nor will any other intervention I'm aware of. As part of a package of things that we do in our life, it can have a really positive impact on people. And I think the really interesting thing since we last spoke which is built upon this observational data in terms of prevention is there's been some really smart Mendelian randomisation studies. And I want to give a shout out to Carmel Troy who is an amazing doctoral researcher, she's finished her PhD now at Harvard University and she's been looking at this type of study which looks at the causal relationships between genes and outcome.

And what she's done is she's looked at huge data of people wearing objective devices such as accelerometers which are really, really accurate devices that you may typically wear as a consumer on your wrist or on your phone. And found that there is a causal relationship between how active objectively you are on your wrist of depression in the future and it doesn't go the other way. And this is a really, sort of, technical way of doing the analysis. And the good news of this is the paper which she did for all of us, is that even if you're genetically predisposed. Genetics, environment, lifestyle all plays a complex interplay about why we may get depression or anxiety. Is that if you're more active you can still offset your risk of developing depression. So she did really one smart study in depression and anxiety published earlier this year. 60,000 people, they looked at all of their genetic makeup and all of these people were genetically predisposed to developing depression of equal weighting. And she looked at objective device measured physical activity and she found that even if you are genetically predisposed, being more active compared to those who are not active, you can offset your risk. So in this context, 60,000 people, great physical activity data, great depressive data. You know, your genes do not determine necessarily your risk of depression and I think that's really, really powerful. And a bit about treatment. So I think we're moving very very fast in terms of implementation. I think, you know, we've unequivocally shown that exercise as part of a package of care for people and as part of a menu can have a really positive impact, whether you have depression, anxiety, post traumatic stress disorder.

You know, any one number of these things that adding on physical activity or exercise can help reduce your mental health burden and we know about the other health benefits (TC 00:10:00) from doing that. One of the main criticisms of exercise, if I just take depression as an example and this is just to illustrate how useful it is.
Is that research that is of typically short term and follow up, so less than six months. So we're just, like, okay you can do exercise for three months, you feel better, great. Then what happens? So there's a really good study in Sweden by a colleague called Matt Horngren and he looked at big numbers as well because if a study doesn't have enough people in it, you can't really be confident in the outcomes of the study. So Matt's recruited 1000 people living in Sweden, living in a community with mild to moderate depression and he followed them up for twelve months. And they're randomly allocated into three groups and then everybody got treatment as usual, which is best practice care. Seeing your doctor or psychiatrist, psychologist or a combination of all of those things. One group got that. The other group's got, like, two and another group got

CBT delivered via the internet and another group had exercised as an intervention. And everybody was followed up over twelve months to say, what happens in this well powered, well designed long term follow up study? And to add, you know, great credit, Matt's found that exercise has just as good impact on depressive symptoms as CBT. CBT is wonderful and I fully recommend that anybody who has that should take that as they should any treatment recommended by, you know, medical practitioner or otherwise.

But Matt's found that exercise and CBT were just as effective as each other. That's not to pitch them up against each other because why not use both tools? I mean, if I needed it today I would. But it just goes to show how powerful it was and they were both significantly and clinically meaningfully, so it means something better than just standard practice care within Sweden. So that is a really good randomised control trial and since we last spoke we've had a great infiltration into guidelines. Nice guidelines within the UK. We've written European guidelines, you know, with very imminent psychiatrists, psychologists, people with lived experience recommending that as an option, as part of a whole package of care, physical activity is used in the prevention and the treatment of people with mental illness. So we've had good penetration at a national, European and international level in respect of the evidence. And people don't change policy if the evidence is not good, so it's exciting times that people are considering this as an actual serious intervention that people can have as part of a menu.

(TC: 00:12:21)
Dr Hazel Wallace: Yes absolutely. And the question that always comes after people ask about the link between exercise and depression is, 'How much do I need to do in order to reap the benefits?'

(TC: 00:12:32)
Brendon Stubbs: Yes, it's a great question. So, if we're looking at prevention, Carmel, who I mentioned previously, did that really nice study and she recommended that you could just do, you know, 30 minutes a day would be enough to prevent you from developing depression. Again, this is looking at population, so big, big data. On an individual level, for anyone who's experienced depression, knows somebody with depression, you know it's really complex and multi-faceted. But, you know, Carmel has shown that this can help nudge the cards in your favour. Just 30 minutes over the course of a day. And if you actually do have a diagnosis or you're struggling with your mental health then, you know, fifteen, twenty, 30 minutes can help you per day. Three times a week. The most important thing for people who are struggling, and I work in a hospital where you don't go into hospital unless you're really ill, is just getting started. So we had the World Health Organization new guidelines come out earlier this year and they've slightly revised the lower band and the upper band about what people in the general population should be aiming for. But they really caveat it for people with conditions, whether it be a physical health condition or a mental health condition. And just say, if you're struggling for any reason, just getting started today with, you know, two minutes, five minutes is really, really important to get people moving, letting that activity continue.

(TC: 00:13:48)
Dr Hazel Wallace: Yes absolutely. I think that's a really good message. You know, we have the guidance and we know what the research says, but from a practical point of view every little helps and just getting people moving is the most important thing maybe.

(TC: 00:14:01)

Brendon Stubbs: Absolutely.

(TC: 00:14:02)
Dr Hazel Wallace: Yes and then moving on from physical activity to food and the whole, kind of, food and mood as such. It's a big topic that's thrown around a lot and people are told about various foods to eat to boost their mood. What is the link there? What, kind of, diet or dietary pattern do you think has the strongest evidence when it comes to influencing our mood?

(TC: 00:14:25)
Brendon Stubbs: Yes, well I've had the great privilege of working with some of the giants and pioneers in this area. And the best evidence at the moment, and it may be because most of the evidence that's focused on that is really around the Mediterranean diet. Both in terms of the prevention, so there was a systematic review looking at prevention earlier on this year or the year before showing a Mediterranean style diet, particularly when we talk about low inflammatory foods, can help protect against the emergence of onset of mood disorders and also for the treatment of depression too. So it appears a Mediterranean style diet is a very beneficial approach within this particular context. Whether or not that is just an artefact of people who are studying that the most, I think that is to be determined. But that is where most of the evidence lies at this moment in time.

(TC: 00:15:11)
Dr Hazel Wallace: Yes I would agree. When it comes to the Mediterranean diet I think everyone's probably sick of hearing about it. There's so much evidence for it supporting lots of different aspects of our health from, like, our mood, our cardiovascular health, hormonal health. It's very much the one diet that fits all, but it's not a very prescriptive diet per say. You know, it's very flexible. I'm super interested in Felice Jacka's work and her SMILES trial is one of the most landmark trials that really set the scene for this field of research.

(TC: 00:15:46)
Brendon Stubbs: It's incredible and Felice, she's a pioneer. You know, she's literally transformed the landscape of nutrition and mental health in terms of the research evidence base. And her SMILES trial which she did, you know, at face value it was audacious in many ways. In addition to conventional medical care, can we introduce a Mediterranean style diet to help people's symptoms. And I know from speaking to Felice quite a lot and she's shared this openly is, it was very difficult to get that study funded because, you know, who wants to believe that, particularly in psychiatry, what you eat could really be an active part of people's treatment. But kudos to Felice and her tenacity, her vision. She's driven this forwards and demonstrated within a randomised control trial that it can really help improve people's mental health symptoms. And one of the other barriers which she did, which is just so incredible, is demonstrated that it doesn't have to be expensive. She did, like, a health economic analysis within that trial demonstrating that it's actually cheaper to go out and buy these wholefoods rather than the standard American or SAD diet and ultra-processed foods that we may have, which is one of the, sort of, misconceptions about Mediterranean-style diet eating is that it can not to be accessible to all people, and clearly that's an issue for some people, but it doesn't necessarily have to be more expensive than what may be a standard Western diet.

(TC: 00:17:14)

Dr Hazel Wallace: Yes, I agree. (Advert 17.14 - 18.04) Then, that, kind of, brings us on nicely to supplementation and definitely in London anyway, there's this huge wellness market that's really booming at the moment and there's lots of like nootropics and various supplements that claim to improve your mood and I know that you've been looking at this. So, as like a, kind of, overarching umbrella are there any supplements that are really standing out in the crowd or are there any supplements that people are shouting about that you don't really like the evidence is really there yet.

(TC: 00:18:37)
Brendon Stubbs: So, we looked at this in the context of nutritional supplementation in the treatment of different mental health conditions. Joseph Firth was the first author, he had a paper in World Psychiatry, and so, you know, what are the best nutraceuticals or nutritional supplements which can help people with different mental diagnoses. The good news is it appears that almost all of them are safe, so that's good if you're happy to part with your money, but the evidence is not quite convincing as you hear from people who get very excited about this issue, or if I walk into one of my local stores and people often tell me about various supplements that cure lots of things, and I always find it very interesting. The best sort of evidence at the moment is obviously Vitamin D, particularly in the winter, there's good evidence within that particular context. Some of the Omega 3s and 6, also. There's interesting, sort of, data on pre- and pro-biotics as well. It's definitely an emerging field, and I definitely think it's a field which should be good to catch its breath before it catapults into everyone's cupboards across, you know, the city or anyone else's, because the data is still trying to catch up with the enthusiasm which is in the market. Joe presented that paper at a well-known nutritional conference and effectively ended it saying that, you know, the good news is that all of these are safe, but the not-so-good news is (TC 00:20:00) that most things don't work at all, or anywhere near as good as they say. It was a pretty unpopular ending to a conference presentation but there is some evidence definitely around some Omega-3's, Vitamin D's, some other supplements too.

(TC: 00:20:14)
Dr Hazel Wallace: Then, one supplement in particular that is popping up quite a bit is CBD. That's been, kind of, brewing around in the background for the last couple of years for anxiety, insomnia and now, you know, I see it really marketed towards the kind of sports and athletic community for recovery. There's all these claims that are being made about it. Obviously, with supplements, they're not regulated in the same way as medicines, so in terms of the quality, that's something that people need to be aware off, but I would love to know your stance on whether there is strong evidence for its anti-anxiety effects.

(TC: 00:20:52)
Brendon Stubbs: So, I've witnessed and seen the enthusiasm and I've got people close to me who swear by CBD and its cure-all and I've sat in shops and talked to people who've told me, you know, no matter what I go in and say I would like help with, CBD will cure it. When we look at the science behind this, for the some of the reasons that people commonly use it, you know, science in terms of top-quality evidence when randomised controlled trials is catching up, before I touch upon mental health, where I think there is a bit more promising evidence, I'll briefly touch upon some of the other common reasons that people use it. So, there was a recent systematic review and randomised controlled trial pooling, so a meta-analysis, looking at the possible benefits and the possible side effects across two different papers. The authors found that CBD-based products, across a number of randomised controlled trails, so this is double-blind, so the

participants don't know if they're getting CBD or if they're getting a control placebo, that's one of the good things about doing nutraceutical research, and the people giving it don't. I've been involved in a Vitamin D study in first episode psychosis, so I know it's quite easy to do double-blind randomised controlled trials. They found in this paper, in Neuropsychopharmacology earlier this year, is that, you know, interestingly in the quote unquote healthy population, that CBD reduces your appetite and it doesn't have any effect on your sleep, and the impact on pain is negligible in this particular randomised controlled trial and meta-analysis. So, that is in that particular context.

Again, looking in a general population, some colleagues where I work looked at, what are the adverse events or side effects, which we would do if you look at any particular medication in the treatment of any particular condition, and they found some quite concerning side effects for people which I've not heard many people talk about. So, for instance, side effects such as increased risk of withdrawal due to side effects, two-fold increase compared to the placebo group. There was an increased risk of almost ten-fold for abnormal liver function tests. There was an increased risk of diarrhoea by two and a half times compared to control conditions, an increased risk of sedation during the day, four-fold increase, and a five-fold increase in pneumonia compared to the control conditions. This is double-blind randomised controlled trials and the paper, the first author was Edward Chesney in Neuropsychopharmacology published in 2020 in one of the nature journals and I work with that particular team. So, I don't think that's one of the things that we particularly hear about is the potential adverse side effects reported and this is a supplement which I can go down to the local shop and buy heaps of, and no-one's ever told me that it could result in all of those different things. That being said, just before I talk about mental health, I've got people close to me who will literally, you know, swear by the power and healing that it's done across many different facets. I think within this particular context, until we're met with good data, I'm continuing to sort of sit on the fence and look at this a bit sceptically.

The power of the placebo is real. It's very, very powerful. If I go to a shop and I don't know and someone tells me all of these wonderful things, it's going to make me feel better and all of this stuff, then, you know, it's almost like even before I've tried it, I'm like, 'Wow, I've got my new product. I'm going to go home and try it,' and I start to feel better and whether or not it's due to the placebo that people are feeling better on an anecdotal basis or not, is yet to be confirmed in the general population. If we look in clinical populations and mental health specifically, so there is some tentative evidence that it may help people's mental health, particularly anxiety. There's some tentative evidence, and I'm using the word 'tentative' quite strongly, that it may help people's depressive symptoms. There's some interesting data looking in schizophrenia and the schizophrenia spectrum as well that it may be a possible helpful treatment for this kind of people who experience those symptoms. So, as a sort of neutral bystander, I'm slightly concerned at the mismatch between the marketing, the lack of awareness of adverse events which are being reported in pre-registered randomised controlled trials and the evidence for the health benefits in randomised controlled trials is not anywhere near as clear as people reporting their own experiences, or people will tell you when you go into a shop or you go on a company's website.

(TC: 00:25:18)
Dr Hazel Wallace: Yes, absolutely. I think there's so many anecdotal reports for CBD and I know, like, a lot of people have used it and I did my own little experiment, obviously not blinded because I'm

giving myself CBD, but I decided to take it for 30 days and see how it affected or influenced my WHOOP data, in terms of sleep, recovery, mood. What I found was, because I'm pretty sceptical about all of this, I've read the research, when it comes to supplements I am always very cautious anyway, I had this initial boost in my recovery, green streak on WHOOP, and all of my markers were improved and this, kind of, dropped off after 8, 9 days and came back to base-line. You know, I finished my month and I decided not to continue taking it. First of all, it's like £70 a bottle, and I'm like, 'There's so many other low-hanging fruit when it comes to improving your mental health, that, like, I just don't want to waste my money until someone can show me very good evidence that it's going to make an improvement.' So, how I explain, or how I'm, kind of, interpreting this initial increase in recovery, was that placebo effect, but also, I'm probably doing things sub-consciously around that time. You know, having CBD before bedtime, probably getting into bed a bit earlier, doing all the other things that are confounding what I'm doing with CBD, so it's so hard to tease apart what's happening. I think for a lot of people who are interested in CBD, they're already doing lots of the good things already.

They've probably invested in things like blue-light blocking glasses, they're getting into bed, they're not using technology, they're eating a well-balanced diet, they're exercising, and so, it's very hard to say, 'Yes, it's the CBD that's made that difference to you.'

(TC: 00:27:10)
Brendon Stubbs: Yes, absolutely. It's literally impossible to say. You really do need to randomised controlled trials to compare, you know, people who don't know what they're taking against people who are taking CBD and when you look at that the evidence is not clear, and in fact, it points to people may have side effects. Again, never underestimate the power of the placebo. I'll never forget, I'll give you one anecdotal example of how I saw this very early on in my clinical training as a student. This was a bit bad of me but I did tell the person the next time. This person came in with some back pain, and I put on what's called a short-wave diathermy machine, which is some electrotherapy device which has, I think, subsequently been debunked but we got taught how to use. I put it on this person's painful neck at that particular time and shoulder, and after the end, twenty minutes, they said, 'Wow, that felt amazing.' Then, I realised I didn't turn it on. After they said that, they said, 'That was absolutely incredible,' and then, they came back the next time, and I was a nervous, anxious student, didn't know what to say. Told my educator at the time, he came back next week and said, you know, 'Ever since that last week, I've felt incredible,' and then I had to, sort of, say, 'Look, I'm really sorry, I didn't turn the machine on.' That was my first early experience of real-world placebo taking. Don't underestimate the power of the mind.

(TC: 00:28:22)
Dr Hazel Wallace: Yes, absolutely. Also, just, like, the therapeutic experience of seeing a practitioner and the physical touch and them actually doing something and listening to your problems, I feel like, when I'm seeing patients, 80% of what I'm doing is reassuring and listening. That's therapy in itself. People walk away feeling like their ailments, even physical ailments, have improved purely because they've gotten a load off their chest.

(TC: 00:28:50)

Brendon Stubbs: Absolutely, and I invite students or qualified people or anyone to come in and spend time with me and my clinical practice. I always say to them, 'You're not really going to learn from me physiotherapy-wise because most of my time is spent talking, listening, reassuring, encouraging people to engage in treatment.' You know, people in hospital who are really unwell, just really benefit from that time and that space to be reassured that if you are having aches and pains, you know, it doesn't mean your back's going to crumble and snap. So, I'm very much in my own clinical practice, you know, a two ears and one mouth, and I continue to try and use it in that proportion if not more.

(TC: 00:29:26)
Dr Hazel Wallace: Yes, absolutely. So, we, kind of, touched on a little bit about like marketing around mental health and products and things like that and there's some really incredible marketing tools out there and they can be very convincing. If you don't have a scientific background or you're not willing to go look at the evidence yourself, you're, kind of, having to take things at face value that you see online. So, I get a lot of people sending me various posts or advertisements, 'Hazel, is there evidence for this?' 'Can you debunk this?' (TC 00:30:00) What would be your best advice for people to look out for in terms of red flags for pseudoscience?

(TC: 00:30:07)
Brendon Stubbs: So, in terms of pseudoscience and lack of clarity, be careful, particularly if there's a new pseudoscience or area, there's normally, you know, like a guru or a face of someone who is a sort of leader of that particular movement. People who practice pseudoscience, particularly in new areas, claim that it helps many different areas, and they tend not to subject themselves to the scientific process, you know, what we've talked about in terms of testing with randomised controlled trials and seeing whether it really does work. If you ask that person about their new amazing product, or their new amazing therapy, or their new amazing theory and you ask for their research, or even go onto their websites and this can be very confusing in its own right, because most websites say, you know, 'We're evidence-backed.' 'We've done this research.' If you get down into it, the evidence base is actually really, really poor and quite shoddy. I'd be quite careful about what you do and don't take on board. What I'll often typically hear, if I engage with people who are talking about pseudosciences, I often hear that, 'It's just so complex that, you know, scientific methods can't capture this.' Such as, you know, we'll call it 'Brendan's Therapy', Brendan's got a new therapy that works and releases, I'll just say this as an example, new energy within your body and makes you feel amazing with this new Brendan's special therapy. Of course, it normally comes with a prolonged, I'll call it babble, because often I don't understand what people are saying, and that's just because it is, literally, just not interpretable.

So, I would be cautious for any of these particular therapies, treatments, approaches, which do not submit themselves to the scientific process and if they're using lots of lingo and scientific terms and jargon which are making it sound overly complex.

(TC: 00:31:49)
Dr Hazel Wallace: Yes, I agree. The other thing that pops up quite a bit, is, like, 'I've done my research.' Or 'Do your research.' Research is such a big term, and I'd love you to, kind of, just briefly touch on that and the hierarchy of evidence and what we look for when it comes to good research as clinicians and researchers.

(TC: 00:32:12)
Brendon Stubbs: So, the top of the evidence hierarchy pyramid is someone who looks absolutely amazing when they take their top off or looks great in their gym gear. I'm just joking about that. No, in terms of the evidence-based hierarchy pyramid or public health policy when we're making decisions, we tend to use, you know, what we call, quote/unquote, expert opinion. It's interesting, but it's not really good evidence. Not that I'd consider myself an expert and give an opinion on anything else, but, you know, take anything I say with a pinch of salt, really look at the science. Then, as we move up, we start to collect data and we look at case series. You know, we talked about anecdotes. So, a researcher may get a series of anecdotes where they may give an amazing product to, you know, a group of people over a week and look at some outcomes before and after using standardised metrics, whatever they want to measure, physical health, mental health metrics. Then, if you want to get a bit better, you could go up to sort of cohort and cross-sectional studies. You could look at surveys, and capture data from larger numbers of people. You could even look at people over time who don't have a condition and look at their symptoms of, say, mental health over time when they're taking amazing product or they're doing Brendan's therapy and you can see how they improve at the end. Really that's association data, you can't really say whether it's Brendan's therapy or Brendan's amazing product that's making a difference.

If I give you a real-world example of how we can confuse associations between causation, there is an almost perfect, perfect correlation between grey hair and dementia, as one example. Does grey hair cause dementia? Of course not. But do people in that age group who are often older and may have grey hair, you know, at the end of the spectrum, 60-plus, are they more likely to have grey hair? Absolutely. So, it's really just an absolute confounder (ph 33.57) that grey hair is related to dementia. So, that is the interesting thing, but the thing we need to be really careful about when we're looking at observational data, so if I want to say whether Brendon's amazing therapy works, or Brendon's amazing new pill which has everything under the sun works, it needs to be tested within a well-powered, randomised controlled trial. Which is open, has good numbers of people in, and it doesn't have me evaluating all of the data internally, and saying, 'Oh, I think, you know, these ten people, they look really motivated, I'm going to pick those people and some of these friends and some friends that I know to take the product because I know they're going to do really well. Whereas, my mate Dave and Stuart and others, they can't be bothered to do anything, and they're not in a great space, so I'm just going to give them the placebo and not tell anyone.' Randomised controlled trial removes, you know, that sampling bias and many other biases right at the start, and it really is the only way to reduce all of that bias to understand whether something truly, truly does work.

And that is the top of the evidence base hierarchy in terms of primary studies. And then to go a bit more boring and a bit more confusing, one study's never enough. So, never, ever just believe one study, you know, we always need replication within studies. And we see this phenomenon within new areas of research, new areas like CBD or Brendon's therapy, or Brendon's nutraceutical we see (ph 35.15) new study effect sizes, and this has been shown time and time again, that when we see a new product or a new intervention launched, we see great results. Then, when you get other people replicating it, saying, 'Can we really get great results from Brendon's therapy or Brendon's nutraceuticals?' we continually see the effect size shrink if not go away over time. So, we need to be wary of one study, even if it's a randomised controlled trial, is never enough, and that's where we need replication. Meta-analysis is one way, pooling of individual studies

and data to try and understand better the answer about whether a product or an intervention actually truly works.

(TC: 00:35:50)
Dr Hazel Wallace: Yes, that was a really good overview. (Advert plays 35.51-36.21). One of the areas that I've been really interested in and have, like, spoken to you about before is research into female mental health and mental health for women. We know, like, historically, a lot of the research has been based on a typical white, 70-kilo male, but when it comes to mental health, there's really important really sex differences, and we're starting to understand them a little bit more. Can you speak to that a little bit?

(TC: 00:36:47)
Brendon Stubbs: Sure, I can. So, you know, I've certainly read on this, I've published a number of papers on women's mental health, particularly after birth, before birth as well, and across the lifespan. So, I can share a bit about my understanding of the era. So, I was on a talk this morning, and thank goodness for that, with a professor from Great Ormond Street Hospital, a paediatric psychiatrist, and some fresh off some (ph 37.09) latest knowledge. So, she was emphasising that for all of us, you know, concerningly, 50% of mental health conditions, the first time people get them is under the age of fourteen years, and that is just incredible. So, you know, we really need to protect our young people. Obviously, that is a really important, on average, time of change for lots of people in different areas in terms of, you know, social circumstances, being much more aware of friends and obviously this huge physiological event in terms of puberty and going through the puberty process. So, what we tend to see in terms of the epidemiology or the patterns of mental health conditions is females, on average, have puberty, and have additional factors that happen around puberty in terms of, like, menstrual cycle beginning etc. before men, well, boys at that stage. So, females are twice as likely to have mental health symptoms in this critical stage at around the puberty stage, and that's due to, you know, a huge hormonal change, body change.

All of these things which, all of a sudden get-, you know, I'm not speaking obviously from personal experience, but all of a sudden, get put upon young women. And all of this together with increasing societal pressure at that age can really predispose young girls to be at increased risk of depression. So, that is a really key milestone for young people, particularly young females. And one that we tend to see is boys catch up a bit later on in terms of the prevalence of common mental health conditions later on, and then we see a much more static pattern in terms of common levels up until females get around, you know, other key events which males do not experience, and we're going to talk about these before I talk about social aspects. In terms of childbirth, for instance, you know, the huge hormonal changes, the changes in circumstances that happen before a birth, after a birth, and then this postnatal phase, is an immense period of adaptation for females both socially, but also in terms of changes in hormones particularly oestrogen has been heavily implicated within key areas of processing emotions within the brain and predisposing people to an increased risk of mental health symptoms. Then, looking along the lifecycle of females, it's been increasingly recognised and we've looked at this recently, is that the perimenopausal phase, and then the postmenopausal phase, again, another unique but very, very important phase which females go through that men obviously don't.

This is a huge time of change, of, you know, hormonal changes, body changes, tiredness, fatigue etc., and this is another risk time where we tend to see an increase in the prevalence of mental health co-morbidities within females. And then later on as we move into older age, we tend to see males and females flatten out in their prevalence. (TC 00:40:00) Caveated within those key changes across females, we've got all of this-, and again, speaking from reading but not from personal experience, increasing social pressures in females in many different domains, you know, equality, pressure in terms of childcare responsibilities, unequal burden, inequality in the workplace, inequality in working hours. Just looking at those factors, it's no surprise that society discriminates against female gender so much that groups of females are, you know, a high risk population for mental health co-morbidities.

(TC: 00:40:34)
Dr Hazel Wallace: Yes, absolutely. I think it's really important that you said there in that what we see in these, kind of, major hormonal milestones, there's almost a period of vulnerability, where there's a blip or a spike or an increased risk of mental health conditions, whether it's post-partum depression or perimenopausal depression. But during those transitions, there's typically a lot more happening outside of the, kind of, physical and physiological body, and usually, women are going through a huge change in their life as well. Doctor Sarah McKay, she really talks about this so elegantly in that, like, hormones are so easy to blame, and they're definitely often the loudest voice in the crowd, but they're not the only voice in the crowd. It's very easy to forget about the other things, and we know that, you know, social support and social connection is one of the biggest predictors of good mental health. So, if a woman feels unsupported after she's had a baby, that's one thing that we could be offering more help and advice with to help women, kind of, get through that really daunting transition from being pregnant to a new mum.

(TC: 00:41:48)
Brendon Stubbs: Absolutely, and just distilling it to a hormone or a series of hormones would be doing, you know, as you said, complete injustice, because there's so much more going on in terms of roles, responsibilities, far beyond what I ever could possibly imagine and there's definitely a much more holistic issue in terms of support that is needed within people. I think within research, what we tend to do is, hormones are easy to measure and they're objective. When you start to look at other factors such as social support or, you know, inequalities in the workplace and how that may be impacting mental health, we're starting to do a bit more, but it's just been less easy to measure, which doesn't do the whole story justice whatsoever.

(TC: 00:42:32)
Dr Hazel Wallace: Yes. What's also difficult with the research, when it comes to mental health in particular, you know, we're looking at biological sex, male/ female, but then we also have, like, gender which is a social construct and whether people identify as a woman or not, or non-binary. The research fails to capture that, like, we're not there yet. So, when we're thinking about mental health it's such a complex web of factors that influence that, and so it's not just our biology, it's how the world perceives us and, kind of, what opportunities we get and what environment we're growing up in and how people treat us. So, it's fascinating, but I think we definitely need to start considering those factors because not everyone identifies in the same gender as their biological sex.

(TC: 00:43:20)
Brendon Stubbs: Absolutely not, and it's really, sort of, important that more research is done within this particular area to understand people for whom their gender may not be what their sex was when they were born, and we recognise from epidemiological data that there is an increased mental health burden in people whose gender identity may change over time. It's great to see new research coming through. So, where I work, for instance, I'm not involved with this, they've got Professor Louise Harrod (ph 43.47), who's a women's health psychiatrist, and her great team. They're doing some wonderful work looking at all of these types of issues in terms of, you know, gender-specific mental health conditions, what could be contributing to that, how can we support people doing that? And also supporting females who have been through horrific times, whether that be trauma related issues or, you know, Sian Aram (ph 44.11) is another wonderful doctor doing some really fascinating, such important work, looking at people who've been trafficked as an example, and females in that instance. Huge needs, and such important to be going on within this particular area. So, I think there's more investment happening but it can't come quick enough. You know, the key thing that I'm really personally interested in in this context more broadly is, okay, let's do the research, but let's get the information out there and let's really start to action this so we can support people across the spectrum, regardless of gender, socioeconomic status, let's help people.

(TC: 00:44:41)
Dr Hazel Wallace: Yes, I agree. So, this is probably a really difficult question to summarise, but if you could write a mental health prescription for everybody, what are some of the, kind of, key pillars that you would love to see people starting to engage in?

(TC: 00:44:57)
Brendon Stubbs: Sure. Well, if I'm going to start from an assumption that this could work for someone who is struggling with their mental health, or has a diagnosed mental health condition, I'd recommend that the absolute fundamentals to keep on top, I do many of these myself. Have a position of gratitude. I personally have written a gratitude diary for ten-plus years and I sit and spend time with that every particular morning, and it shifts my mindset, because I naturally wake up and I'm having conversations throughout the day, and more often than not, I'm projecting worse outcomes. So, it helps shift me in terms of, you know, focussing on the positive. So, having a positive mindset and a gratitude journal is absolutely fantastic for that. Making time for physical activity is really important. So, you know, even me, who spends a lot of time, you know, and is privileged in many, many ways, I diarise time in to make sure that-, you know, it's a diary with myself and self-care that I get outdoors and I get active. Also nutrition, we've spoken a lot about that. There's really good evidence for both the prevention and promotion of better mental wellbeing today. We know about sleep. You know, if you do all of those things, if you're not feeling great and you get two hours of sleep or no sleep at all, you're going to feel pretty rotten.

Also, other techniques, if we don't talk about, you know, someone's got (ph 46.06) medication-related stuff in terms of mindset and mindfulness is just so important in terms of being present, acknowledging emotions, and being part of a social network too. Feeling part of something, and that is really, really important. So, feeling part of a connection within a community, a group of friends, is really, really important for people. And, if you are struggling with your mental health, it may be very difficult to do some of those, so just start off with perfecting one, don't think you've got to do all.

(TC: 00:46:34)
Dr Hazel Wallace: Yes, I think the message is really nice in that. You have to be compassionate with yourself, and it's very easy to list these things, but like you said, if you're struggling with your mental health, sometimes it's just not practical to expect someone to implement all those things at once. So, it can always be integrated by a stepwise approach. But I think that's a really nice way to, kind of, wind up the podcast. Before you go though, I have three questions that I ask every guest. The first one is, what is the number one take-away that you want people to take from this episode?

(TC: 00:47:08)
Brendon Stubbs: The number one take-away is be interested in evidence and be sceptical. It's your time and your health, do your due diligence on anything that you take up.

(TC: 00:47:18)
Dr Hazel Wallace: That's a quote right there. And this one's a little bit different to what we spoke about, but if you could go back and give your eighteen-year-old self one piece of advice, what would it be?

(TC: 00:47:27)
Brendon Stubbs: I'd sit down with eighteen-year-old Brendon, I'd put my arm around him, and I would tell him everything's going to be okay. There's going to be a few bumps, but it'll be alright, and don't take yourself too seriously.

(TC: 00:47:39)
Dr Hazel Wallace: Yes, that's a good one. Finally, what is one book that you recommend everyone reads?

(TC: 00:47:46)
Brendon Stubbs: So, one book that I recommend everybody reads, I'm going to be a bit geeky with this, because it's my area of interest, is, 'Bad Science,' by Ben Goldacre. If you're interested in science and why science works and why science is the best way to understand research questions still, it's imperfect. Ben Goldacre is the author who's a Doctor at Cambridge. He's written a fantastic, really accessible book, looking at how science, whilst it is the best way to understand the safety and benefits of anything that we do in our lives, it's imperfect, and he very eloquently outlines what are some of the flaws in science.

(TC: 00:48:21)
Dr Hazel Wallace: Yes, that book actually was-, in my first degree, I was in a biochemistry lecture, and Professor Morton, who was my lecturer back then, recommended that we all read that. So, that was probably ten years if not more ago, so that book's been around a while. It's one of the, kind of, most groundbreaking books when it comes to telling you or showing you how to spot pseudoscience. I found it super eye-opening because, as a young science student, you just want to believe in everything, and evidence is evidence, and it takes a while to hone those skills of looking for good evidence, and I love that book as well.

(TC: 00:49:00)

Brendon Stubbs: Yes, it's a great book. I'm still doubting a lot of my own science too, and I think that's a healthy thing, and it's better to disprove your own hypothesis and your own research than other people do it for you. So, we're continually trying to disprove what I've said. So, I reserve the right to continue to be wrong, and I continue to change my mind about certain topics too.

(TC: 00:49:19)
Dr Hazel Wallace: That's another great take-away, you know, be willing to be wrong, and if you're not willing to, if you're too proud, then you're never going to evolve. So, if people want to read more about, like, the work that you're doing or touch base with you, where is the best place to contact you?

(TC: 00:49:35)
Brendon Stubbs: So, Instagram now, Brendon.Stubbs is my handle. So, you can contact me there, and I post about research namely, and then the odd random stuff.

(TC: 00:49:46)
Dr Hazel Wallace: Oh, amazing, thank you, and thank you for your work and research as well.

(TC: 00:49:50)
Brendon Stubbs: Thank you Hazel, thank you for your advocacy and pushing evidence-based to the masses. It's amazing, keep up the great work.

(TC: 00:49:58)
Dr Hazel Wallace: Thank you so much for tuning in today. (TC 00:50:00) I think the power of exercise on our mental health just really isn't spoken about enough, and I'm still blown away by the abundance of research we now have to back it up. Make sure to describe so you're the first to hear about any new episodes, and if you would like to submit a question to the podcast on any topic related to health, fitness, nutrition or mindset, please your voice-recorded questions to Ellie@thefoodmedic.co.uk, for your chance to be featured on the podcast. Finally, if you're enjoying the show, I would love if you could rate, review and leave us a little mention, and possibly share it with someone who you think would enjoy the podcast too. That's all from me, see you again next time.