

# **Neuroinflammation**

# with Simon Billings 16<sup>th</sup> June 2020

# **TRANSCRIPT**

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I met Simon Billings who is tonight's guest at the McTimoney conference, best part of a year ago, I think. And he was a phenomenal speaker. And we thought we had to get him in and it's taken us this long to achieve it. But he's on here this evening, he's a very senior chiropractor. He is the founder of the Academy of Chiropractic Nutrition, which I think he's going to rename. Simon, welcome.

# **Simon Billings**

Thank you for having me. I appreciate it.

# **Steven Bruce**

Is that a reasonable introduction for you? Founder of the Academy of Chiropractic Nutrition.

# **Simon Billings**

I think that's fair. Yeah, there's nothing specific to chiropractic. It's really for neuromechanical practitioners just that I'm a chiropractor. That's my first kind of audience. So, it doesn't matter if you're an osteopath or a physio. As far as I'm concerned. I'm interested in practitioners that want to get sustainable clinical results, and I couldn't care less what you're called.

# **Steven Bruce**

You were saying before we came on? Are you thinking of renaming it so as not to scare the osteopaths away?

#### **Steven Bruce**

Yeah, I have osteopaths on the course. But I think Academy of Neuromechanical Nutrition because everything I'm interested in is allowing our neuromechanical intervention to work as we know it can do and some that doesn't. And our lifestyles have changed so dramatically, that often the metabolic side of health is part of it that functional medicine and nutrition. And that, we want to make sure we want to build a tribe of practitioners that are still osteopaths and chiropractors, but they understand that that nutritional side is very, very important in terms of healing and recovering from injuries.

#### **Steven Bruce**

Well, it's great to have you with us. I mean, I can't help thinking it's slightly an unusual title neuromechanical isn't it? Neuromechanical and you're combining it with nutrition as well. So explain the link, if you will.

#### **Steven Bruce**

Well I don't like musculoskeletal I think it's a terrible term. It's about the nervous and it just seems ridiculous. And neuromusculoskeletal is just a mouthful and I know fascia is not in there and I missed the fascia. Neuro covers the nervous system and mechanical covers everything that covers the nervous system. So, I think neuromechanical is a better catch all term for what I do.

And when I saw you last, we were talking about B12. And I mentioned I've had Tracy Witty on the show some time back talking about B12, which I recommend to anybody who's watching because she was fantastic speaker. Is nutrition a huge part of what you do or is it just one small component?

# Steven Bruce

No, it's massive because we attract a lot of very unwell people. A lot of people have seen many other chiropractors, osteopaths, physios, and a lot of the time there is a lot of it is related to the underlying biochemistry of the patient. They're just not well people, they just don't know it. They think they just have depression. It's just a thing they have, they've always had a bit of IBS. Their B12 levels are normal, well, you know, as you said to Tracy, that's a grey area. And the clinical picture is the most important thing. So, you if you want to get really good results with chronic difficult patients, you have to get in there nutritionally and that's everything the course I've aimed at is it's for osteopaths, and chiropractors, that still want to be osteopaths and chiropractors. There's a lot of very good functional medicine nutritional courses out there, but they're designed for full time functional Medicine practitioners. When you take the information into your chiropractic osteopathic settings, very difficult to implement, because they don't really marry up, you got half an hour with the patient you want to do neuromechanical treatment, you know what they need, but they're also low in B12 and vitamin D and they're gluten sensitive, they've got gut infections, all this kind of stuff. So, you need to have that, what I've done is create a hierarchy and a kind of a clinical protocol for going through the most important bits because you're low in vitamin D, it doesn't matter what else you do, they will not recover. No matter how much omega 3 you give them, how much cranial release, whatever it won't work, there are key stones in your metabolism, and vitamin D is one of them, that's why it's so important.

#### **Steven Bruce**

Funny, isn't it? Because I think we agreed on the topic for this evening months and months ago and vitamin D is particularly topical at the moment with the Coronavirus problem, for reasons which I'm sure that you'll go into. Do you want to start us off on your slides? And then we'll take questions as they come in, are you happy for me to interrupt you as questions come in?

#### **Simon Billings**

Please do. Very happy to. So, we'll talk about vitamin D deficiency, why it's making your patients hypersensitive, so fatigued and depressed and anxious. And for me, when I learned at college, the biopsychosocial model, it was an association, and they're in pain because they're depressed, and vice versa. And now, if you look at the research people who are properly depressed and have really significant hypersensitivity they have almost, not always, but a lot of them have neuroinflammation. And there are many causes of that. But vitamin D is one profound one, because of our evolution, our ancestry, and where we live and migration and so on. It's a very, very important piece of the jigsaw that you got to get right.

#### **Steven Bruce**

When you say neuro inflammation, what actually is getting inflamed?

Literally the brain so because we have an integrated response between our nervous system and our immune system. So, if you have the flu, when you latch on, or COVID whatever it is, your instinct latches on creates inflammation, systemic in the blood. But then the blood brain barrier is monitoring what's happening in the blood. And it's monitoring, that there's an inflammation and inflammation means infection. So immune system will kill anything that's a perceived threat, and then has to then turn on inflammation in the brain to try to protect it and that's your microglia are your immune system in the brain that generates inflammation and is trying to clear out any infection. That's fine, if it's a virus, which comes and goes then your inflammation drops down to baseline again. In case of flu, it's very obvious. You lie in bed, you hurt everywhere, that's hypersensitivity. You are exhausted. You don't feel very social and you feel a little bit sort of, you have this kind of weird hyper vigilance where you can't sleep, you feel tired, you can't sleep. That's an integrated response from our ancestry to in order to increase the chance of survival when you're infected, it changes your behaviour. The problem is that will then, if it doesn't go because there's not the flu, maybe it's a gut infection that's there all the time or it's gluten, and your body is perceiving gluten to be a threat, then it never goes and you get a low grade, a sustained low grade inflammatory response and the response is to the bug of the gluten for example, and you are slightly hypersensitive, but not enough that you can't move or do anything, you're a bit tired, you're a bit depressed and you're a little bit anxious. It's not enough the NHS flag it, but it's enough that it will derail your treatment for their migraine or their back pain when they came in for it.

# Steven Bruce

Okay.

# **Simon Billings**

And that's the point of everything is that we all know that some people get incredible results from our care. But we don't learn anything from that if you know that doing a particular cranial release or spinal manipulation or fascial release gives great results. That's amazing. We don't learn from that it just confirms what you knew. When you do it and they don't get relief, or they kind of get a bit better then plateau, they're the ones we need to learn from and when I qualified, if they didn't get better, but I thought they should. I just did it again, I didn't know what else to do, didn't have any other tools in my toolbox, and you can go into rehab and you can do different techniques. But a lot of the time in my experience, it is a metabolic system. And this is when they're not getting better the way you've seen before and they turn up with and it looks like a neuromechanical complaint, they've got a disc injury that just didn't never heals. The question is why and that's an opportunity for learning as far as I'm concerned. So, what do we do with that don't get better? We don't want to keep repeating it. That's something that some of my colleagues are a little bit prone to, is just repeating the same treatment and keeping going and keeping going. And I think it's to the detriment of everyone basically. So it's really interface there. We know the neuromechanical system when treated appropriately and it's just that, they respond well, we've seen it, I think that it's the metabolic side when you particularly have systemic inflammation that will give you fibrotic connective tissue so the oxidative stress runs riot through your connective tissue and creates little micro damage. And then that produces a response which is scar tissue within your fascia. So binds up and it's persistent. You see this very

obviously in patients with things like rheumatoid and polymyalgia rheumatica, in the morning, when they haven't moved, they are really stiff. And then every morning, your patients with a lower grade inflammation just the same, but it's on a more subtle level. And then they have neuroinflammation. So, they have systemic inflammation in the blood that bathes then into the peripheral and central nervous system, and that generates neuroinflammation which generates hypersensitivity. So that means you have an existing neuromechanical problem, the pain threshold drops down, and it highlights or exaggerate an existing issue. So, it looks just like the other guy that came in, but they just simply don't respond in the way that you thought they would. So, they then have persistent pain, because of the hypersensitivity, they get persistent dysfunction when you're measuring range of movement, because the soft tissue in the fascia keep binding up all the time. They have low grade mood and behaviour problems. They might be aware of it they might have a diagnosis and that's inflammation changes your brain chemistry. So, it turns the production of serotonin down and you get less serotonin so you get less happiness and less pleasure from existing conditions and you get slight hyper vigilance occurring. And that's anxiety is what most people refer to it as. And then also they tend to get fatigue. They're not always aware of it because they've had it so long, but it's a low-grade sort of malaise. So, we want results, not theory, that is what it's ultimately got to be for me.

# **Steven Bruce**

So, as I said in functional medicine seminars, you've got all this information, they cram it into your head because they want to do full on function medicine, it's overwhelming. So, what I do is I'm looking for keystone nutrients, certain things that have key stages in certain metabolic processes that affect our neuromechanical practice, they're bottlenecks to change. If you miss vitamin D, it doesn't matter how much omega three or how much rehab or how much biopsychosocial stuff you do, they will not get better. I guarantee it, I've seen it when they're properly deficient, they're ruined, they just will not function. So, we want to focus on the nutrients that are having the biggest effect. They've also got to be, it's got to be common. There's no point having something that's a big effect. But isn't that common. And we want to be able to replenish it quickly with supplements, ideally, and foods to be maintained, but supplements initially to get them up and running quickly. And we want to be results fast. There's no point doing so omega 3 might be appropriate for some people, but it takes months for the effects to kick in. Same with the gut microbiome. That's a big thing. But it takes months often to change the bacterial population, whereas a vitamin D supplement within days if they're deficient, certainly within weeks, they are up and running. They feel completely different. And then you have them onboard as you're making your neuromechanical intervention.

#### **Steven Bruce**

Why is it vitamin D is such a keystone?

# Steven Bruce

Well, it's every single cell in our body has a receptor for it. So, from an evolutionary point of view, it's just profound like you and I are white, we have low melanin content in our skin because at some point our ancestors migrated north from the equator. That's why if you go to people who are from originally from North Finland, North Norway, they're incredibly fair skinned, because we have to be able to make vitamin D when we can, with what little sunlight we have, when you're in the equator, you're getting sunlight all the time. So, every single cell responds to vitamin D. The only other thing that has that is the thyroid. And it's profoundly important for your immune system, as we're discovering now, with COVID. And we knew that before, it's just that it wasn't the media story that it is now in terms of that, and when it goes down, it creates this sustained inflammatory response and that creates pain, it creates depression and it creates fatigue, and it's so profound. It's the inflammation. That's what it really comes down to and the mechanisms behind it, I haven't put in this presentation because it's not really a clinically that useful, but at the end there's a link for your members where they can go to a separate link and they can watch a 20-30 minute video, it's a bit more nerdy in the research about the mechanisms on vitamin D and they can watch that in their own time.

#### **Steven Bruce**

Okay, thanks.

# **Simon Billings**

So, vitamin D is if you're not that au fait with nutrition is the best place to start because it's in the public eye, everyone's aware of it now, and you can't get enough from your diet, it's not possible. It has to be sunshine because where we live, you can't get enough. Supplements are cheap, they're safe, they get results very quickly. It's just a great place to be able to start for intervention. So just go for the low hanging fruits there in terms of clinical stuff.

# **Steven Bruce**

So, what you were saying a minute ago, Simon, rather perversely I think, dark skinned people are likely to have lower vitamin D in this particular part of the world aren't they because presumably their skin was designed for a lot more sunshine than you get in the UK?

# **Simon Billings**

And we'll see that in a minute in the research. They are always deficient. If you're if you're anything other than Caucasian, you are going to be deficient living in England. 100% of the time, and they absolutely must, must supplement. Certainly, my Asian, I work in Southampton and have a lot of predominantly Caucasian population but maybe 10% have some Indian patients that come in, without exception, the elderly Asian patients are profoundly inflammatory in their metabolic makeup, huge rates of diabetes, heart disease, strokes, cancers, all that stuff and massive degenerative change. Now that's partly there's some issues with diet and the way that they cook a lot with omega sixes, and a vegetarian very carb heavy diet, but also, they just are very low in vitamin D. And that creates this profound inflammatory response that then basically ages them very quickly, we call it inflammageing, they age rapidly, really disproportionately compared to some of my Caucasian patients of similar ages really profoundly. So, in terms of our intervention, neuromechanical practitioners, I want it to work as I know it should and I want sustained range of movement increases that are consistent with remodeling and healing of any kind of damaged tissue, whatever you're going to call it. So, I like to measure range of movement a lot with what I did because it's objective and measurable and if you get improvement in function, you should get a sustained drop in the pain consistent with remodeling and with normal nociceptive thresholds. If your threshold is

very, very low, then obviously you're going to get the system firing even when it isn't appropriate. And then I may also do some stuff just for health and wellness. But really, as a chiropractor, I'm all about results from what I get with my neuromechanical intervention, not just nutrition for the sake of nutrition, I'm not interested in that per se. So vitamin D is a very, very common cause of the system pain dysfunction, mood and behaviour, and I say mood and behaviour quite specifically not depression and anxiety just because I think that label creates things in the patient's head, and fatigue, and that a significant number of your neuromechanical pain patients are deficient or insufficient, and we'll clarify the distinction in a moment. But in particular, patients that are obese, non-Caucasian and the elderly have disproportionately high rates of deficiency, meaning really, really high. We'll see later in the research. We split those apart. Rather just using averages, they are way more likely to have a problem. So, if you want to go away from this with something easy, pick out your patients that are carrying a bit more weight, three stone or more, they're gonna have a problem. If they're anything other than Caucasian, and if they're over about 65, they aren't going to be deficient. If they live in England, it is not possible not to be. So, you can't really go wrong. All you got to do is look for the triad of symptoms. They've got persistent pain, they might have some low-level mood and behaviour, maybe a diagnosis and a bit tired. If they're obese, if they are non-Caucasian, if they're elderly or all three, you're in just give them lots of vitamin D. And then you're going to get some great changes happening.

# **Steven Bruce**

And I'm guessing it's no coincidence that those are three of the most vulnerable groups to COVID-19?

#### **Simon Billings**

That exactly why the COVID-19 thing appears to be that they're the people that are inflamed, so that's why they get cytokine storm, they're already inflamed. Then the COVID comes in and they go completely berserk and their lungs kind of basically drown as far as I can, and they get all sorts of weird damage occurring. Yeah, that's exactly right. So, most patients 5000 international units or 125 micrograms is going to correct most people unless they're obese. And we'll cover why that is. So, this one slide will give you what I want to take away those three things along with the obesity, skin tone, elderly, you're going to get in vitamin D and you're going to be going to, for some people, it is absolutely like a silver bullet. So, this is just to show that the NHS now are right on top of this as well. They are well aware that you can't get it from diet. And that actually, certain people are more likely and I don't know if you can read this but muscle aches and weaknesses. This is very important elderly people in terms of risk of falling they associate with sarcopenia so they become much more fragile so the NHS are on board. The danger with the NHS being involved is that the GPs give out very low dose vitamin D in the form of Calcichew and it's not enough to get them out of deficiency often and also because Calcichew tastes of chalk, which is what it is, and they don't like taking it. So, the compliance is quite poor as well. So, here's this is just a schematic of how it works, I'm not going to go into detail but the vitamin D creates a sustained inflammatory response that drives free radical damage, which creates oxidative damage. Now unfortunately, that free radical damage also upsets your mitochondria. And your mitochondria are your number one source of free radicals so that free radical damage creates more inflammation, you get this kind of spinning cycle of ageing, that damages your soft tissues and then they get very stiff and achy there, you manipulate the spine, you might release the soft tissue, and then the

next time they come in, it's kind of bound up again, and it just seems really, really stiff all the time. And also, their pain threshold is quite low. So even though their function might have improved when you assess it, they still hurt quite a lot and it's a bit surprising. And then they'll have mood and behavioural issues directly as well. So, the key clinical question is, is my patient likely to be deficient or insufficient? And if they are, is the vitamin D deficiency or insufficiency directly causing the chief complaint? So is it allodynia, the vitamin D is causing the pain? And it's like a silver bullet in that because you get some miraculous changes. What's more common, certainly in my practice, which is probably a reflection of the people I see and where I work in Southampton. If you're working in the north of England or Scotland, and you have a much higher rate of people who are non-Caucasian, you're going to get much higher rates of this kind of stuff where it's the thing is going to make the big difference, but in my practice was more common is that is it contributing to the overall picture? So, is it lowering their pain threshold down which then highlights an existing or latent neuromechanical dysfunction or some kind of connective tissue failure that was previously sitting there not hurting like a prolapsed disc or rotator cuff tear and then pain threshold drops down ignites it up into pain and inflammation? Or have they had this kind of niggly bit for ages and suddenly it just gets worse. That's a different question.

# **Steven Bruce**

Can I interject with a few questions from the audience while we're? I've got one, the predictable one, and you probably are going to talk about this later on, but Pip's asked is it possible to take too much D3 from supplements? Especially some of them apparently are 10,000 international units.

#### **Steven Bruce**

Yep, we'll cover that later. The answer is, yes, you can, but you'd have to go berserk.

#### Steven Bruce

And Darren's asked whether you advise vitamin K to go with vitamin D, because apparently in his opinion D on its own is not enough.

#### **Steven Bruce**

So it's to do with vitamin D allows you to absorb calcium, when you get the calcium it's the vitamin K that activates a protein your bone called osteocalcin. And that then, basically sucks the calcium into the bone. So if you have lots of calcium in your system from the D, you don't have enough vitamin K, K2 this is specifically, then theoretically there is a relationship between osteoporosis and heart disease and the calcium will disappear instead of going the bones will go into your arteries and cause heart disease so, but that does depend on the patient depending on their gut microbiome, because you will make a certain amount of K2 through gut microbiome. You can also eat K2 in the form of good quality grass fed dairy. So like Kerrygold butter will have it in it. And also, you can convert K1 from leafy greens into some K2, so it does vary a little bit. The K2 thing is important for some things but it's probably been over emphasised by the supplement industry. They want to sell you stuff.

Okay, and just one more before we move on. Jan's asked about testing for vitamin D, does it show up in a blood test? What's the threshold level that GPs would accept these days?

# **Simon Billings**

We'll come to all of that.

#### Steven Bruce

In which case we'll shut up and we'll wait until you get there.

# Steven Bruce

I've done this lecture loads of times, I've got all the questions mainly covered. So, the NHS range in a black and white view of the world is under 25 is generally considered grossly or severely deficient, in millimoles. And then 25 to 50 is deficient. And then once you're above 50, they aren't interested, they're not going to return as adequate or normal. So, it's very important, you always get a copy of the GP notes. So always get the patient to request GP notes, I'm not going to chase GPS because they don't want to hear from me. So always get a copy of the notes. In the functional world that I live in we recognise those two are the same, but 50 to 85, we consider insufficient, and I'll come to why that is in a minute, because people can still be wildly symptomatic in this area. Now I've got a case study coming up. Optimal is a different question. And again, I'll explain the research later but optimal, because we don't want to patients just adequate, or you know, not insufficient, you want them optimal, because the immune benefits of vitamin D don't really get juicy until about 100. So, what we want is around about 120 to 150, maybe a little higher depending on the patient, and I'll explain why we think that's optimal later. Once you get above 200, you're not likely to get endogenous production of vitamin D, above 200. So, if you want to mimic what you'd get if you lived in a sunny climate and had all year-round exposure, and that's somewhere in the hundreds for the most part. So, under 50 is generally considered deficient by everyone. 50 to 85 is insufficient in our world and your world now but the NHS will recognise that, if you're 51, you're fine. And in fact, often when you like 48-45 or so you fine don't worry about it. The other thing GPs do a lot of is they will find a deficiency, say 25, give them a loading dose of vitamin D, whatever it is, they'll retest them, say you're fine now you can stop taking the supplements. Now, if it's the middle of winter, that's not going to work because they're going to get deficient again, and patients, I'll explain again, how you make vitamin D naturally later in the presentation. Patients really have an issue with not putting suntan lotion on. Some of them just can't get their heads around it because I'm going to tell them the exact opposite of everything they've been taught. So, some of them struggle with that so they have to supplement all year round, but I'm gonna come to that later.

# **Steven Bruce**

Interesting that the last box on those two graphs there, those two bar charts, you said that over 250 nanomoles is excessive, the GPs say it's toxic.

# **Simon Billings**

Well, vitamin D isn't toxic itself, it can create hypercalcemia. So that can be an issue. But you'd have to again, to get the levels above 250 you're gonna have to take a lot of vitamin D supplements, you can make 20,000 units in half an hour sunbathing. So the RDA is 200. And most supplements are 400, it's not a meaningful physiological dose at all. That's why 5000 which I'm recommending for most people, is like 5-10 minutes of sun, done. In Florida, you get that all year round, done. To get above 250, you're gonna have to take well in excess of 20,000 units, probably every day, for a long period. And even then, there are research studies with MS where they are deliberately creating massive over like up to the five hundreds, and the patients are fine. I'm not advocating that but I'm just saying in the research study they do that. And while there are case reports of people having hypercalcemia if you stop vitamin D they come down again and they're fine.

# Steven Bruce

Did you, you might cover this later I don't know, did you see there was a study done in about 2007-2008 into people supplemented with vitamin D and how many of them got the flu? I can't remember who the researchers were. But they had it was 500 odd people in the study. Then one got a placebo one group, one got the standard GP daily allowance of vitamin D supplementation, and the others got in the second year of the trial, they got 8000 international units. And at the end of the trial, you know, the number of people who got flu in the winter was massive for those who were on placebo. And of the ones that 8000 units, only one of them got flu at all throughout the whole study.

# **Steven Bruce**

And there's plenty of studies out there like that. It's not new research, particularly it's just come to the fore now.

# Steven Bruce

It's just it's nice to draw it to people's attention, isn't it? You know, what a significant effect.

#### **Steven Bruce**

It's massive and that's again, because you're getting into the optimal zone, not just not deficient, where their immune system cranks up and you're just mimicking evolutionarily where you should be. That's all it is. And those cultures that live north like Norway and Finland, they also realised that in the winter, they just couldn't get enough. That's why they have a culture of using like cod liver oil and fermented cod livers, because they realised when they had that they were healthier than what it was, turns out to be vitamin A and vitamin D in there, along with the oil of fish, but that's what it was. And that's why they culturally, tribes and people that often work out what they need to do nutritionally to be healthy and thrive.

# Steven Bruce

Yeah.

#### **Simon Billings**

Okay, so common signs and symptom. Below 25 nanomoles, this is gross deficiency, they are always symptomatic, always. And they're going to have broad areas of muscle pain and stiffness generally, across the shoulders often in the mornings can't move they're all bunched up again. Lower back pain often is quite broad and diffuse, the whole lumbar spine, maybe right across the buttocks and then often their lower extremities because they're weight bearing and they're hypersensitive through there, so they're always symptomatic. The danger is in the older patients, they think they're just getting old. That's easy to justify or they've been fobbed off with something else. The next slide I show that. They are always fatigued, that is a key symptom, they are knackered, absolutely knackered, and that fatigue is often misdiagnosed as depression because they are so tired, they have no motivation to do anything. And when they talk, they're just really slow, and they just talk like this. And then when you give them vitamin D, they come alive, it is astonishing to see happen. It really is. If you're doing muscle testing, I do a lot of muscle testing. They are weak, any big kind of muscle, they are weak, they are weak as a feather. They always have a low mood. And again, it might be diagnosed it might not but they'll have low mood. And they will if they've had a neuromechanical issue, they will have had a non-response to other treatments. So, it doesn't mean they need your particularly amazing cranial release or your visceral work or your whatever it is. If they have that collection of symptoms, then you have to make sure that they have vitamin D sufficiency. They may well also have been misdiagnosed because they will have complained to lots of people, they'll have fibromyalgia or chronic fatigue syndrome, depression, anxiety, it's all in their head at the pain clinic because they got hypersensitivity. In children, they get horrendous growing pains and I've got some case studies coming up on that. In the younger ones, its failure to thrive and developmental delay. They are so tired. They're just not able to muster and to develop as they ought to. And in teenagers, they're just kind of that kind of standard Kevin, kind of grumpy teenager. Being a teenager is metabolically, the nutrient requirements are massive because they're growing rapidly, producing hormones, intensely nutritionally demanding and unfortunately at an age, but they typically get very carby in their intake, and so on. So, I've seen some very narky teenagers become quite nice people, when we got their vitamin D up and their magnesium, we've got them fat and protein, and suddenly their periods become not agony every month like they were, and their mum thought it was normal because she's always had that, you know? So, in that range then so this is one bit of research, I don't put lots and lots of research in this stuff because it's not that conducive. But this one is a very interesting one because they took a load of people with sort of chronic widespread pain and also people with a diagnosis of fibromyalgia. So, they gave them all 7000 units, which is a good dose, and anything under 62 nanomoles were included. And then they measured and they gave them so 7000 a day and they measured pain, visual analogue scale, they did depression scores, they did quality of life, they did sleep, they did tenderness in terms of fibromyalgia criteria, all that kind of stuff. And then, this is the amazing thing, in three months, they had a 47% drop in pain, that's massive. It's huge. So, they didn't do anything else, no neuromechanical engine, nothing, they just gave them vitamin D got them up, and they got half their pain level, a 35% reduction in depression and 77% increase in general vitality markers. So that's one nutrient they've got, they might be low and other things. Magnesium is very common, vitamin B12. They might have, you know, pelvic stuff and cranial stuff and all these things. If you miss this, then all bets are off, doesn't matter how good you are at what you do, you're never going to get rid of these problems and they're going to stay depressed and they're going to stay tight. So, there's one thing and this is literally as simple as it gets. You

pick them up they are obese, non-Caucasian, maybe also they're elderly, you can go through this is super, super easy, low hanging fruit to go for and clinically very, very rewarding.

# **Steven Bruce**

Just before you move on, you've said there are lots of studies, just reassure us you haven't cherry picked the one that gives you the dramatic results and that this is more or less across the board.

# **Simon Billings**

I have cherry picked that for dramatic results, but there are other ones. In research terms, not everyone agrees. There's always studies, the bestselling drug in the world is statins for cholesterol. I can serve it up with a 30% benefit and I can serve it up with nothing. So, there's always going to be questions a lot of the time in vitamin D and in general, this is actually in general research, the people doing the research don't actually understand what they're studying. So, in vitamin D research, what they'll often do is they'll take people with, say depression, and they just give everyone vitamin D, they don't measure their vitamin D level. So, the question in the research they're doing is does vitamin D help depression? Well, the question should be, are people who are deficient in vitamin D, if you get them up to optimal, does they improve depression? That's a different question. And in the conclusion, they don't write that and that gets included in metaanalysis. Or they measure them, they're deficient, they give them a crappy dose that isn't enough and then again, they don't retest that and notice it. So, when you have a study about depression and vitamin D, when you include all the research you get this kind of watered-down effect well, they'll say well, some said it was good, some said it wasn't any good. When you average out it's about nothing. We need more research. That's common, right? When the researchers, the people that understand vitamin D, go in and exclude all the studies that are basically bullshit and are not testing properly or giving proper doses, all of a sudden, the results look good, very good. And that's very common amongst nutritional researchers. Because they don't understand what they're studying. They trying to do one thing and one thing on its own and with vitamin D, it can work, but in other areas, doing one thing it's not what you're do in clinic. You know, that's the medical model for testing drugs because you're squashing a symptom or a system with a drug. The root cause is irrelevant, doesn't matter. You just take an anti-inflammatory, whack it down. It's proven for back pain, right? If they're not vitamin D deficient, doesn't work. You don't get them up, it doesn't work. If they have vitamin D deficiency and they're low in magnesium, doesn't work, because magnesium activates vitamin D. The enzyme that turns vitamin D on is a magnesium dependent enzyme. I have a case study coming up, exactly that, I loaded him up, nothing happened. Gave him magnesium ping, he suddenly is fine. So it's nuance to these things. So, the answer is yes, I have picked that because it's good. Yes, there are other ones. And if you look at the research, there's other ones that say it doesn't work.

# Steven Bruce

Well, this is why we need people like you because most of us would look at a paper and we wouldn't be able to determine the flaws in their research and evidence. It's very difficult to do that for the layman, isn't it? And I regard us as laymen in research.

#### **Simon Billings**

It's lies, damned lies and statistics, it's the politicians' favourite, right? So, when they go between 25 and 50, it's still deficient, but it's not gross. They're usually symptomatic, but it's a bit more subtle, and they're not always aware, it varies quite a bit. It's surprising. They'll often have low grade aches and pains that are broad and specific, but it's not quite severe. The low pain threshold will often highlight an existing issue. So, these ones, the first lot under 25. They have obviously non-mechanical back pain, it's broad, it's diffuse, it doesn't really change that much with movement. It's very bad in the morning. These lot. They have a little bit of that, but often the pain threshold is dropped down and so it pokes out an existing issue or a latent issue. So, then it will look like the sacroiliac joint is an issue and it is an issue. But then you do the treatment and they prove a bit, and then they plateau, they just don't get beyond a certain level because they're hypersensitive. The fatigue and the mood mild to moderate, again, depends on other factors in their life. The other psychosocial stuff. And they'll often seen other people have said it was good, and then it kind of stopped working. It didn't really get past a certain point, they plateau at a point where they're not quite sure why. So, this is a case study. This was a long time ago. So, if I had this now, I'd be all over him in the beginning. So, this is 2008 quite a while back, so he's 47. He's got sort of chronic back pain, chronic neck pain and tingling in both hands. He had a bit of scoliosis and a bit of low grade degenerative, nothing I was that worried about. He did eight treatments. I measured function, he did improve but very modest improvements in his symptoms, really. So, we did some rehab. And then we did some other stuff. But again, he's improved, his function improved again, but his symptoms didn't really change, so he's moving better, and everything's better, but he's still using analgesics. In fact, when I really asked him, he was using Tramadol every four hours. It was amazing he was still at work. So, I sent him back to his GP, he was a vegetarian. So, I was interested in his B12. And his vitamin D levels were 35. And his CRP was normal and his B12 there was 140. So as Tracy's stuff, that's definitely NHS deficient. So, his GP is giving him 800 units of vitamin D with calcium carbonate, and then injections 1000 B12. And they do a loading dose three times a week for two weeks, and then they split it immediately to every three months, which is ridiculous. Anyway, so he had just that low backache that was constant and just didn't really want to go away. And so then when I say that 800 is probably not enough, let's go for 5000 and by August, he was completely pain free. Nothing. But he's having monthly injections, we managed to get the GP to do monthly at this point, then every three months, and by October, he had back pain again. So, at this point, I then got him sublingual B12. And he then was pain free again and actually injects himself. So, this case it was vitamin D and B12. And that's where, you know one thing is great, but sometimes it is a jigsaw and it's finding enough of the jigsaw bits to get it in and then all of a sudden, he turned around, if I'd left him all twisted up, he would still have some back pain. It's just that I got rid of the mechanical stuff, but I left in the metabolic stuff and therefore he got a bit better and then plateaued.

# **Steven Bruce**

Simon, I need to interrupt because I've got so many questions coming in as we kind of anticipated. Is that okay? Diana says, Are there any contraindications to suggesting vitamin D, neurological disorders such as Parkinson's, for anyone? And someone who wants to be called the Renegade Weasel says Can we see histological changes in chronically inflamed patients that show the increased fibrotic changes? Are these changes macro enough to be seen in imaging like MRI or ultrasound?

I have, like the way inflammation. Yeah. Probably if you were looking at I've got some ultrasounds of people's fascia in the lower back and the binding effects of, well, they were low back patients. I don't know whether it's specifically inflammation so I don't know the answer that question. I would imagine you would if they're chronic enough. I don't know how that would work clinically. But yeah, probably.

# Steven Bruce

And Jan asked about you mentioned the connection with diabetes, do you mean type two diabetes?

# **Simon Billings**

What do you mean a connection? I'm not sure that connection, there's not a connection, well there is a higher risk of autoimmunity if you're low in vitamin D early in life. Type Two Diabetes, there isn't a direct link, but there's low level stuff in terms of prevention that might suggest that because of inflammation, but it's not conclusive, if I say that.

# **Steven Bruce**

And final one then before we move on, Carolyn says to what extent can vitamin D and other supplements influence the onset and the progress of autoimmune conditions like COPD, MS, lupus etc?

# **Simon Billings**

Yeah, very good. It's a big factor for autoimmunity because the immune system goes kind of rogue. So yeah, prevention very important. Once they have it, you're gonna have to work hard to get it to turn off because by that point, there's so much damage has occurred, the guts always involved. So that's how I got into this was I had psoriasis and ankylosing spondylitis. And that's how I went on my journey through functional medicine from about well 2007 is when I started looking at it for my own health. So, but you know, just vitamin D on its own is not going to turn someone's autoimmunity off, unfortunately. So, prevention, yes, but once it's on you have to do vitamin D, but with a lot of other stuff as well. Okay, so growing pains, just easy peasy. Again, low hanging fruit. This is a study from Turkey, I think it was. So, they took a load of kids with growing pains and the average level is 33. So, they're deficient. It's not gross, but it's deficient. And then they're going, now look at the doses here. If they were under six years old, they gave them 150,000 international units, if they were over six, 300,000. Now, the reason they do that is because people taking supplements in studies is unreliable. They're not going to do it every day. So, they just load them up with a dose, they know is going to get them out of deficiency and do it that way. And they have no reaction to that whatsoever. So, I'll come later to how you can do weekly dosing. But that just puts into context, the safety thing a little bit as well. Again, I'll talk about later but if I see someone who is really low, I will load them up in the room with a liquid, I'll give them 100,000 units straight in the mouth, because I know that their levels up whack immediately. They need to feel better quickly. Yeah. So, this was a baseline and they went up to 111, they put them into the optimal zone, which is exactly what you want. And then after that you can see here so they're averaging 6.8 on the visual analogue scale and they dropped 2.9 so a 57% reduction in pain in three months. So again, and the rest of these pains that may be some mechanical stuff, it might be

magnesium, it might be a whole load of stuff. But that's a massive improvement with not a lot of effort. And not just for growing pains then but you're gonna have an influence over their whole life in terms of their immunity, their bone density, a whole load of stuff. And if anyone's interested in pregnancy, and breastfeeding and paeds, at the end, the link I put up for you, you can get the download for some charts I put in there and also I've done a presentation on pregnancy, the dosing and for breastfeeding so you know how much to dose women and pregnant women with babies, it's about 10 to 15 minutes on that kind of stuff. Okay, so case study again. This is Ben he was 12 when he came to see me, generalised aches and pains. Knees, feet, ankle, neck, very tired. He was exhausted, right. He fractured his ankle in March 11. Six weeks in a cast hadn't healed, should be a red flag for vitamin D right there. And he was splinted for four weeks, and then showed vague signs of healing, and the paeds, and this is important he'd been seen by a paeds consultant, and they hadn't tested his vitamin D, his calcium levels in the blood were normal. And we'll describe why because basically, he's got to maintain that through parathyroid hormone. And they've said he was fine. He's got flat feet. He does have flat feet, ridiculously flat feet, he's very hypermobile. And he'd already seen a chiropractor and an osteopath. And he clicks very nicely. They love giving him a good clicking, but it did nothing for his pain. So, I ordered him up. I'm sorry I did the exam, he's very hypermobile. He has got very flat feet. He has got nothing on muscle testing. So I ordered vitamin D, and he was 20 nanomoles. So properly gross deficiency. This is rickets territory, he was a bit younger, and he wasn't sort of, you know, a tall, 12-13-year-old he'd be having bow legs, and all classic rickets stuff. So, 20 nanomoles, I gave him a 50,000-unit loading dose and then I gave him 5000 every day, and he didn't actually improve that much. The next time I saw him a week or two after I added the magnesium. All of a sudden, his symptoms lifted very, very quickly. I also did do some manipulations and cranial stuff, some instrument assisted stuff because he's quite stiff in the fascia, bit of rehab and some orthotics. And he was basically fine. And then we retested his vitamin D, 120. And he's good as gold. And the problem you have with children is that they stop taking the supplements. He came back in December, achy, knees achy, low back, poor sleep he just stopped his supplements. He's fine. Now he doesn't need them. He's fine. Why would he take that? And he's done that twice since this happened, he's now in his early 20s. And he still does it. So, you have to make sure you don't assume anything. Are you still taking your supplements because if they're not they're going to get all the symptoms straight back again.

#### **Steven Bruce**

And his parents I take it weren't monitoring this?

# **Simon Billings**

No. Parents have this thing about when they're teenagers, they like to give them responsibility. You're remembering this, you must remember this and I keep telling parents, they're not going to remember, they're a teenager they have no interest in it. You got to give it to them. Every day or once a week, and then you're going to be able to see it. Okay, so once you get above 50, the NHS are reporting as normal. Now we consider that insufficient so always get copies of the GP notes. So always get copy of the report. Now insufficient, what does that mean? So, if I just show you this, they took two groups of people, one had 50 nanomoles in the blood, one had 86 nanomoles, they gave them the same dose of calcium, and they wanted to see how much calcium do they absorb out of the supplement. The group with 85 nanomoles had 65%

more calcium absorption than the other group. And if you're still laying down bone, or if you're an osteoporotic older lady that is a massive amount of calcium you're missing out on. Huge. And they can shove them with all the calcium carbonate they want, they're missing out on half of it. So, for that reason, then, this research was done. The reason they picked 85 was because their parathyroid hormone when they get to 85 is maximally suppressed. Which I'll talk about in a minute. So, from our point of view, we want functional levels up to 85. And that's a minimum. And really, we want optimal. So, symptom wise, they're not actually usually very symptomatic, if at all, in this range. So, if you look at them, they're 50-85, they don't usually complain about a lot, unless they have a defect for the vitamin D receptor. Now, you're not going to know that obviously. But if they have a defect in the vitamin D receptor, the vitamin D does not get accepted by the receptor in the way that it ought to, and you're gonna need a much higher levels of vitamin D in your system to get the same effect that somebody with a decent genetic hand would again. The other thing it can be as I say is magnesium deficiency because magnesium turns vitamin D on so they can flood the system with vitamin D. If you don't have enough magnesium, then you're not going to get the results that you would expect. So this is a case study, this is David, he came to see us 67, three years of really severe, broad muscle pain, incredible fatigue and weakness. And it came on after he had radiotherapy actually. He had to bring his bed downstairs because he just couldn't walk upstairs and he's effectively disabled and his wife said that he's basically fading away in front her, he's losing muscle. His GP said he's got osteoarthritis. He's already taking a 1300 units of vitamin D. And his vitamin D levels are 55. So, I said, Look, I want to get you ptimum to see what happens. So, we did that. And I gave him 5000 a day and within three days, he was able to walk upstairs. Two months later, he's walking four miles as he starts to recondition. He now goes on walking holidays, and he's now early 70s. And we got brought him up to about 7000 using blood testing. He seems to need that, he needs to be up in the high, just above 200. That's where he seems to get his peak, kind of energy and resilience back and you wouldn't have a clue, the guy literally could walk upstairs, had effectively retired from being an antiques dealer because he just couldn't do anything anymore. And he had normal vitamin D levels. So, this is where there's a nuance in clinic. You just need to know those nuances. It might be that he just, he might have something else. But it might just be that you need to get him up nice and high. That's why I always aim for optimal to try and see the changes, rather than just not deficient.

# Steven Bruce

Interestingly, too, you said it came on after radiotherapy. And of course, it would be very easy to attribute all those problems to the radiotherapy and the previous cancer.

#### **Simon Billings**

Yeah, and he's relatively unusual. It was very spectacular with radiotherapy and also be thinking about the gut microbiome and all that other stuff. But yeah, in his case, it was like a silver bullet. It was miraculous. So optimal levels, we're going to say 100 to 200. And it's just mimicking what you'd get from a natural endogenous exposure with the sun. So, there's epidemiological studies and some randomised studies just suggest that in that 100-200 zone, you get a significant drop in cancer, strokes, heart attacks and mortality in general. Again, it's not universal, but it's there's enough there. Again, even it's not perfect research, I'm just looking at evolutionarily, you know, I should have a certain amount. And if I don't, then you know that just

from evolutionary point of view I'm at a deficit. So, I want to try and maintain myself as best I can in a decent range all year round.

# **Steven Bruce**

Joe's actually asked whether getting more suntanned if you're a Caucasian reduces your ability to absorb vitamin D?

# **Simon Billings**

From supplements?

# Steven Bruce

No, I imagine from sunshine.

# Steven Bruce

So, you're saying if you're Caucasian, you get a suntan? Yeah, a little bit because you're getting natural protection.

# Steven Bruce

But in the process, of course, you must be getting a higher dose of vitamin D from the sunlight anyway.

# **Steven Bruce**

Yeah, absolutely. If you're very fair, people don't need a lot of sunlight at all. But ironically, even though I flagged up obesity, non-Caucasians and elderly, actually redheads and people that are very fair are often so diligent with factor 50. They also can be grossly deficient as well, because they go out and just burn immediately, so they just don't go out with that factor 50 on and also children, I could also argue are at a risk because the parents are absolutely obsessed. It's like they think their children of vampires and a hint of UV on their skin and they'll explode into flames. So that could be an issue as well. And some parents really just can't get their heads around and you have to supplement all year round rather than saying let them get 20 minutes the sun and then lotion up.

# **Steven Bruce**

Interesting. I've seen some other research recently that suggests that we are over protective about sunlight. Karen's asked, are there any other things which block vitamin D? You've talked about not having low levels of magnesium, which means it won't get switched on but does anything else block it?

# **Simon Billings**

Block it in the sense of once it's in you? No. Let me think about that. No, not that I can think of. Okay, so this is just they'd go to countries where there are people that work outdoors and they have sunlight all year round, and then they look at their blood levels. And you can see here, they're well into the hundreds. So that's why generally you want to mimic natural all year round in endogenous sun exposure, we're gonna just try and mimic that. So, measuring vitamin D, there's a site, there's loads of companies doing it. Now, that's

just the one I originally used, vitamindtest.org.uk, 29 quid for fingerprick. Done. There's loads, medichecks are online doing it, there's thrive, there's tonnes of people doing it now. So, it's not the only one, just bear in mind again, that when if the patient orders directly when they get their results back, they will have a traditional NHS range usually. So, you need to tell them, look bring me the results, I'll interpret them for you. And then I'll show you the chart here, this is a download from, I set up a link for you guys to go to afterwards and get this chart. So, then you can, you can show them that you're here you're under 25 and we want to get you up to 150. So, it's 7400 a day, but then you just look also about obesity. We'll talk about that if they're four or five stone overweight, you're going to double the dose. So, we'll talk about that in a minute. So, you can grab that as a download also I have on the same, it's a double sided one. It has zero to 25 and a list of symptoms they might have, and then 25 to 50 and it lists the kind of symptoms, they can just see the range. And I have that also on there 100 to 200, you know, mimics natural sun exposure, benefits in mortality, cancer and so on. So, it gives them a little bit of education as well.

#### **Steven Bruce**

Is there any difference in the quality of the tests between, let's say, medichecks and what you get if you go to a GP? GPs will do a valid test will they? Unlike B12, which I gather, they're not very good at testing accurately.

# **Simon Billings**

Well, there's no accurate test for B12 basically, there really isn't one because what's in the blood is in the blood, it isn't in the cell. And then what's in the cell. I've seen people with, I did every test, I could for vitamin B, did methylmalonic acid, homocysteine, did all the Bs, and she was normal in all of them, but if she didn't inject or take a large percent of B12 she basically can't function. So, in my world, the clinical picture means everything. It really is tests are great, but you have to interpret them within the context of the patient. That's where GPs and medics have lost their way a little bit they rely on bloods. imaging and they've lost the art of the clinical diagnosis now in my opinion. Alright, so vitamin D is UVB specifically, b for burn, has to be a UV index of three or above hits your skin, you can't have any lotion on it's going to block the production. That becomes vitamin D3. That's the form you take in supplements and you get some from food, it goes to your liver, the liver converts it, again magnesium needed for that, then it becomes 25OHD3. Now that is inactive, does nothing, that is the form we test for generally speaking, and then it goes to the kidneys and is activated into 125 and that is what regulates calcium absorption specifically. So that's the calcium bit and that's the bone health bit. Now what happens is if you're low in vitamin D, your count, that's detected in the blood. The parathyroid then sends a signal to the bone that says we're low on calcium. I can't be having that. It has to maintain it. So, it releases calcium from its reservoir, its reserve and that's from bone. And it increases the blood calcium level. So that boy that we saw, who had the fracture wouldn't heal, with calcium levels were normal, completely all his bloods were fine but didn't measure his vitamin D. And they will always maintain calcium in the blood. That's why they get osteoporosis because they're drawing down their reserves. That's another reason actually why if you're interested in magnesium, your body will buffer magnesium from the bone when you're low in magnesium in the blood. So again, the magnesium test isn't terribly reliable unless they're very, very low, because it will generally tend to look decent. So, you're looking at a grey scale again of deficiency. So that's calcium. That's why calcium levels in

the blood almost generally mean very little in terms of vitamin D, unless they're very poorly and very, very low. Now this is where it gets interesting from an immune system point of view. And that's what, it's the immune system that drives the inflammation that gives us all the symptoms that we're often interested in as a mechanical practitioner. So as well as the kidneys it also goes into the cells of the body. The digestive cells, the bone, goes into the ovaries, the breast, the brain, the muscles, and inside of those cells, it turns on again, with the same enzyme. And that's what then produces this profound anti-inflammatory effect. It regulates cell growth for cancer. It's great for mental health is good for blood pressure. And it's great for infection prevention. But that happens inside the cell. And that's why we measure generally the inactive form because that's happening inside the cell. You can't measure what's happening inside the cells with a blood test doesn't work. It gets deactivated and spit back out again. Okay, so this is just we talked about flu and infections. This was a British Medical Journal two, three years ago. And they're pretty conservative with a systematic and meta-analysis review and they're saying, hey, look, vitamin D was safe, and it protected against acute respiratory tract infections. And the patients that are most at risk were very vitamin D deficient so it's no big surprise. You're very deficient, you get the most benefits in terms of prevention of infections. And that's exactly what's on the last slide, it turns on your immune system to work normally, and you get normal, healthy immune response. And that's what we're seeing from at least partly with the black and Asian groups with COVID struggling with the death rates. And this is just an interesting thing about flu. There is a theory that basically the influenza virus is around all year round. It's ubiquitous the whole year. But where is it between epidemics? And why aren't we prone in the summer and their theory is that in the winter, as your vitamin D levels begin to drop, your immunity begins to drop, and the virus then gets in, gets established, replicates and then all of a sudden, you've been got a fight, and then you get the flu. And so, their theory is that it's simply vitamin D dropping then affects your immunity. So, it's a theory and there is something interesting in that that it is around all year round, and it's kind of what you discussed earlier with that bit of research. Alright, so we make vitamin D. It's a UV index three and above, but no lotion. And in general terms, that means from April to September between about 11 o'clock and three o'clock, that's when the sun is strong enough. If and the easiest way I tell patients is if your shadow is shorter than you are, you can make vitamin D. That's it. They tend to get confused in the winter, they'll go out on a sunny day in January, and they'll think they're getting vitamin D but their shadows like three miles long because the sun is so low in the sky. They can't make any. It has to be your height or shorter to make vitamin D, with no lotion. The whole point of the lotion is it blocks the UV rays, right?

# Steven Bruce

How much of you has to be exposed for this rule to work?

#### **Steven Bruce**

It's coming up later.

#### Steven Bruce

You're way ahead of me, I know.

# **Simon Billings**

I love this lecture. So, when you get a little bit pink, they call that one minimal erythemal dose and you can make 20,000 units. I always tell patients this because I'm giving them a 5000 tablet. The RDA for that looks high. And I'm saying that I know this is 5000. Now that might seem a lot, but you can make four times that in half an hour. No problem. So, 400 is what you've taken before, what the GP is going to give you, is just physiologically meaningless dose doesn't mean anything at all. So, you don't want to get burned, that's for sure. But so, what we aim for is a third to a half of what you would normally get pink with, you don't want to get pink. A third to a half is safe and effective at producing that we want a minimum of 25% on show, so that would be forearms, lower leg, face and neck. The more you get out, the more you make. Again, 10 to 30 minutes depends on your skin tone, if your darker skin tone, you need more, if you're extremely fair, don't lie around for half an hour if you know you are gonna get burned, it's gonna cause problems.

# **Steven Bruce**

I wouldn't look good in those shorts, I'd need something else.

# **Simon Billings**

Okay, we'll get you some budgie smugglers, Steve, that's the look for you, I suspect. And then once you've got your dose, then you lotion up or you cover up. What I did when I was a teenager, early 20s. I'd go to Spain, and I'd lie there in the sun a work my way down the factors over two weeks. Lie in the sun all day long. That's a very bad strategy for health. Leaving aside the chemicals I was smearing all over myself. I need 15, 20 mins, half an hour and then I'm done. I'm gonna put a hat on, whatever, shirt, I'm not gonna lie around in the sun deliberately trying to get a tan it's not gonna work. It's nothing. It's not a very healthy thing to do.

# Steven Bruce

This is a daily dose, this 10 to 30 minutes?

#### **Simon Billings**

Yeah, if you can get it, yeah. Now the vitamin D from the sun lasts longer than supplements, double the time. So, it lasts, I think at least six to eight weeks it will flood your system and then because of the fat, it stays in the body and slowly drops downwards. Water soluble like a B vitamin that's in that in and out reasonably quickly, because it's water soluble whereas fat accumulates in the body so you can have big juicy doses and it stays with you. So, between March and April into September, October yeah, that's your main time. 11 and three, no lotion. If you put any lotion on above factor 50 blocks in 99% of all production so it just doesn't work at all. You can see here this is just it's an exposure of a person, so the dotted line is one minimal erythemal dose. That's where they made them a little bit pink deliberately. And you can see here that shot the vitamin D level up. That's 10,000 units, the bottom line. So, sunshine gave more vitamin D than 10,000 units of vitamin D, that's 25,000 units up here and note how it drops quickly. That's because the vitamin D from supplements doesn't last as long as naturally produced tends to hang about in the blood longer. So sunshine is always your best source always. So, some people just can't get their heads around because it basically means you've got to go out and midday sun with no lotion, and they just can't get their

hands around it. So, if they have a problem, I say don't worry just take the supplements, I always encourage them, but some people particularly with children, they just they just can't get their heads around, will often do things like they'll go out into the sun for a bit, but they'll put lotion on. They can't leave the house without putting factor 50 on so if somebody's not going to, I don't want to badger them but I just try and encourage them as best I can. So, our central clinical question we said at the start was, is my patient vitamin D deficient or insufficient? We've clarified that deficient is under 50. Insufficient is 50 to 85. So, consider the time of year. If it's in the winter, if it's in winter or early autumn, the likelihood goes up because they've not had any sunshine, that's going to give them vitamin D. If they are obese, the likelihood goes up a lot. If they are non-Caucasian, it goes up a lot. And if they're elderly, above 60-65, the prevalence goes up a lot. So, these are the key people to look out for and think about the time of year people getting SAD syndrome. They get really flat in the winter, a lot of time, that's vitamin D, they're missing. So, here's actual research from the UK, in the middle of winter, if you're considering it deficiency and insufficient, so anything below 75 we're talking nearly 90% of the UK population are deficient or insufficient. We're talking about pandemics at the moment, that to me, that's a lot of people and a lot of them are depressed and they're in pain. They're tired, and a lot of them are going to get cancer and a whole lot of other stuff because they're low in vitamin D because they're busy smearing themselves in factor 50 and ignoring that evolutionary history. If you go to the summer, the rates then drop obviously, because we're getting natural sun exposure, it goes to about 60%. So, at the best point of the whole year 60% of the population are deficient or insufficient, that's still a colossal amount of people and in our neuromechanical pain base population, when they do the study of people with aches and pains, higher again, even higher rates generally speaking. What they also found was the prevalence of vitamin D deficiency was markedly high in obese people, and in all in all groups regardless of the season. And the reason is that vitamin D is a fat, your bodies sequesters it into your fat and takes it out of circulation. So, there's less in the blood to do the job you need it to do you store it in your fat. Also, in the patients who were non-Caucasian, it was 100% all year round. The whole year. So, as I say, if they're obese, if they're non-Caucasian, if they're elderly, you guarantee they're going to be low. And just look at their clinical picture and you're in, easy peasy, low hanging fruit from a nutritional point of view. Just consider if your ethnicity if your relatives are at the equator, and you move to England at 51 degrees or North Finland, you have a problem, your evolutionary history just doesn't fit with where you live now and you're going to have to supplement. That's one of the reasons there's very high rates of certain types of cancers and obesity and diabetes and other things amongst black and Asian groups for sure. Anything above 37 degrees, by the way, living above 37 degrees, is considered a risk factor for vitamin D deficiency. If you look at where 37 degrees is, that includes Spain, because now that the red line goes through there, Spain is above that, and we're 51 degrees that's fairly far north, we're the same level, we're higher than Mongolia. Right, so we're fairly far north. So, this is a study in elderly people. This is again exposure to the sunlight and consistent range. There's the young people big surge up to the hundreds here, of nanomoles in vitamin D. And there's the elderly surge, very muted. By that point, their skin has lost the ability to convert cholesterol into vitamin D. Turns out cholesterol isn't awful for you. There's some other good things it's good for as well, hormones, for example, is quite important. And vitamin D, and obesity remember, it's stored in the fat therefore there's less in the blood and you're deficient then effectively function. So,, the clinical question was, is my patient's vitamin D deficiency or insufficiency directly causing the chief complaint? That is, is it the one thing that silver bullet like we saw with David, the older guy? The

only way you can tell is to restore vitamin D to optimal levels and assess the response. And it's the same with the other question, is it creating that inflammatory response which is lowering the pain threshold and highlighting an existing or latent neuromechanical issue or connective tissue failure, you can only tell by giving them vitamin D and assessing. Bear in mind with this the second one that might be like with the young boy, might be vitamin D and other things, the jigsaw, there might be more than one thing. So just because they don't get some miraculous recovery it doesn't mean they don't need it. It might mean they have other things in play as well. So, if you're going to do it, you're not going to do any testing specifically, just do on the first visit, because it will take days and weeks for the symptom to change just get in there. 5000 a day is safe, it's effective for the majority. If they are severe, I load them up with 100,000 there in the room, and I might do 10,000 a day for the first month and then drop it down to five. And you saw in the research with the children, they load them up with 300,000 so me giving 100,000 to an adult is not an issue at all. It's completely safe. It just seems a little bit scary when you first start out when you read the research you can see it's actually quite safe. Now when it comes to obesity, this is the biggest thing that stops getting results in clinic. So, while you're more prone to deficiency, if you're non-Caucasian, they respond just fine to supplements, it's the obese that don't respond. And the reason is this, the bottom line here, this is someone who's obese, the green line, this line here, the brown one is someone of normal weight. So, they give them 5000 units of vitamin D, note that their starting point isn't that deficient, they're maybe like 60-70, not terrible, not down here. And if you're obese only gets you up to about 90-95. If you have normal weight, they go to 125. So big difference. So, if we then convert that across, if you want to get to the same level as the person with the normal bodyweight, if you're obese, you will need this at least twice the dose to get up to the same level. And you can see that the response to vitamin D is not linear. It doesn't go directly in a straight line, it's curvilinear. It goes up, as you get the high levels to get optimal, the line is beginning to flatten out. So, we have to push up harder to get up higher. That's why you can't just do the same dose all the time. So, for anyone who's obese, if they're like three stone overweight, I tend to add on about two and a half thousand. Once they get four or five stone over, I just double it. And I know that they can make plenty, that they could make that on their own, so I'm not putting any risk in the middle. Okay, so that's what I've said already, we can move on to that one. And then poor compliance, generally speaking, it's men and children that are the problem, women are much better looking after their health, men and children don't tend to do as well. So, you can do a weekly dose, remember in the study it was like 300,000 units in one go. All you do if the kids are crap at taking it or your husband's crap at taking it, you just shove them full of seven days' worth in one go like squirt of liquid or seven capsules, whatever it is, and you do it once a week and then at least you're guaranteed that you know they're going to get the levels into a decent range rather than trying to nag them to take it all the time.

#### **Steven Bruce**

Now, what you've said there's quite useful and answers one of the questions that came in from somebody, who was asking about how you feed vitamin D particularly to awkward customers and she mentioned autistic teenagers.

Well, that's difficult and it depends how autistic they are. But yeah, so the liquid, they generally taste pretty good actually. And then there are some chewables around, some sublingual that taste very nice. That's what the malabsorption stuff I've put in here, if they have digestive issues, if they're on a proton pump inhibitor, proton pump inhibitors are so bad for you, it's unbelievable. I've read some research on proton pump inhibitors direct link with dementia because they drop your B12 levels. And in seven days, proton pump inhibitors can affect your cognition. It's really very scary drug and it seems so innocuous, a bit of heartburn meds, and it gives you within a month most people have got a bacterial overgrowth in their gut. That won't go away unless you treat it really, really bad for you.

# Steven Bruce

You're echoing there exactly what Tracy Witty said when she was talking about B12 and proton pump inhibitors.

# **Simon Billings**

It's really scary and what it does, it really is. So, I use sublingual, or you can also the one I'm using more of now also is a liposomal, liposomals they encapsulate the vitamin D or the B12 in a little fatty globule and then it goes straight into system. They both work fine. And there's no issue with getting around these things now. So easy mistake to make in clinic. Patients says, I already take vitamin D, fine great, but they mean they're buying in the supermarket usually or maybe Holland and Barrett but even then, the doses are usually quite low. And sometimes they're buying on Amazon and they've got like, a bag of 1000 tablets for a fiver. Well, it's come from China and it won't have enough everything in it. So, you ask them, is it on its own, is it part of a multi and where'd you get it from? If they say the supermarket ever. The doses are meaningless and the forms are crap. They won't absorb it and it won't give them any kind of results. You absolutely have a duty of care to get them on quality supplements and yes, it costs a bit more. But the bit more gives them the results. That's why they're taking them

#### **Steven Bruce**

So even though this says 10 micrograms on your top thing there, what would that translate to an international unit?

# **Steven Bruce**

10 micrograms are I think it's about 400 units.

#### **Steven Bruce**

Okay, but you're saying that that dose is meaningless if it's a supermarket supplement?

#### **Steven Bruce**

Yes. So basically so 5000 units we talked about is 125 micrograms. So, I think 10 like 10. I think 10 is 400 units, which is the kind of general standard, what they tend to put in it for the most part. Yeah, it is 10

micrograms is 400. The actual RDA or the NRV, as it's called now, is actually is five micrograms, which is 200 international units. Remember, you can make 20,000 units in half an hour. So, you know, 400, 200, it doesn't mean anything. If you think about it, from a physiological point of view it's meaningless. That's like, you know, a minute of sun exposure, and it's just it's not worth it. So then, if you're going to do any testing, then you can download the chart and you can dose bespoke and you might then be able to push them up into the upper echelons. And you'll see here that as you get to the higher levels, the dose goes quite high, simply because that curve by linear growth is not straight up, it's kind of up and then it starts to slow down, you need to push harder if you want to get into the green zone, this where all that immunity tends to come to life.

# Steven Bruce

So just run me through that. On this side here, you've got what the current level of D3 is?

# Steven Bruce

Yep, that's where they are now. Top is where you want them to be.

# **Steven Bruce**

And in the middle, it's got how much you need to give them to get them there.

# Steven Bruce

Exactly. And then you just double check the obesity. So obviously, if they are obese, you need to increase it, you know, maybe two and a half thousand or doubling it, depending on how big they are. I don't do a lot of testing. I did a lot of testing in the beginning. And I don't do that much anymore. Because they're usually low, and it's only really the ones that like data, and they're just kind of interested in it a little bit. And they want to know exactly, that's fine. I'm happy to test for them is 29 quid, not a lot. We have a whole load of the kits in the clinic, and they can do that if they wish to.

#### **Steven Bruce**

Carolyn's actually asked here, would we need to cover ourselves as practitioners, before recommending a high dose of vitamin D by getting their levels checked either by the GP or by one of the online clinics?

# Steven Bruce

No, why would you? They can buy it in the supermarket and buy it online, buy it anywhere they want. Nothing you're giving them, they can't get themselves.

# **Steven Bruce**

No but there's a difference between being able to get it, and us telling them to take a massive dose. They would buy 400.

Yeah, but you can buy 20,000 tablets online, it's all there. There's nothing illegal. They're not like you're recommending something that's prescription only, it's just that the NHS simply always packaged up with calcium for osteoporosis. Well, there are a few now that they have separate vitamin D tablets, but isn't it you're not giving them anything. And again, if you follow, I've got the contraindications coming up, as long as you follow those rules, you're fine. Because again, you can make more than that by sunbathing.

#### Steven Bruce

So we're not going to cause any harm. That's the main thing.

#### **Simon Billings**

What as long as, there's one contraindication I'll show you, but other than that, no. All right. Yeah, so it can build up in the blood. Because it's fat soluble, but it's not toxic, but it can lead theoretically to hypercalcemia. But there's no link with kidney stones, that was the historical concept was there was a link with kidney stones. And again, you will find the odd bit of research that says it is. But if you look at the totality of it the vast majority is saying there really isn't any link with it. In terms of kidney stone, there's a kind of a, but that there is a sort of a medical hysteria that envelops some people not quite so much now actually, when I started doing this in 2007, it was more so, particularly the nurses used to get their knickers in a right old twist. But nowadays they're more open to it actually. And again, because I'm recommending 5000 again in the scheme is not that much, it's not that unusual, relatively speaking now. The one, this is just the calcium and the kidney stone so 48 studies, 20,000 patients, no increased risk of kidney stones. So that occasionally comes up with people who've seen the nurse or someone that shouldn't have this supplement model. So, the risks themselves, the published reports with the doses known all involved intakes over 40,000 units every day. So, there's not a physiological dose, you couldn't make that yourself. So, you have to take over 40,000 and often for quite a protracted period. And then also even when the toxicity didn't ever actually kick in until you went above 500 nanomoles in the blood, so we're not going to anywhere near that. Most of our patients are going to have around 150, occasionally I might push them a little bit higher if they haven't had a response and I think they should have done. 10,000 units over the long term has been shown to be safe. Again, you make 20,000 half an hour. It's a physiologically meaningful dose. That's all it is. contraindications, the main one is sarcoidosis. Anyone with sarcoidosis, I just would leave them alone. It's not worth it. I did actually do this once, and they got very unwell, but he was my brother, so luckily, he hasn't forgiven me actually because he was very unwell with it, but I didn't know he had sarcoidosis in my defense. I just thought he had a really, really bad chest infection, it wasn't diagnosed till later. So, I just leave it alone that is not worth the risk. Don't try and give them a little dose, I used to give little doses but I just leave it.

# Steven Bruce

What's the mechanism there?

# **Simon Billings**

I can't remember the term, granulomatosis I think, the general term. They make this kind of scar tissue and it just it pulls, calcium goes very, very high in the blood. And it can make them quite poorly with excessive calcium in the blood. So, we just leave it alone. So, our general kind of review there is we're going to look at the symptoms. So persistent pain, persistent dysfunction, previous response to treatment, have they kind of got a bit better then plateaued, they've not got better at all, have they had a previous diagnosis, like chronic fatigue diagnosis or firbromyalgia, depression, then look at their risk factors, obesity, skin tone, are they elderly, and then you put those together and then you go for it. If you get that right and you get it, you're going to get some great results. And it's very easy because the supplements are cheap, they're safe. If you want to be testing that's cheap, it's safe. There's just no reason not to start using vitamin D in clinical practice whatsoever, patients want to use this stuff, they're aware it's important now and very much so, it's changed.

# **Steven Bruce**

You said you have the testing kits in your clinic, do you have to send those away for analysis or is it a simple spot test and you get a...

# **Simon Billings**

In house you mean? Yeah, you can get them in house now, then they get results in like 20 minutes, there is technology available for that we don't have it because I don't do that much of it. And if I did more, I might do that. But yeah, generally just send it away. And then because it's a UK based lab, the results are back very quickly within a week easily. All right, that's kind of our summary slide what we had at the beginning, that's persistent pain, dysfunction, mood and behavioural problems, fatigue, and particularly obese, non-Caucasian, elderly, those three things and 5000 works for most except the obese then you got to crank the dose up an extra two and a half thousand or double if they are more than four or five stone overweight. All right, we're done. That's the link. For people that want the download. This is just academyofchiropracticnutrition.com/APM that will get them the symptom chart and the dosing chart, then they get the video on the mechanisms on how it works. And then they can also get the vitamin D research on pregnancy, what the doses are for pregnancy, and what the doses are for breastfeeding to make sure the baby's blood level is correct. And there's some stuff there also about if they're deficient in utero, or if they're deficient in it as babies what the longer-term consequences are from a health perspective as well, because they are profound, potentially.

# **Steven Bruce**

Right now, we get into our questions, I'm going to start with one of my own, which was more an observation than a question, which is why the hell have I waited 20 years to hear all this? Because this should be taught in the first year of undergraduate osteopathy or chiropractic training. Surely. I mean, maybe it is now, maybe I'm a dinosaur.

#### **Simon Billings**

Yeah, well not in chiropractic it's not definitely, I think you might be slightly more holistic than us. But it is ironic that the research takes decades to filter down to clinical practice. So, when I start doing this 2007, I got into it, the GPs were like, I'm not testing you, because you're white, you're never going to be deficient. You know, why would you be deficient, right? And then every now and again, someone would demand, I refer them to the GP to be tested. And when I do the GP then say, No, I'm not going to test them, they're always deficient. So, it's gone from I won't test you because you're never deficient to I won't test you because always deficient. So, it's a funny thing. I don't think most chiropractors understand. They understand vitamin D and maybe rickets. They don't understand there's a spectrum. And they don't understand that vitamin D creates symptoms. Yes, the calcium and the rickets thing is the obvious thing, but in an adult, you get this profound pro inflammatory state and I talk about that in the research section. That's what is neuroinflammation. If you understand neuroinflammation, the minute the patient walks in, all of their symptoms, they look different. You can look at them and go, aha, you know, it's so common. They have this kind of bit of depression, bit of fatigue, they've got a bit achey here, bit achey there, one there, one there, across there. Oh, I saw this other guy, yeah, I was a bit better, I felt better, but it kind of came back. I didn't sleep very well. It's inflammation, inflammation. If you get inflammation down, you win the game of neuromechanics every time. Vitamin D is one of those keystone ones that I go for, because it's common, it's easy to get right. And the supplement the results come quickly, same that's why I do a bit of magnesium, a bit of B12. And all those things because they are keystones vitamin B12, as Tracy said, that holds two very, very critical steps in your metabolism. If you can't get B12 in, you can't make myelin. Well, that's a problem. They don't all turn up complaining of bilateral tingling and numbress, they'll usually turn up with something regional because again, it lowers the pain threshold and your neuromechanical thing pops out the top and you go Aha, I know what this is, a disc, I've seen these before, I'm excellent at these and then they don't get better and you can't work it out. So, you keep doing the same thing. And they plateau and they go see someone else and say I saw that Steve guy, he's very nice, but he didn't sort me out, very nice man. But whatever. So, you're right, it should be because it's about results. And this may be different within chiropractic and osteopathy, certainly in chiropractic, the institutions are very conservative, there's a lot of academia now there, very conservative and they want respect and they want integration with the medical community, which I'm all for, but not at the expense of what needs to be done to get the patient right. That must be patient is everything and we mustn't kind of lose sight of that. That all the research I've shown you, there isn't anything that controversial about it, it's all there. It's just the GPs don't read that because they can't read all the research, not possible.

# Steven Bruce

Sean has asked whether vitamin D supplementation increases the level of calcium in the blood?

# Steven Bruce

Yeah, well, it will increase it in the blood but then the body will then distribute it out. It won't let it come up too high. It will maintain it. That's fine. It'll stick it in the bones.

I don't know who asked this question, but it is a bit of another slant on one that was asked earlier about things that blocked vitamin D. Are there any drugs or foods or anything else that reduce your vitamin D? You mentioned PPIs earlier on.

#### **Simon Billings**

PPIs. Not drugs that do it, no, almost anything digestive like Crohn's anything that general for malabsorbtion. But that would be the same across the board, not specifically vitamin D, if you have malabsorption of some kind be it Crohn's or something more functional like IBS, which is usually just a lower grade inflammation from bacteria, infection, food issues.

#### **Steven Bruce**

And I'm going to have to explain this to you. Again, I have to explain this to all our speakers. But we have people in our audience who decide to give themselves weird names, and I'm not gonna go into the whys and wherefores of that. But Scotch Bonnet wants to know if a vitamin D goes into the body fat, how do you prevent the supplement just disappearing into their adipose tissue?

# **Steven Bruce**

Well, you can't, you just have to load them up. And you know, some is going to go into the tissue and then they'll get some of it in the blood and the blood will come up and we see that in the research. They just need more.

#### Steven Bruce

And Martine says on the same subject, if obese people then lose weight does their vitamin D then go straight into the bloodstream?

# **Simon Billings**

That's a good question. I never thought about that. I guess it could do, yeah. Yeah, maybe.

#### **Steven Bruce**

Never easy to get obese people to lose weight unfortunately. Okay so I suppose this is very predictable, people want to know which brands you recommend for the various types of supplementation you've talked about.

#### **Steven Bruce**

There's nothing specifically I'd recommend, I'm tied slightly contractually actually from something but there are lots of good UK brands out there that are widely available, everyone makes it and there is liquids, there are sublinguals, there are swallow tablets, there's a whole load of stuff so you don't need to go look too far for a hold load of brands that are well known UK brands and you can be fine.

So, is Solgar okay?

# Steven Bruce

Yeah, fine. Nutri advanced, there's Lambert's, there's biocare, Nutri advanced do a good liquid actually, I would use a lot of their liquids for the kids, they do with vitamin D on its own, vitamin D with K2. There's a whole load of them. So, it's not, don't believe anyone telling you their vitamin D's better than someone else's, that's just marketing nonsense. The nutrition industry, they don't kill anyone like the drug companies do, but they're still prone to a bit of cheeky advertising.

#### **Steven Bruce**

Yeah. And which is the brand that you're contractually tied to then?

# **Steven Bruce**

It's a long way back. It doesn't matter. It's a long way past.

# Steven Bruce

So, Lucinda says does vitamin D deficiency affect short term memory?

#### **Steven Bruce**

Only through inflammation if it does. So, the people that are profoundly deficient, they just have no energy for anything. I mean, they're just, they're exhausted, absolutely exhausted. So, it will affect their cognition in that sense, because they're exhausted.

#### **Steven Bruce**

Carolyn's come up with a weird one. Carolyn says that she's heard that coconut oil on the skin enhances vitamin D synthesis.

#### **Simon Billings**

That is a weird one. I don't know. I don't know about that. It's made from a form of cholesterol in the skin. I don't know what coconut would do to that. No idea.

#### **Steven Bruce**

So, I'm guessing there, I mean, and we can have a long chat I'm sure about the pros, the cons, the benefits, and the cons surrounding statins, if someone's on statins then is that going to affect their vitamin D synthesis?

#### Steven Bruce

Yeah, the research is somewhat mixed. And again, I'm very suspicious because there's so much money on the table, that the research is not being done properly by the drug companies. Because when you look at the independent research against the drug company research, they are so at odds. It's ridiculous. But you know,

the recent COVID thing about the study that was pulled from the Lancet? The peer reviewers didn't get a look at the raw data, and they're all up in arms that they couldn't see the raw data, all of the drug companies for the cholesterol studies that are the ones that say it works, they will refuse, they refuse to release the raw data, they've been asked numerous times they're having none of it. And when you look at just the independent research it says statins don't do anything. Even some of the drug company research in secondary prevention says they don't do anything. And in fact, since 2004, we had the Vioxx scandal, where Merck killed all those people with Vioxx, since 2004 it's illegal to tamper with data, since 2004 the research on statins is looking very, very poor, because all of a sudden, you know, they could go to jail for it. Three huge secondary prevention studies, no benefit. The third one, they then reinterpreted the data and suddenly it looked amazing. So, all that money, hundred authors, thousands of patients published in The Lancet or somewhere it was, and they got the data wrong. I don't think so. So, statins, are dodgy at the best of times, the vitamin D thing it isn't clear. Maybe. They certainly drop down, there was some suggestion they do affect your hormone status, because, testosterone, oestrogen, those kinds of things as well. And also, cholesterol makes your mineral corticoids as well.

# Steven Bruce

Statins is possibly a discussion for another time. I've had Malcolm Kendrick on the show a couple of times, and you'll be aware of him and I recommend his blog to everybody because he's fascinating and brilliant and very, very funny on the subject of cholesterol particularly. Here's an interesting one for you, Anne here says that she had an eight-month-old patient of third generation Iraqi descent. He had rickets, bowed legs and three months of K2 and D3 and his legs will completely be straightened. I'm getting a little clapppy emojicon or whatever it's called at the end of that one. Yeah, good for him. What about the effects of celiac, asks Fiona?

# **Simon Billings**

Ah, well, if they're a healed celiac, there shouldn't be an issue. If they're undiagnosed, or they're still in the first year of recovery, they'll have generally poor absorption across the board. So that would be a general, again you would use a sublingual. But bear in mind, for everyone that's diagnosed, there are seven walking around who don't know they've got it. And that's just celiac disease that doesn't include gluten related disorders without celiac disease. I have the gene but I don't have the disease, but I'm gluten sensitive. And that's another great topic. And gluten related disorders are so prevalent there. I was writing a part of the course recently and discovered that half of Caucasians have the gene for celiac disease. There's no other food when you have a genetic predisposition to attacking it, dairy or egg or those foods that are some quite common allergens, you have a gene that predisposes you to going after to gluten. And not everyone has the gene gets the disease, but those people who have the gene have way higher rates of gluten sensitivity. And people with "IBS" if you then get if you then, particularly with IBS, do the genetic testing and then you give them a gluten free diet. The ones with the gene do way better and a lot of time their IBS completely disappears, whereas the ones without the gene they do okay, but not quite as well. That's a big issue.

If I can take you back to PPIs for a second, Sayeed says that he's been prescribed PPIs he wants to know what's a good alternative, if they're going to help prevent his heartburn and so on?

# Steven Bruce

Well he needs to work out why he's got heartburn.

# **Steven Bruce**

Barrett's oesaphagus I think I can see you on the notes.

# **Simon Billings**

So, Barrett's oesophagus again, that's the end result of then the refluxing oesophagus. The question is why is he refluxing into the oesophagus. And that's a big question but commonly they actually have low stomach acid and poor digestive capacity. So, they swallow the food, goes into the stomach. And then if you don't get enough acidity, the stomach won't release into the small intestine, it would get delayed emptying, so the food sits in the stomach and it ferments gently and that produces gas and it pops the valve into the oesophagus and then they reflux what acid they do have into the oesophagus and of course problems. Also, very, very common even if you didn't have it the beginning, within six weeks, eight weeks, three months, you will have a small intestinal bacterial overgrowth because the acid is needed to kill off incoming stuff to help digestion. So, you will develop small intestinal bacterial overgrowth, they then feed on your food, they produce gas, they make you bloat and that again, pushes the valve open, you go again. So, in the short term, I would probably recommend things like deglycyrrhised licorice, and slippery elm and some other demulcent herbs that help you produce mucus. So yeah, DGL, slippery elm, marshmallow root and also Dlimonene can be very soothing as well. It's a extract of orange peel. I would use those in conjunction with the PPI initially and try and improve the digestion and also the small intestine with some probiotics and prebiotics, and then see if they can gently wean down and try and get the oesophagus to heal. And also,, maybe some L-glutamine and some butyrate because L-glutamine and butyrate are the main fuel for the gut lining to the cells to replenish.

#### **Steven Bruce**

Simon, we've got so many questions that are here, but I would actually like to ask you just to elaborate a little bit more on what the Academy of Neuromechanical Nutrition does. I mean, what happens, you can join the academy, so what do you get for joining the academy?

#### **Simon Billings**

So, it's one off fee and you get lifetime access to the core concepts in neuromechanical nutrition and so it is all around getting results from what we do. It's not a nutrition course, just general nutrition because you don't need to know, every vitamin and every mineral, it's not like that, I give you a framework of the most, like we said, those eystone nutrients that without you can get better. And the ones that are common that are easy to fix. And we do in hierarchies, we have phase one, a phase two, a phase three, you work through the phases, and you only do what you have to do to allow your care to work, to allow the patient to heal, to get sustainable results. That's what we're about. So, it's six modules, lifetime access, it's 100% online. So, you can go in and you can watch it whenever you like. There's no kind of time limit on it. You don't need to sit and listen to me talking. You can watch it at home. And then you can contact me, we have a Facebook group running as well, where people post cases and questions and I post other tidbits of research and case studies and so on. And we're just all about results. And like you said, I have little time for professional posturing and I just can't be dealing with any of it, I like people that are into results. I don't care what you call yourself or how you achieve it, as long as you can improve range of movement, sustainably and significantly, and drop pain down. You're good. I'm all for it. And if you think about our lifestyle and how it's changed over the last even just the last 10-20 years, maybe 50 years, 100 years, it's so different to anything we've ever exposed to and the toxins in the air and the food we eat is so bad. And the deficiency rates of you know, we said in vitamin D alone is 90%. That's an epidemic. It's very difficult. When BJ Palmer was alive, Andrew Still, BJ Palmer nearly did a whole in one thing and they're just done once. Well, good luck doing that now, because the patients aren't anywhere near as, they're on PPIs and statins and stressed out and they're on Facebook and they don't sleep. It's a real problem. So, we focus on whatever, just as a clear hierarchy. So, it's phase one, phase two, phase three, and we focus on the things that give you the quickest results. Easiest, then we dig down. So just for example, phase two, I don't do gut microbiome stuff until phase two because it takes a bit longer and it's more effort for the patient, more effort for me, if I can get their inflammation down and their pain threshold up by doing some supplements and other gentle diet tweaks and some other things, get them sleep at night, I do a lot of stuff on sleep. Because we get a good night's sleep, everything's better and a lot of them don't sleep very well. And there's some very easy things you can do to get them to sleep.

#### **Steven Bruce**

I think we got about 60 seconds left.

#### **Steven Bruce**

Go to the website and they could download the freebies, and then they can get a hold of me through that as well.

#### **Steven Bruce**

I've been asked for names of the companies that do the testing, please, because I imagine people like you will want to get the numbers in the early stages of doing this.

# **Steven Bruce**

Yeah so, vitamindtest.org.uk is the lab that I've used the most. vitamindtest.org.uk. Medichecks do it, thriva do it. They're all off a finger pricks. There's no blood draw needed. Pretty sure if you just type that into a search engine, you'll find plenty of people offering now because it's becoming really mainstream from where it was 15 to 10 years ago.

# **Steven Bruce**

And last one, Linda says is the high dose thing okay for teenagers

# **Simon Billings**

Yes.

# Steven Bruce

Simon, that's a massive amount of information that you've got across to us. Well, I hope you've got it across to everybody this evening. It's lot to take in, I must admit. I hope people will follow up on the link there. Obviously, we'll put it up on the website. It'll go up as soon as the recording goes up in a day or so. But it's pretty easy to remember, isn't it? academyofchiropractic nutrition.com/APM So that will get them on those resources that you mentioned. And seriously, I'd love to get you back in again to talk some more about nutrition generally, but I suspect we could follow up on vitamin D alone. Judging by the number of questions, I've still got on my pad here. Are you interested in me sending you the questions that I haven't had the time to ask?

# **Simon Billings**

I can sort those out yeah.

# **Steven Bruce**

That would be fantastic of you. Thank you. Thank you for giving us 90 minutes of your time on an evening such as this. And let's hope we see you again soon. Thanks. Good night.