Academy of PHYSICAL MEDICINE

Transcript

Nutritional Considerations on Musculoskeletal Medicine

With Matt Wallden

APM- Good evening. Welcome once again to the Academy of Physical Medicine. We're back in London. We're back at our favorite venue which is the Fish Tank which is the home of the world famous Feeding the Fish. Look him up on feedingthefish.com, available for weddings and bar mitzvahs in your area, seriously a very impressive performance. Life should be full of new experiences, I've had three of them today which is a new thing for me, get three in one day. The first thing, at about 10 o'clock this morning I was sitting in the house in Frasier in their makeup department having makeup tested on my head to stop the shine from my balding patches. Hope that's working well for you and you're not having to wear sunglasses to ease that out on the screens. The second thing was we came down to the Fish Tank for our set up purpose and they had us walking a tight rope in the studio which is again, last time it was hoverboards, this time it's the tight rope and then later on they got us into a photo booth where we did some rather stunning photography with the new system that they're developing at Feeding the Fish. Three new experiences in one day. What can I say? However, better still, we are here actually for some CPD as you can imagine. I'm back with Matt Walden in the studio now. This is Matt's fourth visit back to the Academy. He's been very popular on every broadcast so far. Tonight will be no different. We're going to be talking about nutrition, particularly in musculoskeletal medicine and how evolutionary biases influence biomechanical pain which is not a subject that we've addressed in the past. Normally we look at what's the correct balance of fat and protein and carbohydrates and does this diet work, does that diet work? This is directly related to how we treat our patients, the effect our patients are getting, the advice that we can give to our patients to help accommodate their pain. Matt, as you might remember, is well established in the osteopathic world. He's a graduate of the British College of Osteopathic Medicine, he's an associate editor at the Journal of Rehabilitation and I've got that wrong, Movement and Body Work Therapies, edit that out in the final cut, and he runs a number of courses worldwide in a variety of topics, including nutrition. He's also running a series of webinars of his own. He's got two coming up in the near future, one on posture,

one on infant development. You'll find those in the CPD calendar under the tab on our website. But for the moment, let's get on with this evening's CPD. Welcome back, Matt, nice to see you again. Great to have you back in the studio. I feel slightly overdressed of course 'cause you're always coming in in your tee shirt. You better tell us a little bit about why we should be listening to you on the subject of nutrition because after all, you're just a osteopath.

MW- Well I want to B Comm as you mentioned and my original I guess desire was to go to BSO, the osteopaths I knew had graduated from BSO and seemed like the key college so I went there for interviews and went to ESO and to CNO as it was then without really any intention of going there but just to in a way pay lip service to what I ought to do. And I was there in the interview with Dr. Drysdale and I remember him actually asking me, "So what do you know about naturopathy?" And I was completely unprepared 17 year old at the time and I said, "Is it a little bit like homeopathy?" And he said, "Well, no, it's nothing like homeopathy." And he explained the naturopathic triads which I think most osteopaths would be familiar with, sometimes called the triad of health and said obviously there's the biomechanical side to health which is where osteopathy comes in and then there's the biochemical side which is where nutrition comes in but also pharmacology and then there's the psychological or emotional side. I've got a slide on it, should I bring that up? I think most people would be familiar with it anyway but so the example he gave me was that if someone had been involved in a car accident for example, and sustained say whiplash, then of course there's a mechanical side to that which we can work with with our hands finding tender points or trigger points in the muscles, easing muscle strains, joint restrictions, et cetera, but if you damage the tissues, then you need vitamin C for example to synthesize collagen and he said, "So if you've got a diet "that is low in vitamin C, "then you're not going to be able to repair as effectively." And then he explained, and then of course to have a car accident is traumatic, it's emotional, you may have damaged the car, you may have hurt someone including yourself or other people and so there's an emotional component and that also could inhibit the ability to repair if it's not addressed and dealt with. And really at that moment, I thought, well that makes so much sense that I sort of switched my whole trajectory and ended up going to BCNO.

- I remember we were taught similar stuff at my college where we had one of our lecturers, a formal principal of the college was very, very steeped in naturopathy and he put up the same slide as you've shown and back then I didn't question it and now I think to myself, yes, it makes perfect sense but of course, we don't like common sense in medicine these days, we like to know that actually there's some evidence to say this is actually fact and it does work and that combination of those three factors, the physical, the chemical, the psychological are important components. Do we need to do that or is it so self evident that it doesn't need justification?

- Yeah, I think it's absolutely right that we need evidence and of course, there's a whole sort of industry churning that evidence out and increasingly as the kind of repetitive of research is being put out there, what you're finding is that increasingly a holistic viewpoint is the only way to work with people that are in pain in the longer term. That's not to say, I think acutely you can certainly work quite mechanically and

get a good result but particularly with people with more persistent health conditions but also pain conditions--

- We fall short though. Everyone works holistically according to their websites or their promotional material. My GP works holistically because I'll go in and sure, I'll get a chemical which might not relieve the pain but he'll also say, "Are you sleeping alright," and, "Are you eating well?" And so he probably won't say, "Have you seen an osteopath?"

- It's interesting, it's probably one of the most bastardized words out there, isn't it, holism and holistic?

- Well it's been seized on by I think every person dealing with other people, everything is holistic these days.

- Sure, sure. And I think I actually saw something recently which was a bit of a revelation to me which was saying that holism isn't actually do with the whole person, it's to do with the body being a whole on and that's why it's spelt with an h not with a w. So it's actually that we're composed of atoms which form molecules which form proteins and so on all the way up and each of 'em is a whole on in its own sense.

- I've never heard the term whole on before, is that a real term?

- It is a real term. So each of those entities is a whole of its own but you put them together and then sum of the parts is greater than.

- Super, I think the word holistic is spelled with an h due to pure etymology, nothing to do with, doesn't matter, does it? So where you gonna lead us with this? What new insights have you got that we may not have considered so far in our approach to nutrition?

- I thought a good way to go through it was to explain the kind of path that I walked, as it were, from a nutritional perspective because at B Comm what we did was went through fairly standard clinical nutritional training, lots of discussion around cholesterol being bad and saturated fats being bad--

- Oh, good, those are on my list.

- Yeah, omega three to omega six ratios and so on and so forth and meat in general not being great. So as a student, that's perfect because it pushes you down a vegetarian route which is much cheaper than eating meats.

- Are you a vegetarian?

- I was at college, yeah. No because I got very unwell being vegetarian, well, not very unwell, I got increasingly unwell. So my story really was that I was at university at college and all my friends were at university at the same time and they were off drinking beer and eating burgers and doing the kinds of things that students normally do and there was me eating whole foods, whole cereals, organic stuff where I could but vegetables, vegetarian and I was getting colds the whole time and I started to

develop cold sores on my lips at the slightest hint of stress. So whenever there was an exam coming up, I'd get a cold sore predictably on my lip and this all happened at the time I went vegetarian. And I was more vegetarian from a health perspective, it wasn't a philosophical perspective so much. I liked the idea that it was kinder to animals to not eat them but it was more that the health was driving it based on what I was being taught. So then I left college and I didn't maintain complete vegetarianism but I tended to eat that way and my girlfriend was vegetarian so that tended to push me in that direction as well. But what I found was that when I was working the first patient I saw after lunch every day, I would be struggling to stay awake, especially for doing something like cranial work where you're sat still. But I would find myself really struggling and this is a classic sign of blood sugar dysregulation is postprandial lethargy. And I was eating quite a high carb, low fat diet which is what I've been taught was healthy because all these fats were dangerous and bad and meats were toxic, as far as I've been taught. Yeah, so I was struggling and then I met Paul Chek, so obviously as we've explained--

- Of the C.H.E.K. Institute, c-h-e-k.

- Yeah. And I knew he was really good with sports injuries and I was really keen to hear him speak about sports industries but there he was talking about eating more meats if you're a faster oxidizer or eating less meats if you're a slower oxidizer and avoiding soya because soya was very allergenic and obviously genetically modified in most cases and so he had various rationale for why you should avoid soya being a goitrogenic compound and I was thinking, "This guy knows nothing about nutrition" 'cause I know from my training that soya's like a wonder food, it's a health food and meat is not good but he's saying if you're a fast oxidizer, eat meat. And I thought he should just stick to what he's good at but one of the things he is very good at is leaving a trail of references and so I looked at some of the references and thought, well actually, that makes a lot of sense because really it's tied in with evolutionary concepts and how we ate through our evolutionary times. And also the notion that everyone's biochemistry is going to differ based on where they're from in the world, where their ancestors are from. So simplistically when you go towards the equator, of course you have an abundance of carbohydrate rich foods year round. So our ancestors evolved from equatorial regions so we're quite tolerant of carbohydrates. But as you move into the more temperate zones and the polar zones, then what you find is that of course, there's practically no carbohydrate, particularly during winter time. So even in the UK here, if you were to go out and try and find carbohydrate right now, then you'd struggle and even until sort of the mid summer months and the autumn months, you'd struggle to find any significant carbohydrate growing naturally.

- So when you take your inhabitants of equatorial Africa and you're Eskimo, Inuit, I think we have to call them now and you dissect them, willing volunteers, obviously, you dissect them, you're saying that we're going to see a difference in their digestive system, their digestive tract?

- Absolutely, yes, that's a good prompt to look at the--

- It's entirely unintended, I must admit.

- Let me see if I can find the slide here.

- 'Cause that's surprises me 'cause I think, I can understand the sense of an evolutionary change and the clue is in the title, it's an evolutionary change, we don't eat the same as our ancestors.

- Yes, yes, that's right. This was the slide. Okay so you're obviously right. So one of the things, there's the sort of common sense for you that as you move into temperate zones where nature only really provides proteins and fats, for most of the year and there's short spells where there's carbohydrates, and so biochemically, people that have lived let's say in the UK for thousands of years, who's ancestors have been here, they're probably very well adapted to eating meats or as you say the Inuits even more so because that's pretty much all you can get other than seaweed from the stomachs of the seals that they catch, that's their only source of carbohydrate during the winter months.

- They eat that? They eat the contents of the seal's stomach?

- Yes, but they tend to give that to the women and the children and the way they get their vitamin C is from the adrenal glands of the seals and the fish. But anyway, the slide that we've got up here is just illustrating the notion that so, what we're talking about is biochemical individuality, so the idea that from a biochemistry perspective, our physiology will have adapted to the environment that we're in, especially, we've been there for a long period. But beyond that, the actual mechanics if you like or the actual structure of the gut changes and so the illustration there on the right side is just really showing the variation in stomachs and stomach shapes and stomach sizes but research from a book called Metabolic Man: 10,000 Years From Eden by a guy called Wharton, he shows that the small intestine varies by as much as I think it's about 60%, so you've got 15 feet for small intestine in some people up to as long as 40 feet in other people.

- Yeah I wondered when I saw your slides then, I wondered why there was two blue bars there. I understand, so that's within human beings, that's a variation, not between different species?

- Yeah and it's typically that again more equatorial people have longer guts and people from the poles will have shorter guts which is completely congruent with what we understand of carnivores.

- One of these days we should get in, not just one speaker on a subject like this but we're several questions in about this, which is unusual this early in the program, but we've had other speakers in with completely different approach to yours and if you care to look at what Nisha Badjugar was saying about nutrition, she was saying, "Well, our digestive tract is this long "because we're vegetarians," not mentioning that it varies and saying that soya was very good for you, particularly for women, it's great for reducing the risk of breast cancer and that may or may not be the case, I haven't looked at the research, she claims to have looked at the research. But here we are seeing that actually the whole thing varies between different equatorial regions in one single species.

- Yes, that's right and the slide below I think is also illustrating the, if I can get this to come up, no, it's the one above actually, so this is the one, it's just showing the gut volume by species and showing that in particular the colon in humans is much shorter than other primates.

- So you might want to just explain that 'cause it may be that people on smaller screens can't read the text on that. So we've got three different groupings, have we?

- So on the right slide of the slide there, you've got the different species and then you've got looking at the stomach, the small intestine, the cecum, which is particularly associated with plant digestion, so you find in herbivores, they have a very developed cecum, particularly if they're, what's called hind gut fermenters, so rabbits and horses which don't have multiple stomachs so you get the full gut fermenters like cows and sheep, the ruminants they call them, so they have the capacity to digest plant matter in the fore gut but there are herbivores like rabbits and horses that digest it in the hind gut and they digest it in the cecum. So you can see from the slide here that our cecum is extremely small compared to other primates who also are herbivores or omnivores, so chimpanzees obviously are omnivores.

- So part of the argument on the past several of our speakers has been that our teeth clearly differentiate us as being not carnivores.

- Well, yeah, I think you could argue that either way because of course herbivores don't have canines and we have canines. So you could say, if we weren't meant to eat meat, then we wouldn't have any canines but obviously our canines are relatively small and that's probably because as we talked about in the barefoot running webinar, for about 2.2 million years, we've been eating meats, as far as we know. There's a lot of convergent evolutionary evidence that points to that which seems to be highly correlated with our brain development. And we did that through persistence hunting, through running, through being expert endurance runners. So yes, I think that allows you a couple of millions years for your teeth to adapt to the fact that you are developing tools and sharp things so you don't need canines to tear the flesh or also the control of fire is arguably, I mean it's hundreds of thousands of years old but some people are saying even more than that

- I've not looked at the evidence for this in early hominids. Are we seeing more developed canines in early hominids, do you know?

- Yes, I believe so, yeah but I think it depends on the lineage as well because some were obviously as we can see from the chimpanzees and our other common ancestors, some of them are vegetarian. But I'm not 100% sure on that.

- Let's get some questions out of the way 'cause otherwise we'll end up with an armful before we get to what you brought. I don't know who asked this question but thank you for the question, "My understanding "is that success with veganism, vegetarianism "has a lot to do with your genes, "some people have genes to allow them to get vitamin A "from carrots which only contain beta carotene "whilst others don't

and need meat. "Do you agree with this "or would you have other examples "for or against this type of thinking?"

- Well yeah, I would say that there's some evidence to support that line of thinking from the perspective that since you hear what I'm saying is that everyone's, it's not just where we're from and our genes but it's actually our microbiome as well. So our microbiome which is obviously the gut bacteria will digest certain foods for us and will, they even produce vitamins themselves but they'll also allow us to access vitamins and minerals within the food. So depending on the balance of gut bacteria that you have you might be able to absorb carrots perfectly well now and then if you go on a course of antibiotics 'cause you've got some terrible infection or surgery or something, next year you might not be able to absorb that same food substance.

- So less genetic, more individual state of your gut?

- No, I think it's a mix of both. So I think there's obviously the genetic sides and this is what we talk about in metabolic typing which is really what I'm alluding to with the different food requirements that different, is it longitudinal or latitudes?

- That's latitudes.

- Latitudes, yes, so different latitudes. One of the things with that is that they talk about a genetic type and a physiological type. And so let's say an Alaskan Inuit would probably be a very fast oxidizer. So the cells are oxidizing very rapidly and meat is the perfect fuel for that.

- Fast oxidizer, why?

- Because then you stay warm. And so a good example is that if you were to spend a day out watching the football or the rugby or I used to work in the green grocers store on a Saturday when I was a kid and when I got home in the evenings, I'd just be flushed all evening because essentially you up your cellular oxidation rates to deal with the cold and then your body takes a few hours to adapt that when you get back into the heat. So I've got a research paper on this which shows that you can get adaptation to oxidation rate both within the individual in terms of the environment that they're in but also across generations. So just trying to think back to the original question. Yeah, the original question obviously was talking about veganism--

- And vegetarianism, whether it was genes that made you better or less well adapted?

- Yes, yeah and I think that's absolutely the case. So if someone's a very slow oxidizer, then I think they can probably handle veganism or vegetarianism a lot better than someone who's a very fast oxidizer because to access that much protein and fats is very difficult to do with plant matter. And there are other benefits potentially to getting proteins and fats through animal sources for example, fat soluble vitamins tend to come hand in hand with animal produce whereas they don't with vegetable produce.

- Right okay, which of course means saturated fats, doesn't it?

- Yeah, you get saturated fats obviously in animal produce and cholesterol, of course.

- So let's deal with those two big elephants in the room. Saturated fats are bad, cholesterol's bad.

- Well, first of all, 50% of your cell wall is made from saturated fats. So there's a bit of a problem if you're saying that saturated fats are bad because basically you're made of 100 trillion cells and 50% of the cell wall is made from saturated fats and you're turning over those cells.

- But your body can produce that, does it need saturated fats going in to do that or not?

- Well, see I would use the argument a little bit like with water that some people say, well you don't need to drink much water because you're body's very good at recycling it and it's the notion of whether you want to be more like a stagnant pond or a flowing river. So for me, it makes sense to keep turning over from new sources. And I think the biochemistry aside, that's what we would have evolved doing primarily is absorbing new saturated fats or cholesterol from the food that we consume. And one of the figures that's interesting around that is that we can produce 85% of the cholesterol we need endogenously but we need to get 15% from the diet supposedly. But we can only get cholesterol from animal sources. So to me that suggests--

- Well vegans survive and vegetarians.

- Yeah, yeah, so there's a question around how that then impacts on the hormones because cholesterol is the precursor to pregnenolone which is your primary or mother steroid hormone which goes on to produce testosterone and estrogen and cortisol and basically your glucocorticoids. And so there is a question mark there because the body will always start to prioritize certain hormones over others when there's a relative shortage. So it could be that you start to impair blood sugar regulation, it could be that you start to impair fluid regulation, could be that you start to impair sex drive, that kind of thing. So that's where the question mark comes in and the physiology points to that but I don't think there's any sort of double blind randomized controlled trials that state it categorically.

- There'll be a lot of vegetarians and vegans who'll say, "No, I'm perfectly healthy, "I've got a perfectly healthy sex drive. "I don't have nay of those problems you described," so they're coping. I have seen literature and again, I don't know the quality of the research which essentially says you can't really, you can overeat anything, water will kill you if you drink enough of it but you can't really overdue cholesterol 'cause your body's perfectly capable of getting rid of it and regulating its levels. And to say that eating cholesterol is the cause of particularly hearth disease is bogus because it can't because your body regulates cholesterol. Something else is causing that issue. Is that something you've seen bore out in your reading?

- Yes, that's absolutely what I've come to understand. One of the simplistic ways that I explain it to patients is that blaming cholesterol for causing heart disease is a little bit like blaming the fire brigade for causing fires because it always shows up when there's

a problem. So it's not the cholesterol itself, that's the body's response to the inflammation within the arteries and the inflammation in the arteries is caused by various things from what are they called AGEs which is advanced glycation end products which is as a result typically of too much sugar in the diet but also various free radicals.

- It's worth hammering on about cholesterol I think because it's such a popular subject and it's driven I think from two sources. There are the pharmaceutical companies who for years have wanted to sell statins because they were the most widely prescribed drug, they were making a fortune, billions, and also from people who probably wanted a quick pill to fix their problem. So there was a desire to have that simple solution and of course, I suppose, there were plenty of people saying, this is a plausible solution. You've got a problem, your cholesterol is high. Therefore, that must've caused fire brigade, fire brigade analogy of course.

- Yes, yeah. And it's sort of conspiracy theories around it and maybe there is a bit of that going on but I think the main thrust of it was that in the 1950s and '60s people started to die from heart disease and they had never done that in history in terms of, I say never, it wasn't a big thing and there's an interesting quote from, I'm just trying to remember the guy, he was a Harvard medical doctor and he was explaining to his colleagues that he was traveling to Germany, this was around I think 1912 or just before the first world war, I think, maybe just after, but it was right in that early period of the 1900s and he was going to see this new fangled device called an electrocardiogram and they were saying, "Well, why are you going all that way "and spending all that money "to see this really expensive device?" Because heart disease isn't even a problem, no one dies from heart disease. And so that kind of gives you an illustration, if you look at the figures, sure enough, heart disease rockets up through the 20th century. So then when you try and correlate that with dietary practices and lifestyle practices, then what you see is that really the main thing that correlates with that is sugar and also hydrogenated fats.

- I also saw, again, my memory's pretty rusty but I read two things related to that. One of the studies looked at heart disease and said, well in this part of the 21st century, the early 21st century, there was not much heart disease. Well actually we had two world wars in the first part of the 21st century so lots of people died early before they would've got it. And then they said, well we got heart disease in the 1950s and actually we were still just coming out of rationing then so actually their diet can't have been much of a contributor 'cause there wouldn't have been much cholesterol in it. We might not want to go too far down this rabbit hole but there's a lot more to the whole cholesterol argument I think than can be described simplistically in the way that has been done over the whole statins.

- Definitely, definitely, yeah. So I think the development of statins was definitely something that was done because they were finding on these biopsies, autopsies even, that there was cholesterol there. And so that was what the finger was being pointed at. And so they developed the statins to try to combat the cholesterol without understanding yet the mechanism for why the cholesterol was there. So I don't think there's any sort of negative intention but I think part of the problem was that because it was such a huge epidemic and it became the leading cause of death

in the Western worlds, that the statin industry just grew massively and became, there's a book called 30 Billion Reasons to Give Up Your Statins or some kind of line like that but it's because it was a $30 billion a year industry when this was written back in 2005 or something. And so I think once you get to that kind of size, then what I've noticed in the papers over the last 10 years is that every now and again there's a report that statins are great to Alzheimer's or they're great for breast cancer or they're great for something or other and you think, well that's interesting, it's like there's a bit of maneuvering going on here--

- And I do lean towards the skeptics in this where all of a sudden they're trying to find the reasons to still prescribe a drug which may or may not be credible. We've had a question come in just saying, what about good cholesterol and bad cholesterol, which I'll turn over to Matt.

- Okay, there's the discussion about LDLs and HDLs and VLDLs and that kind of thing and how that relates into this discussion. Again, this is digging back into my memory from the original--

- Can I just stop you there? This is one of the things I think which really pisses people off about this whole debate is the terminology because it goes high density lipoproteins, triglycerides, cholesterol, a lot of which is pretty much the same thing and yet people are saying that one is bad, one is good. It's hard to get a handle on what people are actually describing in much of the literature, not in research papers I'm sure but in the standard literature that you see in the press or in some books, which are less well researched.

- Yeah, it is, it is.

- So HDLs, VLDLs, LDLs?

- Yeah, I should preface this by saying I'm not an expert in biochemistry. I'm digging this out from my training at B Comm but the HDLs are the cholesterol molecules that are shipping cholesterol out to the tissues and this is cholesterol that you're likely to be using for some of the hormones that we're talking about, optimally and also to dampen down the inflammation, very much like the fire brigade going out to deal with damage to the intramural or the arteries and so on where there's inflammation there. But the LDLs are shipping that back, shipping I guess the inflammatory mediators and byproducts back to the liver. So that's an indication of how much inflammation there is in the system.

- So again these are markers.

- They're markers, yeah.

- You can't blame the cholesterol for the problem. You can just say, well actually it's giving you a good indication there is a problem somewhere.

- Yeah, it's things like, I saw something about Hamilton, the Formula One driver and how he obviously has his cholesterol very closely checked and he's normally around 3, 3.5 and on the money with it but leading into a race it will go right up to 12 and it's

just because of the stress of the race and then within five hours of the race, it's back down to three. So there's so many factors that will affect cholesterol scores that I think again, it's not to say that we should ignore them but we just need to be careful not to overinvest in them.

- I've got small questions. I'm not sure if these both come from the same person. Certainly, one comes from Matthew Davis. Matthew, thank you for the question, who says, "Good evening, "why is genetic modification a bad thing "purely from a nutritional point of view?" And the other question which is related is, "Do you agree with meat is absolutely fantastic, "the problem is that modern farmed meat "is full of stuff that makes it bad?" They are related, so is it genetic modification and is that bad, he's making the assumption that it's bad.

- Yeah, well obviously there's a lot of arguments for and against genetic modification and one of the biggest arguments against is that we don't know its ultimate impact on the environment because life is so complex, obviously. So there was an example where they were looking at modifying plants, I think it was crops, and what they hadn't realized was that the insects that stave off certain infections like I guess green fly or something like that, they learned to land, or they know how to land on the crops via ultraviolet kind of emissions that the plants get. So when you start tampering with the ultraviolet emissions, the predators of these green fly don't know how to land on the plant. So there's all kind of different real subtle things that you wouldn't think about but they were just trying to make the plant a little bit more hearty to green fly let's say or to fungus or something and then they completely disrupt the whole ecosystem because they're just tampering with little things which they didn't yet understand and that's one of the dangers with GMO in general.

- This is nothing to do with GM but did you see, there was an article in the press at the weekend about the damage that's being done to the South American environment due to the now overproduction of soya because there are huge rivers springing up almost overnight wiping away the countryside. It's rather like the overproduction of beef is destroying the rainforest and things like that. It's amazing the difference our changing lifestyles can have on a very important part of our eco structure.

- Yeah, so then the same applies to the guts and will the gut receptors recognize the molecules that are genetically modified, how is it gonna affect our microbiome? We know that the microbiome is responsible for all kinds of things from gut health to mental health because it affects our serotonin production. It affects things like abdominal wall function. So we talked earlier in the series about core stability. So if you got dysbiosis, then one of the common side effects of dysbiosis is bloating and one of the things we know about bloating is that it's not all down to gas, it's down to inhibition of the trans abdominis and the tonic motor neurons that surround the midriff. So now if you, let's say, eat some genetically modified soya and go down to the gym, well, you're training with a naked spine, essentially, potentially. So these are the kinds of things that remain unanswered. I've seen advocates of GMO who say that it's the only way forward and we've got billions of data points now through feeding animals, genetically modified feed across hundreds of thousands of animals across 20 or 30 years but you have to wonder, so they're saying it's safe but these animals are being modified to produce milk

and we're not really looking at the welfare of the animal, the health of the animal, the happiness, of the animal. There's all kinds of factors that as a human you may well be affected but it wouldn't register as a data point with a cow. And so these are my concerns, these are my concerns about it.

- My question here which I think I can answer myself, I don't know who sent it in, I'm gonna assume that it's a female which will offend half the audience, it says, "I'm a vegetarian, am I going to die?" Sorry, yes, you are going to die. When? I have no idea. And we've got some more. Martin, I'll do your question a little bit later 'cause we will come on something which is related to that but Matt has sent in a comment about a book called Eat Right For Your Blood Type or a diet, are you aware of that?

- I am, yes, yeah, yeah.

- I remember reading it years ago. Does it make sense in research terms?

- It makes sense from the perspective that what they're talking about specifically is lectins and lectins are found in certain foods. So most people know about lectins because even if they don't sort of consciously know about it, because most people are aware that if you are to eat a kidney bean without soaking it first, it could potentially kill you, certainly make you very ill. That's because of the lectins in it. So if you soak the kidney bean for long enough, it breaks down the lectins and you can absorb it and it's actually quite a healthy food. But all foods more or less have lectins in them and they have different types of lectins and those lectins will react with different blood types in different ways and create more or less agglutination of the red blood cells and so on. Also, more pro inflammatory states in different blood types. So I think there's some fairly sound science behind it. It's not just this guy, Peter D'Adamo that sells the book, I'm aware of a lady called Laura Powers who did her PhD on it and she absolutely agrees with that kind of an approach. Obviously, they've popularized it with the book.

- So when they say a diet suited to your blood type, what specifically, is it as simple as AB, O?

- Yeah, it is pretty much. O blood types tend to do better with meats and A blood types tend to do better with grains. I'm not fully familiar with all of the key details but--

- So it's not an approach that you specifically take when dealing with your own patients?

- Well, what it is is it's a subcategory of the approach. So what metabolic typing does, so Bill Wolcott, who wrote the book Metabolic Typing, he looked at all of the different systems of typing of which the blood type is one and he prioritized them into a hierarchical order and decided that based on his clinical observations, and he is a biochemist and he reckoned that the oxidation rates or the autonomic balance was on top of the list in terms of different foods will affect those two factors in energy production. And so they came first and then below that he would have blood typing and he would have things like endocrine typing and there's various different ways, prostaglandin levels, neurotransmitter levels, there's all kinds of different typing approaches. But he's got a sequence that you work through.

- Let me just try and get a few more questions out of the way 'cause they are still coming in quite rapidly. What we do want to get onto specifically is where we go with nutrition and biomechanical pain because that was obviously the intro that I gave and it's the title of the slides that we're not showing. Right, so there's an easy one there, to develop the fire brigade analogy, it's even simpler. The post mortem finding of cholesterol in plaques is more like saying water causes fire. It's not the process but the agent involved. So Matthew said that one. And there was another one here, Tish says that we used to think, she used to think that her great Uncle Serrol was just a big moaner when he used to call sugar the great white evil back in the '70s, at that time he was 70, so are we gonna talk about sugar later on or more refined sugars?

- Yeah, we can talk about sugar, yeah, yeah. Do you want me to talk about it now?

- Yeah, why not, Tish is all ears at the moment.

- Yes, yes. So sugar I think again, obviously our consumption has gone up dramatically in the last century. You can see that diabetes has gone up almost in direct accordance with that. Also, sugar is what's known as displacement food because what you're doing is you're getting calories and displacing foods that previously would've given us calories, let's say apples or bananas or something like that which actually have a whole bunch of other nutritional value as well from enzymes to vitamins to minerals to coenzymes and bioflavinoids, et cetera. So all of those compounds which are very helpful for us have been displaced out of the diet and then we get a Mars bar or something instead which is mainly sugar and so sugar is a problem. It also obviously affects the microbiome. There's lots of controversy around how it affects the immune system. Certainly one of the researchers, I forget who it was, but I think it's Candace Pert that reports it in her book Molecules of Emotion. She says that the natural killer cells have impaired function for up to eight hours after just one teaspoon full of white sugar. And they're of course what's responsible for preventing cancer for example. So when you see the upsurge in cancer, again, it's not to say that that is the only cause, there's multiple contributing causes but perhaps sugar is a component of that.

- We should've been seeing this since the Elizabethan age when sugar was introduced, shouldn't we, but I supposed records back then of what was causing death were a bit shakier.

- Well they were shakier but also sugar was very expensive back then and a luxury and then because of market forces, it's become super cheap. So there's that and then of course, yes, sugar affects the microbiome. So in particular, yeast loves sugar so things like Candida and so then you can get yeast overgrowths and that can impact on immune function and just general gut health, it can affect on emotional health and brain function and again can cause this bloating that we talked about earlier. So it can then potentially affect musculoskeletal function as well.

- And you said that was after a teaspoon of sugar, so that means basically you've got to cut sugar, refined sugar out of your diet completely?

- Well no, I think always with diet there's a balance to be struck and one of the things that we teach in the C.H.E.K. system is an 80/20 rule, the idea being that 80% of the time you eat well and 20% of the time you let your hair down and I think that's really important because I don't know if you've heard the term orthorexia but the idea is eating too straight and that actually is a psychological disorder, it's like anorexia.

- Too strictly, insisting on exactly the same or just being conscious precisely of the ratio of compliments?

- Anything that's an over focus on food. Food should be enjoyed and it should make you feel good and sometimes sugar can do that and certainly in the right context. One of the examples I use quite often is that alcohol really if you're to look at biochemically there's no justification for drinking it from a health perspective. The proanthocyanidin or OPCs which are these sort of super high antioxidants that you find in red wine, you could get those in supplement, you could get them by eating grapes and grape seeds so why have the toxication of the red wine? It doesn't make any sense biochemically. But that's why the naturopathic model's so important 'cause you've got the psychological and emotional side which includes your social contexts where wine is something that's enjoyable with a meal, it's a social thing that we tend to do, we tend to use it for celebrations but the key thing is is that to enjoy that fully, if you have it with a meal, that slows its absorption, if you are hydrated already or you continue to hydrate as you drink, then that means you get less of a hangover if any hangover at all. And so someone with healthy blood sugar levels who's hydrated who's consuming wine with a meal, that should be a minimal stress to their system.

- So let's face it, it's not the British way is it? Rush home from work and crack a couple of bottles of red while you've got the time and binge, binge, binge. One from Jason who's talking about HDLs and LDLs, he says, "Isn't it a bit misleading "because they don't just contain cholesterol, "they contain triglycerides, monoglycerides, cholesterol, "and not just cholesterol, "they also contain certain fat soluble vitamins, "so could the use of statins "disrupt certain vitamin levels, too?"

- I believe they do. Again, I'm not sort of super up on the biochemistry there but really my primary interest from a nutritional perspective is to look at how we got here and how does that relate to what we should be doing nutritionally because for me, it just makes a lot of sense that we're highly adapted to food sources that our ancestors would have consumed and not so adapted to things that have come into the food chain recently. So I'm not really able to answer that with any authority.

- Okay. We've got a number of people who've asked us questions about cholesterol and I think probably, as Matt said, this is not his area of expertise, is the biochemistry of transportation of cholesterol. So what I'll do is we will address those questions after the broadcast and we'll have the answers next time around. So we'll try and get to answer those questions when we come on the air next time but also I would recommend if you are interested in cholesterol, look up Malcolm Kendrick, he's been our best on a couple of occasions in the past, he's written a book called The Great Cholesterol Con, he's a GP, he's very heavily into cardiovascular research and he is a contrary individual, he doesn't follow the party

line over statins and cholesterol and he's got a lot of really good stuff going on in his blogs about heart disease and so on and a lot of good stuff in his books about the whole mechanism of cholesterol creation, transportation and whether it's good or bad for you. So Malcolm Kendrick, look him up but I think we'll kill it on cholesterol for now. I will ask you another question and we'll get back to your presentation. What are your thoughts on labeling food organic in supermarkets and your views on the recent news that meat with cancer is still made available for human consumption after the cancer is cut out? I didn't realize that. Can this also happen with organic food? In this day and age, is it safer to eat meat or not based on all the potential contamination? I reckon that was possibly a vegetarian asked that question?

- Well, I think the problem is contamination is everywhere and this is one of the things with eating organic vegetables, let's say. Well they've been rained on by clouds that were formed I'm trying to think what the name is but essentially xenoestrogens coming from industry, from plastics and from hormonal industries. These things get into the rivers, they form precipitation and you can measure it in the fields, even in organic foods. So you can't get away from it completely but you can minimize the toxic load on the system by eating organic foods, obviously eating organic meats, assuming you can afford it and eating locally farmed foods because what you'll find is that with organics, it's very expensive to run an organic farm with an organic stamp. The soil association charge a huge amount of money for that so only of the big farmers can afford that but most local farmers have standards equal to or above organic standards so it's always worth going to the local farmer's market and speaking to your local farmers. And quite often they get quite angry, if you ask if their food's organic because their standards are higher but they just can't afford the certification. So in terms of cancers, I've certainly heard that. In terms of factory farming and commercial farming, I'm not so sure. I think most organic standards wouldn't allow that but maybe they're no different.

- Okay, I said I'd let you get on with your presentation before I go back to my arm length of questions here so let's do that 'cause I really want to get down to this business of nutrition and biomechanical pain which was in your title there.

- Sure. Well a generic slide that I use in my presentations is to illustrate to people that across time, of course, we accumulate load on the system so just by sitting in a gravitational field, we've got load coming down on the system and that creates micro trauma to the system and that cumulative micro trauma across time creates macro trauma and if we weren't a living organism, we wouldn't repair from that macro trauma but what will happen is you and I sitting here in this gravitational field will be creating trauma to our joints to some degree, we'll go to bed tonight and hopefully if we've eaten well and we're hydrated and we sleep well, we'll repair all that micro trauma, we'll wake up tomorrow almost identical to how we did this morning. So as osteopaths what we tend to do is we tend to work a lot with the micro trauma and with the stress on the system in terms of the biomechanical stresses, the forces.

- And this applies to our chiropractor viewers as well.

- Yeah, so if we're working physically with the body let's say, then what our aim is is to try and lower the cumulative stress on the body by optimizing posture, optimizing function, optimizing load sharing between the joints, this kind of thing. But there's the flip side to that which is that we need to be able to repair optimally as well and so there's two ways to help an individual with pain and one is to improve their biomechanics and to decrease their loading or dysfunctional loading and the other way is to increase their healing. And so that's where nutrition comes in and is so important and I think it's quite often overlooked because one of the ways that as a society we tend to view food because of the diet industry is as a form of fuel. So we've been kind of indoctrinated to think of food as calories and how much energy do you get from this and how much energy do I need to expel or expend to be able to get rid of that again? So it's almost like a constant fight to try and get rid of the fuel that we've brought on board. But food of course is much more than that and you don't make an eyeball out of pasta alone, you need a mix of different foodstuffs to repair and regenerate. And so I think to put that into context, you make 120 million red blood cells per second, you generate 120 million red blood cells per second. So they're obviously small entities but that's quite incredible that you are producing that many and you have to make them out of something. And if you're making those out of McDonald's, then that's one level of quality of blood cell, if you're making them out of organic farm fresh food, then that's gonna be a completely different level of red blood cell you're creating.

- Are you sure?

- I'm not sure but I would say that there's, a nice phrase that Paul Chek uses is that you can't make chicken salad out of chicken shit and I think that kind of sums it up. Who knows, maybe someone can prove it wrong but I doubt it.

- A question about that very thing has come in, not chicken shit, I don't know who asked it but do people need extra protein if they've got musculoskeletal injuries 'cause it seems very fashionable apparently.

- It is fashionable, I think it's up for debate. The whole thing with protein relates to body building and protein availability for repair. From a metabolic typing point of view, if you are more of a fast oxidizer, then it will help to balance your system and therefore optimize immune function and optimize sleep and optimize other mechanisms that will help you to repair. So I think that's one way that protein could help if you do well with protein. But I think if you've got an effective and functional digestive system, which is quite a big if in this day and age, then you should be able to do well with just a standard diet getting enough protein from it.

- We've had a question, the $60 million question from another anonymous viewer saying what do you recommend we eat to be healthy? Now several times you've talked about fast oxidizers, slow oxidizers, how do you know? When you've got a patient who comes to see you, what do you say to them? You say, "Well, you look a bit like a fast oxidizer to me."

- Yes, yes. So there are systems for testing it and the system that I use is the metabolic typing system developed by Bill Wolcott and basically it's an online questionnaire that

allows you to assess whether you are more of a faster oxidizer, slower oxidizer, whether you're more parasympathetic dominant or sympathetic dominant.

- Is this freely available?

- It's not freely available. There are questionnaires that are free, so certainly you can get a rough idea through a free questionnaire but in general, I recommend patients obviously take the more structured and detailed questionnaire which is 25 pounds. And that gives you quite a significant report to explain how your physiology is likely to respond to different foods, recommended foods, example meal plans, that kind of thing. So that aside, the metabolic typing book I think is an excellent read for anyone who hasn't read it and it also has that basic questionnaire in there. So that's one other possibility. But in general, if you've got white skin, then you're likely to be from an area that didn't have very many carbohydrates available, if you've got darker skin, probably you're gonna have had exposure to greater levels of carbohydrate through your ancestral line and then darker skin, obviously abundant carbohydrate available. Now that is not a good guide for a very good reason and that is because this is not just a genetic thing. It's all based around the stressors that your body's under as well. So when it's cold, for example, we all know intuitively that we don't feel so much like a salad, we feel more like having a roast dinner and the counter to that is that intuitively on a summer's day, hot summer's day, you don't feel like having a roast dinner, you feel like having a chicken salad or something that's lighter. And that's because the oxidation rate has changed, you've slowed right down your oxidation when it's hot so you don't feel like a big, heavy protein rich meal, you feel like a lighter meal and vice versa when it's cold. So there's the environment, obviously women's menstrual cycles will influence their nutritional requirements and just the general stress that the body is under. So an athlete would have a different nutritional requirement to a non athlete.

- A couple of the questions that have come in, again, both ones I'm gonna mention I think are from anonymous viewers are about specific recommendations for specific injuries. So we've got one that says, "What do you recommend nutritionally "for patients with tendon or joint injuries? "Do glucosamine, chondroitin work or help?" and the other one is, "What is your advice "for frozen shoulder nutritionally?" So what would you do with your own patients?

- So with tendons, certainly glucosamine and chondroitin have a lot of research behind that suggests that they can help but not that they help all cases. So I think that the figures typically around 50 to 60% of people get some kind of benefit.

- This is what we hate, isn't it? We want something that works for everybody but as I understood it with glucosamine you've got to wait a month before you know whether it's going to work so it's a long time to work out whether you're in the 50% or the other 50%.

- That's it, that's it, yes, yeah. And then it's collagen. So one of the things, again, looking back to an evolution perspective on nutrition is that we eat very little collagen in this day and age because collagen is the cheap meat and so we tend to like the more expensive meat cuts, that's if we eat meat. If we're vegetarian, of course, we get no

collagen at all and it's easier to make collagen out of collagen than it is to make it out of broccoli for example. So one of the things that's recommended and I'm just trying to think if I've seen any studies on it that prove that it's beneficial but one of the things that's recommended is collagen supplements for tendon injuries and lots of anecdotal reports as to how beneficial it can be but yeah, like I said, I'm not sure if they've been randomized controlled trials on it yet.

- But it's worth trying.

- I think it's worth a try, yeah. So historically of course, our ancestors would've eaten a lot more of the animal which would've included a lot more collagen and in more traditional cooking as well of course, a lot more stews and this kind of thing which were designed to break down the tougher meat and the collagen, stews and soups. And so one of the things our diet is very lacking in today compared to 100 years ago is collagen.

- Okay, it's one of our cheekier viewers has sent in the observation that chicken shit is not any kind of meat and therefore that wasn't a good analysis but I don't think it was meant to be really.

- The point is you can't make something out of something that it isn't.

- Or something good out of something that's bad. One person's very sensibly asked, "Where can we find that questionnaire that you mentioned?" Well you can mention it again now which is--

- So it's in the Metabolic Typing Diet book and just wondering, I could probably put a copy of it onto my website as well.

- We will put a reference up on our website after this broadcast is posted, the recording is posted so you will have that reference. What we'll try to do is for anyone who's, God the GDP is nearly upon us, for anyone whose given us permission for us to send them information, we will send them out information about where to find the related information. Actually, just while we're on the subject of GDPR, the very fact that you're watching this, means I can send you information related to today's discussion or other things that you've been interested in watching. So you will see that we are taking a reasonably relaxed approach to the GDPR, we're keeping within the law of course and we are going to be doing yet another broadcast on it on Thursday because so many people have asked quite a lot about it. So anyway, the answer to her question simply is that Matt's gonna post it on his website, we'll put a reference on our website and so the answer will be there.

- Yes, excellent. So I think one of the analogies that helps people to get their head around the concept of metabolic typing, particularly when I'm talking to patients is that if you think of the metabolism of your body like a fire, like a wood burner, then when you go to bed, if you've ever lived in a house with a wood burner, you need to put hard wood in that wood burner. And so hard wood nutritionally would be things like proteins and fats, so tend to be found obviously more in meats. But they are slow burning. So they help to provide energy, particularly for a faster oxidizer through the sleeping hours. If you have carbohydrates or a high

carbohydrate meal close to bed, well that's more like putting soft wood on the burner. Now that doesn't necessarily mean it's a major issue but what the situation often will be is that the blood sugar will rise after any meal actually but the higher the carbohydrate content, the higher the rise in the blood sugar typically, and again this is all variable depending on genetics and microbiome and so on but so the blood sugar is up and of course the result is to release insulin and insulin brings it back down again. And normally by this stage, you're a couple of hours into your sleep cycle and as your blood sugar drops down, if it drops below the functional physiological range, which is this kind of range that it should stay within, but insulin can drop it below that range. The only way you can bring that back up again is through releasing cortisol and cortisol obviously is a catabolic hormone. So if this is a habit that each night you're having high carb meals and going too high, going too low and then having to release cortisol in the middle of the night, well first of all, as I say, cortisol is catabolic so it's not gonna help tissue repair and in addition, it's antagonistic to melatonin and melatonin is your sleep hormone and also the most potent antioxidant in the human body. So if you're inhibiting melatonin, that's a real potential problem for your health and for your repair.

- There's a great linker between this and so many other broadcasts that we've had because we had Neil Stanley talking to us about the science of sleep a few months ago and the importance of melatonin and so on and so many other factors to do with sleep. And I think it probably just reminds us all that there isn't any one trick answer to any of the problems we've got, they're all related, aren't they?

- That's it, that's it, it's all integrated and I think that an important concept that's useful to understand nutritionally is the idea of repetitive strain injuries. We talk about repetitive strain injuries from a musculoskeletal point of view but if you consistently eat the wrong food, that's like a repetitive strain injury to your hormonal system and across time, that creates a macro trauma to your hormonal system. So I think like I said that's an important concept.

- Okay, can I ask some specifics about nutritional products or items? Is there any benefit in using green lipped muscle extract for tendon or muscle injury as a topical lotion in your experience and is turmeric any good for joint problems?

- Okay, so the muscle question.

- Very popular green lipped muscles, aren't they, along with chondroitin and--

- Okay, I think that links into a discussion that I was going to open with you a bit later about supplementation and how supplementation--

- Yeah, you've got that wonderful slide on it, haven't you?

- Yeah, yeah, maybe I'll drag the slide up but I would say that the, certainly green lipped muscle has got, as far as I've seen it's got some benefits to cartilage based rehabilitation and connective tissue based rehabilitation but I'm not heavily into my supplementation, I'm more about getting the diet right because really the diet is what influences the systems most profoundly and supplementation should be

supplementary of course. I certainly think it has its place but it's quite pharmaceutical in the way it works. It's a this for that approach which means you've got this problem, I'll give you that remedy. Well, really, I'm more interested in dealing with fundamentals to prevent that from coming on in the first place and to give the body the tools to rehabilitate itself. Obviously, supplementation can give a push in the right direction but that's how I would use it, I wouldn't say everyone with a joint problem, that you need glucosamine and everyone with a blood sugar dysregulation needs whatever it might be, I'm trying to think, cinnamon, cinnamon is a classic one for blood sugar dysregulation. So I would try to work on that more nutritionally.

- So turmeric then?

- Turmeric again very good this for that type of approach for joint problems. I've seen research on it that suggests--

- But generally, you'd be putting turmeric into something else in your diet, wouldn't you? I can't imagine eating turmeric on its own.

- Well no, so this is the thing, turmeric and ginger and there's one or two other things like bromelaine that you find in pineapples and papaine you find in papaya, they are proteolytic enzymes and so what they do is they help to break down tissue debris when there's trauma. So they work a bit like macrophages. You damage your knee, if you inject bromelaine, it will help to break down the protein debris from the damage. So then that allows you to heal, at least that's my understanding of it. So they're good but the reason they've been used in cooking is for exactly that reason, that they break down the protein. So you put turmeric in a curry to help soften the lamb or the chicken so that it tastes better and so the connective tissues are more edible. That's why turmeric and ginger and these kinds of things are used in cooking, as well as obviously to provide flavor. But the problem then is that they act on the meat in the dish or the proteins in the dish as opposed to acting in the body. So if you're to supplement with turmeric or ginger or anything like that, it has to be away from food so it doesn't act on the food.

- Is the fast/slow oxidizer and metabolic typing the same as the blood type diet, is one of the questions we've had?

- No, it's not, no. That's to do with cellular metabolism so it's the rate at which your cells oxidize, I was gonna say inflammation, energy, and also the balance in the autonomic nervous system. So if you are more parasympathetic which is rest and digest, then you tend to do better on higher protein meals because you're so sort of heavily into digestion, as it were. Whereas if you're more sympathetic, you're more in fight/flight and so actually you do better on carbs. So that's more what metabolic typing is is looking at where is the balance in the autonomic nervous system, where is the balance in the cellular oxidation system and which foods would help to cater for those balances or imbalances let's say. And then blood typing is part of the metabolic typing system. So it's a way to fine tune what you should or shouldn't eat.

- I'm suspicious that their won't be a few patients out there, particularly in an area close to my own clinic, where they'll be saying, well, where on the spectrum do I have to be to justify McDonald's and Mars bars?

- Yes, yes, that's true. Well the thing is if you have a Mars bar, you just have to eat a steak with it so that you balance it out. It's all about macronutrients.

- I did promise you I was gonna ask you about this 'cause I think it has to come up in every discussion on nutrition, is there a place for the Atkins diet? Does it just depend on who you are?

- Yes, for sure but the problem with Atkins or with Pritikin diet or any sort of labeled diet that tells you how you should eat is that it's a one size fits all approach but as we discussed earlier, everyone's digestive tract is completely different, everyone's genetics are completely different, everyone's microbiome is different, and in addition to that everyone's stressors are different and the temperature is different. So nutritional requirements are very depending on all of those things and really one of the things that metabolic typing attempts to teach you is to have better awareness of what your body needs and how your body is responding to different foods. So if you start to feel a bit tired like I used to after a meal, you might think actually I think I had too many carbs in that meal. If I have a handful of nuts, that might level me out. And so then you have a handful of nuts or seeds or something to up the fats and now your energy levels are better. So that's I think a key part of our nutrition is to understand and start to sense how it reacts with us as we go.

- What about then protein shakes which are very, very popular, particularly amongst the gym community? And this is a question that's come in from one of the audience, especially for body builders and weight lifters, they ask, "Is there more benefit in having natural proteins?"

- There certainly are some benefits to natural proteins but also some benefits to the shakes. The shakes often have branch chain amino acids which as I understand are more absorbable and more quickly absorbed let's say post workout which then means that you should be able to start the repair process a bit quicker.

- Does that mean that they're not good for somebody who isn't doing weight lifting, weight training, body building?

- No I think they can be useful for certain people with certain medical situations that warrant higher protein intake or digestive compromise, so they can't digest proteins the normal way. But the downside to it is that a lot of these substances that are used, things like whey protein, they're actually classified as toxic substances when they're in transport but then we're allowed to consume them in these sports drinks, so that's kind of interesting. But they also, a lot of them are irritants to people because something I haven't particularly touched on tonight is food allergies and intolerances and things like soya, isoflavins and whey protein are very common in these kinds of protein shakes and a lot of people are very highly allergenic to those. So I think with allergies, it's important to again, very complex field and I'm not the world's top expert on all the ins and outs of it but one of

the key understandings that I made around food intolerances and sensitivities is that when you look at different populations, so in the east, the most common food sensitivities are to rice and to soya. In the west the most common food sensitivities are to dairy and to gluten. But if you go to the US, then corn comes right up there with gluten. So when you look at it, there's clearly a relationship to what's being eaten. So in terms of the sheer volume of it. But also beyond that, there's certain foods have a level of allergenicity which makes people more prone to react to them. So then if you link that back into what we're talking about in terms of repair, well if you have a food intolerance to gluten let's say and its creating inflammation in your digestive system, well, that's straight away sensitizing the immune system which means its depleting you from an energetic perspective 'cause you're investing time into fighting an infection which you can't actually find 'cause the infection is the gluten and you keep eating it. So that's depleting in itself but in addition, the inflammation, again, like we talked about earlier is gonna create inhibition over these tonic motor neurons that actually stabilize the core, stabilize the spine. And that's a very classic situation to find with patients that they're gluten intolerance, they've got low back pain, they've got joint aches and pains.

- So let me ask this question that's come in from one of the members of the audience and I'll come back to that specific topic 'cause you talked about dairy intolerances earlier on and at the start, I think I mentioned my training in nutrition from one of our naturopaths at the College of Osteopaths, the late Joe Goodman, he was well known in the community as a naturopath and somebody here says that when he or she was in training at the College of Osteopaths, one of the more naturopathic tutors often suggested patients should cut out dairy for problems with mucus production. You think there's some merit in that? Does dairy lead to overproduction of mucus?

- It is known as a mucagenic food, there's certain foods that are considered mucagenic and dairy obviously is the primary one there. So yeah, I think it's a reasonable kind of general approach but I think with dairy, quite often, again, Caucasians are typically quite well developed to tolerate dairy and different ethnic groups not so much. So we continue to make lactase into adulthood typically whereas other ethnic groups, not so much. So we have quite a high level of tolerance to it. But what's interesting about it is that not everyone has good tolerance to it, the figures vary but what I've seen is about between 40 and 70% don't have good tolerance to it as an adult. But in addition to that, gluten and gliadin and any other kind of irritant to the gut what it does is it damages the microvilli. So the inflammatory process that you get with a gluten intolerance, for example, damages the microvilli and the microvilli are what actually produce lactase to break down the lactose. So if you're damaging your microvilli then the end result of gluten intolerance is to develop a lactose intolerance as well. So I would look back to see not just if there's a lactose problem but a gluten problem beyond that or anything else that could be inflaming the digestive system.

- Okay, so now going back to what you were talking about, what's your approach with a patient who comes to you with low back pain from a nutritional perspective? What do you do?

- Yeah, so I have a system that I use to screen the different organ and glandular systems. So I look to see where the likely problems are, whether it's more in the stomach or the small intestine or the large intestine, there's signs of inflammation and then I look beyond that to see if there's a lot of stress in the adrenal system and whether or not that could be affecting digestion 'cause of course if you're in a fight/flight state, it shuts down digestion. I look at the immune system to see if there's sensitization because if there's sensitization of the immune system, between 70 and 80% of your immune system lines the digestive tract because it's the very part of you where you're actually trying to absorb something that's non self into your body. Most of the rest of the body, you're trying to stop stuff getting in like the skin blocks things from getting in. But n the digestive system, you're actually trying to absorb stuff across. So most of your digestive system is lining your gut tube and what that means is that if you have anything like gluten or dairy that you're intolerant to, we get a strong response to that. I'm just trying to think what the actual question was, you said something about where was I, it was about mucus intolerance or mucus--

- Mucus production, yeah, yeah.

- Mucus intolerance, I mean mucus production.

- So mucus is a generic response to an invader, that's why you produce it when you've got a cold. Ear wax is a generic response to an invader. So diarrhea, again is a generic response to an invader. So we try and push stuff out of us mechanically when we think we're being invaded and mucus is one way to do that.

- Okay, I've got so many things that I want to ask you here but we're already getting close to the end of the broadcast. Should we cover some more of what you've got to say here and then maybe I'll very cheekily ask you to answer some question off camera later?

- Yeah, I think that probably, I've got a slide here which--

- Yeah, I blew this one up for the audience 'cause I don't quite follow it. Can you explain it? I'll make you feel happy, I'll make the presentation available to them afterwards and I'll see where this fits in in your various diagrams.

- Yes, so this is really an evolutionary exploration of human function and what I've tried to do there is to illustrate different polarities that occur.

- Did you make this up, this diagram?

- Yeah.

- That's very artistic of you.

- Thank you. So I've used the yin yang symbol because of course it's masculine feminine and light and dark and so on. So the bottom of the screen there, you see the light/dark cycle and that really to me is the most fundamental polarity or dialectic you could call it that life forms have been exposed to for billions of years and of

course, when you look at our DNA, great swathes of it are the same as plants. So we're something like 70% banana I think, there's some joke about that but the point is is that we have very similar systems, genetic codes, as plants and certainly things like our red blood cells for example are just one atom different to chlorophyll. Element I think is the right term. So we have iron in the middle of the hemoglobin and I think it's magnesium in the middle of chlorophyll but it's exactly the same shape and arrangement and it turns out that the red blood cells are light sensitive. So we have, I think they're called phytochromes within the red blood cells. So we're very responsive to lights and of course light brings us vitamin D. But sleep, the dark cycle, also brings us rest and digest time, it brings us melatonin which is as I mentioned the most potent antioxidant in the human body. So the point there is that you've got two very potent antioxidants, anticarcinogenic compounds that if you get enough light and you get enough dark, they're gonna be very health providing. Then also of course, you've got the whole repair side of things. So really between about 10 and two a.m. Your body is going into physical repair if you're in bed and resting. And then between about two and six a.m. you're going more into psychogenic repair. So if you are missing either side of those, then again it's like a repetitive strain injury to that repair mechanism. So we can all go to bed at midnight or at two in the morning or whatever but across a period of time if we keep doing that we're inhibiting our physical repair. If we keep getting up at four a.m. or we keep waking up early, then we're inhibition our psychogenic repair. So again across a period of time, you end up with micro stressors becoming a macro stress. So that's the bottom part. You've got expiration, inspiration which is the I and the E on the left side of the diagram there and the idea with that is that light is what stimulates the energy producing process in the earliest life forms, they use photosynthesis to generate energy. So of course photosynthesis is a form of inspiration and expiration and in us as human beings inspiration and expiration is again part of our mechanism for repair, it helps with fluid drive, it helps with balancing the autonomic state, so we talked about all about food affecting autonomic balance. Well your breathing rate affects it even quicker. If you've got a breathing pattern disorder, which is obviously Leon's big area that he's focused on for awhile.

- And the broadcasts we've done with Leon Chater, the recordings of those are available and they're well worth watching because it's actually an aspect of medicine that I had not even considered until I listened to Leon talk about this, Leon Chater of course we're talking about, well worth looking at.

- And so of course breathing pattern disorders on their own mimic a lot of the kind of symptoms that a lot of our patients coming to see us with, headaches, neck pain, back pain, dizziness, coordination issues, heart pain, gut issues, bloating, you can get all of those as a result of a breathing pattern disorder. So breathing is critically important, as silly as that sounds, to our health.

- In more than just the obvious way.

- In more than just the obvious way. And so that was the next, so looking at it from an evolutionary perspective, you've got light that drives the respiratory process and practically every living system on the planet has a 24 hour rhythm in tune with the planet. Then you've got the breathing cycle, so the inspiration, expiration,

then you've got the eating and fasting cycle and this is an important component obviously of nutrition because we're talking about nutrition, what we eat, but fasting is something that we haven't talked about.

- And in fact, it's one of the questions that's come in, is there a place for fasting in the diet?

- And absolutely there's a place for fasting. One of the biggest challenges for us in this day and age is that it's quite difficult to fast because we are surrounded by food and very attracted to food all of the time. And also some dietary advice is to say eat little to nothing. I've heard that many times, especially in the training world, they talk about taking eight protein based meals per day so that you can balance your blood sugar.

- And a recommendation of a previous speaker whose particular research was into migraines says that very often eating frequently small amounts is very good for avoiding migraines. That was Natalia Kirkum whose a nutritionist.

- And I think that's a strategy that can be a good fix but for me that's a temporary thing. If you get the balance of micronutrients right within each meal, then you should be able to sustain your energy levels all things being equal between the meals.

- That's not really a fast is it, that's just pause between eating.

- So that is a fast because most people would not have a fast between meals, they'll have snacks between meals. So in that way, that's a fast. One of the things that ties in with the light dark cycle at the bottom is that if you look at how our ancestors evolved, they would have of course gone to sleep at night time, they would've woken up without any food because it was too dangerous to store food, particularly meats, but we know they were eating meats. So if they had caught an animal, they would've had to have finished it or discarded with it the day before. So they go to bed without any animal carcass lying around and they wake up hungry. Now, light stimulates cortisol production and cortisol is what mobilizes glycogen into glucose and stored fats into free fatty acids. So now you have energy to essentially go out and hunt and gather. So you get a cortisol spike first thing in the morning and the cortisol wakes you up, gets you out, gives you the energy that you need.

- I have to remind my body that's not supposed to happen first thing in the morning.

- See we get dampened down cortisol responses as we get fatigued. So that's another thing, especially pain patients get that. So they get a very dampened cortisol spike in the morning. But cortisol also shuts down your digestive system. It's a fight/flight hormone. So you can't be in fight/flight and rest and digest at the same time. So really 24 hour cortisol rhythm of the light/dark cycle is essentially telling us that we should not be eating breakfast, not if we are to follow our physiology.

- We shouldn't eat the most important meal of the day?

- That's right. So then we fast a little bit longer. So we obviously breakfast means to break the fast of course and we should have, but I think breakfast is the most important meal of the day, maybe we should have it at lunch time or mid morning. In an ideal

scenario, we should get up and move and then eat. All of the sports nutrition talks about the importance of eating very quickly after you've finished your workout and when you watch animals hunting or gathering, then that's exactly what they do, they climb the tree, they eat straight away, they hunt the monkey or they hunt the deer and they eat straight away. They don't wait for half an hour or for a couple of hours, they eat straight away because that's when all the enzymes are optimized to bring the nutrition on board, after the activity.

- I suspect Anna's question, it was Anastasia who asked the question about fasting, I suspect she was talking about the longer, sustained fasting and we were taught, again by Joe Goodman that we could do three, four, five days fasting just to see what happened. And maybe you can, maybe it is beneficial?

- I think there's certainly benefits to it. Oe of the things with any kind of fasting is that what you're doing is you're minimizing exposure to insulin and we're overexposed to insulin because of our overconsumption the whole time of insulin stimulating foods. And so then what we end up with is insensitivity to insulin which leads obviously that's prediabetes. So that's one thing but another key thing from a hormonal point of view is that we mentioned lectins earlier but there's something called leptin which is the hormone that you produce when you're feeling satiated. So if we were to have a meal now, we'd release leptin and we'd feel satiated for a couple of hours and then maybe a couple of hours time, we'd want to eat again. But if you do then keep eating and snacking between meals, you become less and less sensitive to leptin. So it kind of ever decreasing cycle as it were and you end up eating full time. So it's been shown in people with morbid obesity that they're very leptin insensitive in general. So to fast--

- Could they address that?

- Yeah, by fasting and your sensitivity returns, just like your insulin sensitivity returns if you fast as well and if you exercise. So really the model is to illustrate that you've got, if you follow the cycles, if you follow the light/dark cycle, you work on your inspiration/expiration cycle, in terms of stress management and how that facilitates digestion, eating and fasting cycles and making them optimized, then your movement and rest cycle which is the top one, or exercise and rest, should come as a kind of natural--

- So we're back to your diagram now?

- That's it, yeah. And then the exercise and rest balance also then helps you to feel tired to want to go to bed and also helps you to make the right food choices and also facilitates optimal breathing mechanics.

- Is this a useful diagram to give to patients and say, "Look, these are the components "you need to take into account."? Because I think patients, because everybody now wants a quick fix, they probably struggle to understand the different components in their pain problem, their nutritional makeup.

- Yes, I think it is. I mean obviously that's what I was developing it for was to try to simplify the complexity of nutrition and lifestyle approaches and I was trying to integrate that

with an evolutionary way of thinking and to really I don't know if you recall from your biology days but there's an acronym called MEERING which is movement, excretion, expiration, reproduction, irritability, nutrition and growth.

- Well done.

- And that is essentially the list that defines a living organism and so I had always thought well if we can reverse engineer that and work out how to optimize growth, nutrition, et cetera, et cetera, then we will have a model for human health or for animal health.

- Two final questions, you have to deal with this first one very, very quickly.

- Okay.

- Is our ability to advise on nutrition compromised with the variable factors of individual's digestive systems?

- Yes.

- Good, that's good 'cause we'll come back to that in a second. And this is the one I promised from Martin earlier on, at some point he asked whether you could recommend a nutritional approach to assist with the side effects of chemotherapy which is cytotoxic, i.e. how to assist in soft tissue repair of the bowel?

- Right, okay. Yeah, I don't know that my advice would change dramatically from the perspective that it's still obviously very important to get the macronutrient ratios optimized because that's what optimizes blood sugar regulation, hormonal production, immune function and so on. So from that perspective, I wouldn't change it but that is an example of somewhere where I would first of all be keen to keep testing and retesting and to really work on the individual's awareness of the nutrition that works for them. So like I mentioned, that's part of the process of metabolic typing is to make the individual more and more conscious of how foods are affecting them. So I think that would be really important with a patient like that because there's going to be so much flux flux based on the disease process but also on the medication and on the stress associated and so on. But then it is a case where I would use supplementation as well and what I would do is I would research it. So there's some generic things that you would think could be beneficial for inflammation in the gut but I wouldn't want to just recommend that out without looking at what pharmacological substances are being used and whether there's any kind of cross reactions. So aloe vera would be a great example of something that really helps to soothe and reduce inflammation in the gut. So it's often used for people with gut inflammation, irritable bowel syndrome, inflammatory bowel disease.

- So again, nutrition can have a significant effect here but it's gotta be tailored to the individual circumstances.

- That's it, that's it, yeah.

- Which seems to be to be the takeaway message from this that nutrition's very important but to settle on the Atkins diet, the paleo diet or whatever other diet is not the right approach because it can't have a one size fits all approach.

- That's right, yeah, yeah, that's it. And I think sometimes the Atkins and things like that almost self select their advocates because of course the people that are faster oxidizers and lose weight on it will really shout about it and say, "I lost all this weight on this diet." And so the guys that tried it for a couple of weeks and it made no difference, they're not likely to shout quite as loudly as the ones that have had tremendous gains. So there's this kind of self selection that occurs. But the other thing is that whenever you change your diet, it's gonna for most people, it's gonna make them feel better for a period of time because you're changing the stress on the system, you're more aware of the foods abut also you're using different enzyme systems and different parts of the digestive system. So a lot of people feel great when they switch to--

- Matt, we're out of time. As always, these evenings fly by and we had a whole heap of questions which reflects on how much people enjoy the subjects that you've been talking about. Thank you very much for coming and join us. We've got a number of questions on sugars and observations about sugar, some about metabolic typing and somatotype typing if that's the right thing, about osteoporosis, all these sort of things, I'm gonna pass on to you later and hopefully you'll have time to give us some answers. We'll pass those on during the next broadcast and we'll post them on the website. We'll post the references on the website, you'll have a copy of Matt's presentation on the website as well and for a lot of things, if you go to mattwalden.com which I hope is up and running now 'cause last time it had a temporary hiccup, mattwalden.com you'll be able to find a lot more about this. Don't forget that Matt also runs his own webinars on subjects such as posture, on nutrition and on infant development which is coming up very soon. You can find the references to those on our website, on his website and obviously I don't need to tell you how good a presenter he is and how knowledgeable the man is. So I recommend those thoroughly.