



Steph: Hello Kirsty, and welcome back to the show.

Kirsty: Hey Steph, thanks so much for having me.

Steph: I'm loving this topic already, it's something I love to speak about, and I'm really thrilled to have you involved in the conversation about ketones as the fourth macronutrient. So let's start there. What does this mean to you?

Kirsty: Well, yeah, so this has been this interesting thing, I have a major nerd crush on Dom D'Agostino. And quite a few years ago, I saw him coining this phrase about the fourth macronutrient, ketones being that fourth macronutrient. And at the time, I wasn't really using ketones, this was quite a while ago when I saw it, and it just blew my mind. How can something not be a carb and not be a protein or a fat, but still produce energy within the body?

So it's always just sparked this great journey of nerding out on the information. But what it really means to me is that, we have these macronutrients, which is far more your space than mine, but it's these fats and carbohydrates and protein. And they provide energy and a source of fuel for the body. But we're now finding that there's exogenous ketones, so things that you take from outside of the body, so external to the body. That's also providing fuel for the body, but it's not a carb or a protein or a fat. And so how does that sit when we're looking at nutrients and how to ... Like for you, for example, a nutritionist, how do you add that into your day, and make sure that there's balance with that?

Do we need to, now that there are ketone esters on the market, and we can increase our ketones exogenously, do we actually need to now question on a daily basis, is it a fourth macronutrient? And then, how do we incorporate that into our lives without going completely hardcore and just relying on ketones? So that's what it means to me, and it excites me. And I've just been on my big week long adventure hike and I, as you know, last hike I did a lot of it fasted and played around with this space. And then this hike I really played around with that fourth macronutrient, those exogenous ketones. And how was my energy and my recovery? And how much carbs could I use? And just all that fun stuff. So it's really nice to keep learning and then applying in situations.

Steph: Yeah, definitely. Especially when we're looking at that endurance side of things. But just even take a step back, we know that, aside from exogenous ketone esters, or ketone salts rather, that ketones are those molecules that are produced by the liver from fatty acids. Usually when we're lowering our carbohydrate intake, it can occur during periods of low food intake, of course, like from a calorie perspective.

But one of the concepts that our listeners will be quite familiar with, is that these lower carbohydrate nutrition approaches that we're supporting are great in that, if they are prescribed properly, we can naturally increase our endogenous production of ketones, as part of that macronutrient conversation. And then, of course, there are the exogenous sources as well.

Kirsty: And I think, unfortunately, we've totally lost that ability or that art of ... That beautiful flow of that survival instinct within our bodies. We don't really now, I know there are some parts of the world that this is a great issue, but we don't really go into that famine survival mode very often, or that starvation mode which actually, in a lot of ways, reactivates so much of the programming within our bodies. It sparks autophagy, it helps depress inflammation, it resets our metabolism.

But it's very rare now, because most of us work on that pre-frontal cortex, that very executive brain now, that we wouldn't choose to put ourselves into those modes. So we've kind of lost that art of our body being able to know how to do that. Unless we want to go back there, what are we doing with this new information and these new products and how this is happening, because we have silenced that whole part of how incredible our body is.

Steph: Yeah, which obviously in the West comes largely from our Western food pyramid and then of course there's the influence of stress as well. But I mean, first and foremost I personally think we should definitely be looking at our nutrition first, which I know you have done for many years, but exogenous ketones are something that I've been experimenting with for about three years now. To clarify, I'm not using them at the moment because they haven't been tested through pregnancy and nursing, but prior to that I've definitely been experimenting with them and I was always really clear to start with the foundation of nutrition, and lowering our carbohydrates and moderating our protein intake, eating good amounts of quality fats, before we just look for a supplement to do the work for us. What are your thoughts on that?

Kirsty: Yeah, absolutely. Nutrition and lifestyle is the only way. It's the most cost effective way, and it's sustainable. Once you have that as your foundations in your life, it is what you do on a daily basis, then it needs to start there. I do know that when we see a lot of our clients, they've got chronic inflammation, there's neuro issues, mitochondrial deficiencies we're seeing more and more. At Cultured Wellness, we're seeing obviously lots of auto-immune conditions, a lot of diabetes, that classic disease state, and going low carbohydrate too quickly can then push too many metabolites that push inflammation. So this whole concept of using ketones as a therapeutic medium to get people to this beautiful sustainable diet that is just so awesome for our health, I can actually see some benefits in that because the gains can happen quicker, but also it can

be easier to incorporate it into your lifestyle. Of course with the end game being that you're going to get to that point that you've got this beautiful nutrition.

To be able to add exogenous ketones in, whilst you're lowering carbs, it brings down that blood glucose, it brings down things like C-reactive protein, that inflammatory response, all of those kinds of things, when you've got people who can't work because they're so sick, I just think therapeutically that there is actually this beautiful way forward.

Steph: I completely agree. I absolutely think it can be really useful, especially in those disease states that you mention. So I guess what we need to clarify is around that individual case. You mentioned Dom D'Agostino, one of the studies he's doing at the moment is around Alzheimer's disease, which I think we'll come back to, but just on this point, they're using the supplements because these are people that have been eating one way for their whole life, and it can be quite challenging to prescribe the right approach of those more traditional macronutrients to get them into that optimal state of ketosis, which we know is the 1.5 to 3 mmol/L, so of course, yeah in these studies the supplements can be really beneficial to increase ketones in the blood.

And then what I see with my athletes is on the other end of the spectrum, really healthy usually, but in someone who might need to lower their dietary intake of carbohydrates to something like 50 grams a day to achieve optimal ketosis, that's too low for someone who's doing ... too low in carbohydrates, to clarify, for someone that's doing a lot of endurance activity. So, as you say, the ketones can bridge that gap. It can be definitely in disease, but then also when you're really wanting maybe slightly higher carbohydrate intake for someone who's metabolically well, and doing a lot of exercise.

Kirsty: Yeah. So that's that, you probably have seen it out of Oxford uni, that national institute of health, that study in 2016, they looked at elite cyclists and they added exogenous ketones and the stable amount of carbs for ultimate performance and they found that they went ... the cyclists could go 400 meters faster than what they were producing beforehand, so they could keep those carbs consistent, but have those extra ketones coming through for that extra energy. So, when you're at that elite or that athlete sort of level, it's pretty exciting but what I see is really exciting in that is obviously over-exercising and all the stuff you and I bang on about, will cause inflammation. It will totally ramp up that NLR, P3 pathway, all those inflammatory pathways, but ketones drop that.

Now, there's not enough research, we don't understand any of this really, as much as we want to, but it's really interesting to have a look at, so endurance athletes, if they use ketones over time and longevity, and sort of that aging through doing some of those activities, the ketones lower that blood glucose, lower that inflammatory stress response, and so the recovery's better, and it enables the athlete or everyone's an athlete to some extent.. as you say, it enables someone to recover better, inflammation's dropped and then they can get what they might want out of their performance.

Steph: Yeah, and look there's a lot of things I don't like about The Game Changers documentary, but I-

Kirsty: Oh!

Steph: Can of worms, but I could not get over the section on Scott Jurek, who obviously everyone knows is a really well-known, very successful endurance athlete, but the only conversation was about glucose, and I was just like somebody send this man to Jeff Volek or Stephen Phinney or somebody that can help him appreciate that he needs ketones if he's going to be running across the world. And it was just a really archaic section, as a lot of the documentary was unfortunately, in that science is so different now, of course we once relied on carbohydrates, just like that very archaic statement about the brain needing glucose, and glucose being the only fuel for the brain, which is false, because ketones are really, really important there as well.

Kirsty: Mm-hmm. Absolutely, absolutely. And I think it's really important to add into this conversation about these externalities that we face on a daily basis that depletes, once again, going back to that mitochondria, and most people having mitochondrial deficiency, if we actually want to live in this environment, we do need to ramp up the game, and change it a little bit if we want to be sustainable and have that longevity.

So I'm not talking about getting chips implanted in people or whatever, but if we're going to be on screens all day, we're going to have a lack of natural light, if our circadian rhythms are going to be so out of whack, or we're born like my kids were, with heavy metal toxicity, viruses, all of those sorts of things, and you're prone to mitochondrial deficiency, then we've really, really got to look at how we're supporting people on a daily basis, and like you said we've got to move past this whole archaic way of looking at things, because that may have worked a hundred years ago, but there's just this huge onslaught of what we're exposed to, and we want to be able to survive through that, as opposed to more chronic illness and chronic disease.

Steph: Yeah. I'd love to talk about the cognitive function actually, because what we've heard a lot around, especially brain health, is that the brain is so dependent on glucose, and I really want to break this down, because yes the brain needs some glucose, but what we're seeing is that perpetual glucose across the blood brain barrier creates huge issues. Just even immediately, for your clients or my clients, that's where we're seeing huge issues with energy and focus and mental clarity and cognitive function, and of course when you're using your body's inbuilt ketone mechanism or taking, drinking, exogenous ketones, then you're giving your brain this alternative fuel that's naturally anti-inflammatory and longevity promoting, and I think that's incredible.

Kirsty: Absolutely incredible, and for people that are going through that beautiful process of really looking at healing their bodies and getting rid of say, once again, if we look at the gut, breaking down and getting rid of viruses and any type of inflammation that's going on in the gut, once again we know those metabolites will cross through to that blood brain barrier, and they have such a significant impact on every neural pathway. They attach to neurons, they attach to receptors like dopamine receptors, and so once again, even a byproduct of carbohydrates and what it's doing in the gut, and then it's impact in

the brain alone is causing these big problems, and so we can depress that and we can change that by utilizing once again, the body's natural ketones, but even exogenous ketones, it's just that inflammation is so much.

But even in diabetes studies, I know that, once again, Dom D'Agostino has been doing a lot of research in diabetes, and Metformin, and they see ketones more effective than Metformin, and I know that if I was diabetic, or my children, or anyone in my family, I would prefer them to be having coconut oil, or utilizing the bodies incredible ability of making ketones, rather than being on a prescribed pharmaceutical drug.

Steph: Well, I agree, and I think you don't even need to be a scientist or a health geek to really appreciate that maybe we shouldn't start with a pharmaceutical, but unfortunately that's what we've always known, so it is that first point of call. But yeah, to really unpack, especially if we just separate diabetes for a moment, because their mechanisms are different, but we know that type two can be completely reversed, or put into remission, right? And a lot of that, for many people, is changing firstly what they eat because it's the insulin resistance that's causing the issue, which of course then is that cascade to these long term side effects and essentially a disease that just gets worse and worse and is not a very good way to go.

Type one's obviously quite different, but where they're common is in their blood sugar control goals, and so ketones, coconut oil, medium chain triglycerides, these are all what we're really looking to keep our blood sugar stable, so then we can decrease our reliance on medication, especially when someone's already being treated that way.

Kirsty: So if we're using an extra macro nutrient that provides energy, but has all these side effects, while someone's transitioning through to getting that remission for type two, why are we not doing it more Steph? I have to put it out there, it should just be a go to on our plans, which I know for you and I it's such a thing that we shout out, but more study needs to be done on this. I know that I just listened to an interview with Dom D'Agostino and he was saying that now there's more, because they've done a lot of mice and rat studies, yes, in this area. Many areas. And that's wonderful, but it still doesn't transition over to being okay how's this going to really go in humans?

But now that we've got some of these exogenous ketones on the markets, and we've got pure esters happening, he was sort of proposing that this is a great opportunity where we can actually just study humans at play here, because people are obviously choosing to have these exogenous ketones, they're part of their diet, so ethically, and making sure we get the studies out there, things have just changed so significantly. So I can't wait to see how that all unfolds.

Steph: Yeah, so I agree, and I think to answer your question why, well firstly big pharma. Full stop.

Kirsty: Oh I love it Steph-

Steph: Yeah, where the research is up to, so unfortunately yeah it has been in animal models up until now, and there's some big players like obviously Dom D'Agostino and his whole team, Stephen Kinane in Canada's doing a lot, more specifically around ketones with Alzheimer's disease and I just think we're going to see a lot more funding because once you know that type two is reversible, that Alzheimer's is insulin resistance of the brain, which can definitely be we're not sure prevented, but slowed down, the funding's going to go there, because these are major players in our decreased quality of life and life span in the west, and we're really now able to redirect the funding towards curing them or at least being able to reverse them so that we're not unfortunately dying from the side effects or a really poor quality of life.

Kirsty: And I think we need to call for preventative measures as well. So, just before we jumped on we were talking about babies first food, and so my kids, because I did not know any better, they started on Farex for goodness sakes. How to jack up some insulin in your child. But that's what my mom told me to do, because that's what she was told to do.

Steph: Yeah it's not her fault.

Kirsty: Yeah. And that's fine, but we know so much more, so we need education right from the get go. Preconception, conception. In these beautiful maternity wards, we need information, first foods, this whole understanding so we don't get this from first foods, our body going into this overdrive of this constant spike of blood glucose and this insulin response that then our bodies are set at that point for ten years, twenty years, thirty years, depending on when it's finally recognized and reversed. We need to start redirecting money, even in schools, we really need to start understanding this further.

Steph: I think that's where it's at. I guess where we're lucky with that ketosis conversation is yes it gets confused and demonized by those that don't quite respectfully understand it, but we know that it's really successful in treating childhood epilepsy that doesn't respond to medications, and there's a really clear strong science around its clinical value. And so where that has allowed us to go, is use that research to then continue understanding ketosis and its clinical application. I've got a client who's quite heavily involved in some research around Angelman syndrome which is a genetic condition, and it has a similarity to epilepsy in that there are seizures.

So Dom D'Agostino is involved in this piece as well, they're now looking at yes ketosis, but definitely exogenous ketones, because these are kids who eat a lot of carbohydrates, usually, depending on the environment they're brought up in, but they've got symptoms that are similar to Prada willies, which is that insatiable appetite, very little appetite regulation in the brain, so these children find it really hard to not eat all the time, so getting them into ketosis with diet alone is definitely more challenging, and then of course exogenous ketones can really help there as well.

So there's just so much more awareness that's stemmed from this initial clinical application, and now we're seeing yes Alzheimer's and metabolic cancers, well maybe all cancers but time will tell.

Kirsty: Yeah, yeah. And for me, obviously I'm always interested in the impacts in the autism space and we use exogenous ketones for Noah on a daily basis, and you see their extra energy. You see the brain being able to make sense of the world and to start learning and have all of those neural pathways firing, and it's just been a huge ... here's this word, game changer. But it really has been-

Steph: Don't use that word-

Kirsty: You know Steph I haven't seen it yet, because I'm too scared to. I don't know how I'm going to respond, but everyone's been telling me about it. Your blood's still boiling and you saw it two, three, four weeks ago or something.

Steph: It's because it's in my face everyday at the moment and I've been having some debates on Instagram, and my articles coming out tonight, real time, so it's been very prominent in my world at the moment.

Kirsty: Yeah. Well it would be, it would be. And it's a great opportunity for you to lay down the research.

Steph: Yeah that's fascinating.

Kirsty: It's made such a huge difference, such a huge difference for him. And also, for a child that has had such significant health issues, just little things like being able to keep him in ketosis, but go to a party and have some extra carrots that day, because obviously when you are sticking to a ketogenic diet to utilize those ketones, there is parameters that you need to stay in. And for a child, on a daily basis, every day of your life, that's quite difficult. So to add in some ketones and then support him to make the right choices at the party, of course. It's a really beautiful moment for Noah and for him to be able to be a little bit more part of the scene, as opposed to I eat this ketogenic diet for my brain and for my recovery, but he sometimes can't participate in all the foods that are out there, even when they're beneficial whole foods. So it's made a huge difference, a huge difference.

Steph: I think kids and adults alike, not that I eat refined sugar, but there are some carbohydrates that I really enjoy, and if we can find that sweet spot between, obviously the nutrition being the foundation of the house, and really ensuring quality and that you eat carbohydrates relative to your genetics and goals and exercise intensity, but then of course that you can sort of not live a little, but you know what I'm saying, just I guess, come out of the extremes to a degree and use these supplements that can be really beneficial, I think that why not? Especially when the research is looking so strong.

Kirsty: Yeah, yeah. Absolutely. And I think speaking from my own experience of many sporting injuries and surgeries and having a time where I did eat lots of carbohydrates and that whole carb loading space and all those kinds of things, and then having my autoimmune condition, I function so much better when I'm in ketosis. And so the power and the ... the absolute incredible joy of knowing that I can flick a switch and turn off that inflammation in my body, so I can still continue to enjoy the things that I love to do, is

just so wonderful. So I was saying before, I've just been on this big hike, and if I didn't utilize my own body's ketones, which I make and then exogenous ketones, I wouldn't be able to go on these hikes. My knees would blow up, and I'd just have so much inflammation just from old injuries really.

But it just doesn't happen. I don't have any of those issues. And what a freeing, empowering joy. And I really, I suppose one of the great things about having this discussion is, it's so nice if other people can also experience that too, instead of giving up going oh my knee gets swollen every time I go out, and play sport, or my favorite thing that I love to do, if only people knew, you could ramp up your ketones, drop that inflammation, and still enjoy those things that make you feel alive. I just think we need to let more people understand that.

Steph: Yeah, that's so exciting. Did you want to add anything else in relation to the gut? What else you've done, or even just some more specifics as to what you've been trialing so far?

Kirsty: Yeah. Absolutely. So this year at the ACNAM conference, which is the Australian College of Environmental Medicine, went along and what a wonderful conference that was. Full of incredible doctors and pediatricians and specialists, and it's just such a wonderful space to learn in functional and integrative medicine. And there was a lot of discussion about ketones, so Cliff Harvey was there, and a lot of discussion about understanding what is the appropriate carbohydrate model and all those kinds of things.

And what I found very, very interesting was during the panel time, they obviously had all the speakers up on the panel, and during the panel time, one of the questions was "Well, what is the impact of the ketogenic diet on the gut microbiome?" Because of course, and this is what gets up my goat, is that there's this oh the ketogenic diet will damage your gut microbiome. And you can't have a beautiful diverse gut, if you're on a ketogenic diet. So I have been doing some research with Microba, which we've talked about before, so if anyone wants to learn about that go to episode ... Steph? I can't remember that. We had such a great chat about Microba ... we'll put it in the notes. It was such a great conversation around what Microba does, and they obviously test stool, but it's this meta genomic testing looking at testing, not only what's going on with our different types of gut bacteria, but what are the metabolites they're producing? What are they actually doing in there for us?

So I'm engaged in some research with Microba, and it's funded by DFAT, looking at the Solomon Islands community, and we've done some pre-testing around their gut microbiome, and we've applied the culture wellness cultures, and added it into their diet, and upped their coconut, which increases their ketones, and then we've done a whole heap of post-testing, and we're starting to analyze that data. So Doctor Christabelle Yeoh, who is the president of ACNAM then called me out at that conference said "Oh Kirsty, so what's your opinion on this?" So I was sitting next to Cliff Harvey, don't you want him to answer it?

So it was a bit of a shock for me, but I said look, first and foremost, we need to define what is an appropriate ketogenic diet. And so I think that with this whole conversation

of the ketogenic diet is dangerous for our gut health, we need to take a step back and look at what is an appropriate ketogenic diet, because when we look at that, there is no way that it is damaging, and in fact the metabolites that ketones help us make are actually beneficial for the environment, for our gut microbiome, so this whole conversation needs to be changed. If you're just having a carnivore diet, or just eating cheese and bacon and those sorts of things, yes, the diversity is going to drop-

Steph: Yeah, exactly. Which isn't ketosis, come on.

Kirsty: Yeah, yeah. But if you're utilizing all of the incredible wholefoods that we know that we can eat on a ketogenic diet, and you're using things like intermittent fasting to boost your ketones, or using exogenous ketones, and you're utilizing fermented foods, so you're getting the benefit of the fiber, the nutrients, but not the sugars, then there is no way that your gut microbiome can be altered by the ketogenic diet, in fact in my opinion the diversity grows significantly. And we see that on our program, we have people that have their pretesting, and then they go through beautiful whole foods ketogenic diets, and then we do the post-testing, and the diversity increases significantly.

Steph: Yeah. 100%. Because a lot of the fibrous vegetables are very low in starch so I totally agree with you. It's so old school to think that ketosis is Atkins or just meat and cheese. Why are we so narrow minded? I think that we need to open our mind up to look at the research, or understand exactly what ketosis is, because it's going to look different for everyone, because it's all relative to carbohydrate tolerance or intolerance, right? And so what gets you into ketosis will look different, probably for me at the moment and for Noah again. So we have to keep our perspective. I just think we're so insular when it comes to nutrition, and it really is not. It's the opposite of insular. It needs to be very broad and individual, but not insular in that we're looking at just one food or just one concept alone.

Kirsty: Yeah. And I think a wonderful take home message for this is that our understanding of our bodies is not static, so you're in the most incredible time of your life, when nothing is static for you. Everything's changing. Breastfeeding and pregnancy and all of those kinds of things, and so when I first changed my diet, and sort of started to understand the impact that carbohydrates had on me, a zucchini had too many carbs for me, I was that intolerant to carbohydrates. A zucchini for goodness sakes. Whereas now, that's just not an issue at all. So if I was still static in that understanding of oh I can't eat a zucchini, that would really impact not only my health, my gut microbiome, but my social attendance ... everything-

Steph: That might affect your gut microbiome too-

Kirsty: Totally, totally. Yeah, just my mental state, like I'm not getting anywhere. But as we grow, as we learn, as we spend more time in these beautiful states of healing, we need to also grow with what our body needs and move through that, and obviously that's where getting expert nutrition advice is the bees knees, but I see it too often. I can only eat three foods, and I've only been eating three foods for the last two years, and then have you introduced anything else? How do you know? "No, I'm too scared too".

Steph: I'm sure you understand where they come from, it's tough. But yes.

Kirsty: Yeah. It's really tough. I think it's just moving with the research, moving with your body, moving with how you're healing, and maybe not being frightened off these things and utilizing them. So, if you are a zucchini is too much for me, try some exogenous ketones. How does that support your body to have a few more extra vegetables, it's going to improve your gut microbiome, improve your energy levels, and get you to that next level. So yeah, be curious about what your body needs and don't be shy, with obviously supervision, to really embrace these things and give them a try with joy, because obviously as we know that's such a big part of our bodies healing, is to not be frightened of it.

Steph: Yeah. And the longer I consult, the more I actually spend a lot more time discussing this evolutionary concept, and I'm not talking about looking at the hunters and gatherers. I mean in that what you eat now is going to look really different in the future, because if you've got, like you said, a really dysbiosis which is causing you to react to really simple foods, or if you've got really poor blood sugar control, or if you've got insulin resistance, then your food looks like what it needs to look like initially for that part of the treatment phase, and then as you either a., heal your gut, or b., fix your blood sugar issues, or c., reverse your insulin resistance, your diet looks different again. You can tolerate more foods. Often, slightly more carbohydrates, and so on.

I often think about that in clients who blanket say to me I hate liver, or I hate sliced tomato, or I hate broccoli. Whatever it might be, that's just now, because of the food that you've eaten, the bacteria that dominate your gut, what controls your cravings. Make sure that as your taste buds change, as you heal your gut, as you evolve your taste buds, that you try that food again, because it's going to taste so different in the future, when your taste buds aren't blunted by refined foods and processed sugar.

Kirsty: Yeah. Yeah. And all sorts of different bacteria overgrowth. I just love it so much when we go to events and we have our yogurt there and people taste it and they're like , there's no way I could ever eat this, what even is this stuff? And then I'm like okay so I know that you need that, if you're having that big a response, and I guarantee in six months time you just can't get enough of it. And sure enough, absolutely. Once all those different parts of the body balance out, you just love it. You can't say never, you really can't.

Steph: And I know we've discussed it before, but what about those emails that you get when somebody has had a little bit of cultured wellness, and they blame you for their food poisoning, because they've had essentially quite a big reaction because of the state of their gut in the first place.

Kirsty: Yeah, yeah. I always ... yes, we get them absolutely. And this is a great learning lesson, of what needs to happen from here. Which is a really frustrating response for someone who-

Steph: Just wants to blame-

Kirsty: Just wants to blame. That once again, if we have this curious mindset at all times, then wow, if something that my friend ate had no impact on her and I'm having this extreme response, what's going on in my body, because that shouldn't be the case, to have such a big response to beautiful nourishing healing foods?

Steph: Yeah for sure.

Kirsty: So Steph I have a question for you-

Steph: Okay, on the spot, go-

Kirsty: Yeah, I know you love that. So sorry! Okay, so if we've got this fourth macro nutrient, and you may not be able to answer this, I don't actually know. But so when we look at this, obviously situation changes, like for me when I was doing the half marathon, carbs and proteins and fats were different compared to when I've got a full week of sitting down writing a book or something, so obviously it changes depending on what you're doing and your output. If we've got this fourth macronutrient, how do you add that in when we look at percentages, and when we look at the fuel for the body. Have you ever written in for someone using that extra macro nutrient? How are you doing it at the moment, and do you see there being changes in how plans are written to incorporate that?

Steph: Yeah, good question. To date, I haven't changed someone's 100% split. So I haven't said to them, okay X percentage from carbs, X from protein, X from fat, and X from ketones. I haven't done it to that level, to answer the first part of the question. So I'm still looking at the three way split between carbs, protein and fats. But one, if you're taking exogenous ketones, you still want to make sure that you're factoring in the calories, not that we calorie count, but we still need to keep that in mind depending on what you're using and whether it's pure coconut oil or whether it's, I love the Melrose Health MCT powders that have just been released that can be really great between meals. So just looking at calories per se, and then it's going to be really individual. I always say that your first barometer is blood sugar control, so you'll know how many ketones or how much you'll need to add into that fourth macro nutrient based on blood sugar control, how long your meal to meal window is, and then your overnight fast, how well you can do that, and then step into more responsive intermittent fasts, and the evolution of that over time.

And then some people like to test, so I have a lot of usually male athletes that are quite data driven, and they like to take X, like an exogenous ketone, and then measure their blood ketones and see where they sit in comparison to a quote unquote normal day where they weren't supplementing, or a higher carbohydrate day, or a training day. So I guess at this stage where we're looking is there are so many variables, and it's going to depend on the day but also the individual. Does that kind of answer your question?

Kirsty: Yeah, absolutely. Do you see a future that it may be included as, and I suppose it would start with either elite athletes, endurance athletes, starting at that level, where we might get enough data to say okay on this kind of training on this kind of day, this is the

kind of exogenous ketones you need to add in, and doing the split four ways instead of three. Do you see that as the future or do you think it will be just popped into that fat component?

Steph: Yeah I don't know actually. I haven't given it enough thought. I'm definitely willing to play around with this though, because obviously the fat calories can easily be worked out as a percentage, just to keep it really top level. If it's someone having 200 calories from exogenous ketones, on a 2000 calorie day, we can easily work out that might be 10% right? And then we would look at of the remaining 90%, what needs to split between carbs, proteins and fats. I'm open to that. I'm going to have a little bit more of a think around whether that would work, but then I guess each day would have to be different, if you weren't taking exogenous ketones everyday, whereas my macro nutrient split is more fixed, and then training will be added on top of that to change the number of grams per day, rather than the percentage.

So if we just broke this down for a second, say my male athlete is pretty much always on 15% carb, 20% protein and 65% fat, on a rest day that might be 75 grams of carbs, but when he adds training, that might be 95 grams of carbs. It's still 15% of his daily intake, but it's slightly more carbohydrate in food. So if you were adding in exogenous ketones everyday, that would be okay, but if you weren't, your macro split would obviously then change daily.

Kirsty: Yeah, yeah. Fascinating.

Steph: Food for thought, but yeah, you got me thinking. I can definitely look at that.

Kirsty: I can be your test bunny. as always.

I love it. I have to sign up for another endurance race.

Steph. I'm sure you will. Totally. Are you in a position to talk brands at all, or is that for another conversation do you think?

Kirsty: No, I can talk about what I've tried, I don't have any alliances with any brands.

Steph: No, no, that's cool. Because I just wanted to add, for those that haven't seen the Melrose Health MCT powders, we've obviously been using their MCT oil for decades, but a lot of people find that either too harsh on their gut or impractical for travel or a little bit less user friendly, whereas the MCT powders are much better on the digestive system, so full serves or more can be consumed, they're great for travel and you can also have them in between meals without having to make up your MCT coffee or your bulletproof, so I'm loving those at the moment.

Kirsty: Interesting that you say that because I just tried it on this hike-

Steph: Oh did you?

Kirsty: Yeah, because obviously they're ... I've always used more MCT oils, so same thing, we sell the Melrose, so I play around. I use mainly the C8 one, it's the blue bottle, gosh, that's go faster, is it?

Steph: No I think you use go for longer don't you?

Kirsty: Go for longer. The blue. Now that's something you see, my brain needs significant amount of help, but I've used all of them and just love them, but when you're carrying six days' worth of food on your back and I use probably 30 mils a day of the MCT oil, that's actually quite heavy in your pack-

Steph: Right, yeah, good point, practically-

Kirsty: Yeah. I use these little ... now everyone likes to know, I use Now Gene bottles, because they're completely leak proof, and they're awesome for transporting it, but yeah I was like okay what's going on with these powders? Are they lighter, are they easier for me to use when I'm hiking or I'm camping or I'm traveling or all those sorts of things, so this time, I came up with this ingenious plan. I made myself basically a bliss ball but all I needed to do was add water when I was out there-

Steph: Get out-

Kirsty: Yeah, so I put the scooped MCT powder, linseed, psyllium, some cacao, I put a little bit of stevia in there, I put some ginger for my circulation, some lions mane, some wishy woo. I just put collagen of course, and put them in these little bags and then for each day, because obviously you've got to plan all these things out, and then all I needed to do was add the appropriate amount of water and it rolled up into this awesome little-

Steph: You're a genius. That's so cool.

Kirsty: It's like perfect, because there's your fiber, done and dusted for the day, and getting that extra nutrition in, and I really loved the benefits of cacao, so yeah those powders. That was the first time I've used them so I'm about to go on a climbing trip this weekend so I'll do it again, I will absolutely use them. They're very easy to use.

Steph: And can I just put on thing, I'm jumping in, but just to also add, I was just thinking that when I was really quite ... when I was using more of the MCT coffees, my meal frequency was down, so calorie wise it would work for me to have say a second one to extend a mini fast in the afternoon, but if you're adding in MCT coffees on top of meals, like I'm eating now nursing, it's too many calories. An MCT coffee would have 200 to 300 calories depending on how you make it, whereas one serve, so a 10 gram scoop of the Melrose powder is something like 70 calories, so practically wise, it obviously looks really different, but you might be able to find there's less of a limitation in how it's used, just mixed up on its own, versus MCT coffee.

Kirsty: Yeah. I've also played around with it to add it into baking and biscuits-

Steph: Yes, we've made cookies too.

Kirsty: They're awesome. So I made the kids some beautiful biscuits the other day, and Noah mainly gets his ketones in via, we call it his hotty, which is basically kind of like a bulletproof coffee, but obviously he doesn't have the coffee, it's just water-

Steph: Hotty? Oh that's so cute. It's like, we call it a bulletproof cacao. It's like a healthy hot chocolate-

Kirsty: Yeah! So Noah has his hotty, and that's how he gets it in, but today it's 80% humidity and 30 something degrees, and no child wants to have a hotty when it's-

Steph: Very true-

Kirsty: So I'm playing around with these powders for breakfast and school snacks, so I made him that fiber bliss ball and adding that in, so it helps him through the day, and helps manage making sure he's satiated and his brain has got that constant level of energy. So yeah, funny you should say that because I have been playing around with it, of just other ways that I know that I can get those beautiful ketones into the kids.

Steph: Yes, absolutely, but just to clarify which right now we're talking about an MCT powder which is like a keto supplement, but different to the exogenous ketones. It's still going to promote ketosis, but different again to a ketone ester or a ketone salt of course.

Kirsty: Yeah, absolutely. And those exogenous ketones, they will spike, as in they will push your milli mol level of ketones quite high quite quickly, whereas the powders, it's a nice gentle increase-

Steph: That's very true.

Kirsty: Very, very different. probably the last thing to say is yes, be curious, absolutely. Try all the things, and obviously under supervision, but the most important thing to understand is that when you're using these substances, if you do have ... if there's a lot of toxicity in your body, if you've got heavy metals in your body, if you're dealing with toxicity, the aim of being in this beautiful state of ketosis is that it will help you to reduce inflammation and get rid of or to help your body process those things.

So you can not feel great, and this is sort of the keto flu but not really, you've got to assist your body that when it's actually working at that beautiful metabolic state, and it's really doing its job because it's finally got the resources that it needs, make sure that you give it that love and support of mopping up those toxins and enabling your body to have the resources, whether it be chlorella or charcoal or some bentonite clay, obviously just having a nice Epsom salts bath, jumping on a rebounder, going out for a swim in the ocean. All those sorts of things that will help mop up that toxicity because I see it time and time again, "Oh I tried ketosis, it made me really sick and I put on heaps of weight", or it screwed up my hormones or this or that or this or that.

And really what was happening is your body finally had the resources it needed to start the cleanup, and do that big spring clean, but unless you've got the big garbage bags and the mini skip and the right cleaning tools to do that big spring clean, you'll just be covered in all the dust and all of the crap from the clean if you know what I'm saying so-

Steph: So true-

Kirsty: Yeah. Help your body. Support it, because it makes me upset when "Oh I tried that, didn't work, felt terrible"-

Steph: But also just eating meat and cheese. Yeah exactly, it has to be well prescribed. so like you said, having some support could make all the difference. Hey before I forget, it was RFR248 where I interviewed Doctor Prebble from Microba and then you and I spoke earlier than that, which was RFR237, Mapping your Gut Microbiome, rather.

Kirsty: Beautiful.

Steph: So I'll pop those episodes in the show notes for those that want to check them out. Yeah.

Kirsty: Awesome.

Steph: I've loved this conversation. Thank you so much. Hopefully we'll get a whole series of questions so we can do a Q & A and I get to explore it again with you selfishly.

Kirsty: Thanks Steph, it's been so lovely. I love unpacking all this stuff, so thanks for having me.

Steph: You're very welcome.