
Steph: Hi Katee, and welcome back to the show.

Katee: Hi Steph. Excited to be here.

Steph: Very good. It's one of our favorite topics today talking about all things fuelling and of course race day planning. So, I'd love to get your perspective as coach as to when you start to talk to your athletes about race day fuelling and when we start the process of practicing that in training.

Katee: Yeah, I think it's funny. I actually first commented about how we're excited by it. Maybe athletes not so much.

Steph: Yeah.

Katee: Some athletes come ready prepared and ask the questions early on. But I would say vast majority do leave it to the last minute. And that's probably the first thing we need to avoid to avoid pitfalls. There's absolutely no point training and nailing everything from performance point of view if you don't pay respect to a nutrition plan which will absolutely undo all that great training if you don't get it right.

I think sometimes there's a little bit of a delay in initiating a nutrition plan for a race, sometimes through overwhelm, not knowing where to start, not knowing who to see or who to talk to. Which is what this podcast is about. Which will be perfect. And there are ideal situations and it will be different for different distances of event. If we talk about the long distance big events, multi-day or Ironman, I'd be wanting to have a race nutrition plan looked at and considered 15 weeks out. For a couple of reasons. It gives plenty of time to tweak, plenty of time to practice in training. Especially if it's someone's first time doing one of those events, and they don't have a previous plan to work off and they don't know what works for them.

It means that we can if necessary, do further data collection for really specific personalized results, when we have time for those results to that testing to happen, get the results back, and then implement the plan. So, that's my rule of thumb for long course and then revisit that every four to six weeks based on how training's going. Then

put the final plan in place just before those peak weeks of training, so that the final plan is rehearsed in training in the final two peak weeks.

Steph: Yeah, I think you make some good points there because obviously 15 weeks out you're not necessarily doing the volume or intensity that looks like race day. But the opposite is then if you wait until those peak weeks, what if shit goes wrong? Like you haven't got time to readjust, and it's this huge stressor. This extra kind of job that you've got on your plate so close to race day when your priorities should be really elsewhere by that point in time.

Katee: Absolutely. You just need to say to yourself that additional stress because there's plenty of come up and that you need to put your focus and attention to. And you want to know that you've got it hands down. And in long course events, it's particularly easy to forget the plan, get distracted, have a brain fog and go, “Did I fuel 40 minutes ago”? I don't remember. So, if you're really in a routine, a familiar with what you need to do, you're less likely to get flustered, which is a great thing to avoid. And then for a say half Ironman, an Olympic, you can probably look at it at 10 to 12 weeks and sprint. Not many people would need to fuel during a sprint and that's quite an easy thing to manage obviously probably just a couple of weeks out.

Steph: Yeah. Yeah, awesome. I love that. And I think, you know, just thinking about a few things that you said there around remembering the fuelling plan. I don't think that someone that's new to this kind of space, especially when it's like natural fuelling and being fat adapted rather than trying to cram in 300 calories an hour. It's not their natural or their default. It's not something that they've as you said had time to practice before a lot of experiencing. So you've only done it a couple of times there's so much room for like accidental error. Whereas if it's your new norm you spent a good couple of months, learning about becoming fat adapted, why you're fuelling plan is probably a quarter of what you've been told, or tried in the past. Then understanding all the practical considerations that we're going to share today. I think, you race to race. You don't race to plan on when you're eating and drinking. It's not about the fuelling although it is a significant part. So you want to better enjoy the experience not have texted down your arm of what you're doing every 45 minutes because you can't remember and it's so foreign to you.

Katee: Yes. And I think that's one of the reasons a lot of people that aren’t across say nutrition planning or don't see the importance, the the common feedback I get is but I'm not Elite, I'm not trying to podium, or I'm not going to come first. I'm just doing it for fun. If you want to have fun you gonna want to get your nutrition right because it’s not going to be fun.

Steph: It's going to be horrific.

Katee: The same goes for, I know I mentioned triathlon events, same for running events. A marathon, we look for ultra, we look at starting planning 15 weeks and a half marathon around 10 to 12.

Steph: Yeah, yeah. Duration specific or distance specific. What would you normally, like how would you start that conversation with someone that's either a complete beginner or new to our world of being fat adapted and fuelling?

Katee: Our systems and processes girl, I find what really works that, I get athletes to work through. That starts with just documenting what they have done in the past. Learning what worked and what didn't work if they've got that experience. If they don't have that experience, then we go what done recently in training. If they don't have that, then we formulate a plan for training to practice. So they're the three places to start from.

Steph: Yeah. And I guess you see all three as do I. I think at the moment my more common client is definitely someone who's tried the 300 calories an hour. Or the take as much as you can tolerate, until you can't anymore kind of model. They don't need a degree in nutrition to understand this is not making sense. There has to be another way. To then obviously start to understand that adaptation and metabolic efficiency and utilizing your body's metabolism and those processes that can help you on race day. Then you're complimenting the exogenous carbohydrate. For them that's really a new language. It's night and day. When there is a big race on the cards it's important to be able to have that conversation. What hasn't worked and let's talk about what are some of the signs this athlete might have experienced if their current or previous fuelling plan wasn't working for them.

Katee: Yeah, you bring up a good point. Sometimes I find that athletes aren't necessarily pinpointing their nutrition or hydration plan as the problem. They might have had a poor results. But put it down to the conditions, oh it was just really hot or I pushed too hard on the bike. That might be true too. But there's probably other elements at play as well. And so I think it's important for everyone to recognize and be curious about what really did play into that result.

Same goes for a successful results. Let's say you nail it and you do really well. I think it's important to give credit to what you did with hydration, nutrition, as well as your pacing and probably consistent training in the lead up. Your success is multifaceted We need to look at all those elements that bring that together.

Steph: Yeah, absolutely. I see that all the time. Like someone's race report totally ignoring, pardon the French, they've fucked up their fuelling. Like over, and over, and over again, it's like when will the penny drop?

Hey, it's my show.

Katee: So talking about things to notice and identify with. For example, gas, bloating, diarrhea, or general gastrointestinal upset is not something that's considered quote unquote normal that I feel athletes should have to put up with. That's a sign that your nutrition needs to change. Nausea is not a good one, cramping to pay attention to. General fatigue, hitting a wall and not holding paces that you normally would, in training you don't quite understand why you weren't able to execute them.

That's in a race scenario and then in training, there are a bunch of things to pay attention to, to know whether a fuelling plan is working or not working for you. But to know that you've got to keep good records, that this is the little caveat. There's got to be a food diary of some kind or training notes of some kind.

To really look at okay well how did you execute a session, what fuel did you have, and how does that compare to the week before? In terms of like, let's say you had had an additional five grams of carbohydrates per hour. How did that impact your recovery, your soreness, your fatigue that day, and then you general output on the training day.

Usually if it's a brick that we're talking about with triathletes, you'll know if your nutrition plan has worked well in training, depending on how you feel from your runn off the bike.

Steph: Not to be brushed over because people are so disconnected. I get it in clinic when I'll ask someone how they feel after a certain food. They look at you like you've got two heads. They've never, ever in their life thought about, Oh, when eat eggs, I need to go to sleep, or I run to the bathroom.

The same thing applies in training. How do you know what works if you're disconnected or you don't take notes that acknowledge, when I did X this happened, or I felt my best when I did Y. It doesn't need to be a huge investment of time. Which I think is one of the kind of stories that people tell themselves that prevent them from making those notes and popping it in training peaks or strava or in their mobile phone, or on a piece of paper.

I think it's such a simple thing to do is from early on. Both in day to day, like what you're putting on your plate, but definitely when you're in this race day fuelling conversation. Because how do you know what's working. Then on the flip side, when something does work, write that shit down. You want to be able to replicate that.

Katee: Yeah, yes, you want to replicate that stuff. Sure.

Steph: I find it really fascinating, like obviously, I've been in this space for quite a while. The whole 270 or 300 calories an hour always comes up. It's that top end where people are like okay if I want to go faster, I need more carbs. I'm gonna make it happen. I'm going to physically force myself to consume 270 calories every hour.

I literally speak to people. I meet people that have that in their plan who do that and continue to vomit as they run along and continue to put that volume of fuel in their system. For me me it's mind blowing. But it's interesting when you talk to someone about digestion. It's quite simple. when you look the digestive cost of consuming carbohydrates, food, calories. And when there's the added variable of intensity.

So this intensity, your blood flow is going out from the gut to the heart, legs, and lungs. Not into the gut to digest. So why would we try and put all this digestive stress in an

equation when already intensity and outputs. It just doesn't make sense. But of course, there's a lot of unlearning for many people to do.

Katee: Yeah absolutely agree. And if you look at it from the flip side, why do we want to be constantly putting fuel in which takes away that blood from the muscles? Every time to have a gel, thinking of it as oh I'm fuelling myself, but at the same time you are taking away capacity from hearts, lungs, muscles.

Timing is crucial as part of any a nutrition plan. That's probably something until people get guidance that people are unaware of. They say I have this many gels or bars in a race. Okay, what timing tools and at what point.

Steph: How much...

Katee: Yeah, at what point of the course is another thing to consider. So with that heart rate conversation, if you know they're significant climbs in your race, then you want to time your fuelling around that. When you know your heart rate is going to be, take the opportunity when it's a bit lower for that digestion.

Steph: Yes. Let's talk more about that because I think that's a really common mistake. If we look at, I think, when you read online 90 grams of carbs an hour or 60 grams of carbs an hour or 270 calories an hour. People assume that literally in one minute. Let me inhale all this right now and that's going to account for the hour ahead. Talk to us about why that's mistake and what might happen when the terrain and heart rate are factored in.

Katee: Yeah so with that intensity, the absorption is diminished or makes it much harder and with so much stress to pump blood everywhere we're likely to get gastrointestinal symptoms. Whether that's diarrhea, or gas, or feeling faint. Getting that distended belly as well. And...lost my train of thought.

So with a plan, you drip feed for a more measured blood sugar management control, as well as helping your gastrointestinal system. That drip feed can occur if you're working with a course that's quite a hilly and undulating. I would plan a race nutrition around the course, not duration.

Steph: I totally agree. I think drip feeding or drip fuelling is a really important takeaway. If you've been given x grams or x calories, my advice is not to try and have that in one hit. That's too much about digestive costs and stress and that whole tug of war concept that we've been talking to you about. Don't take it at the bottom of the hill, it's going to be pear shaped. So you need to be able to understand the course that you're running or racing or cycling or performing on.

Steph: And of course, things might change on race day. That's why you also need an adaptable plan. Which we'll go back to.

Katee: This is the thing. There are so many elements that aren't thought of. And I think it's much better to go in over prepared and have those plan Bs up your sleeve.

Steph: Yeah. So I think amount of fuel is a big one. Definitely factoring in the terrain and the heart rate and being a little bit strategic with that. In the same vein amount of fuel is yes, staying the time, teaching your body to use or need as little as possible. Not the old conventional wisdom of more is more.

Katee: Yes. And this is where the conversation gets to “it depends”. Because if an athlete hasn't become fat adapted or they’re just at the start of the journey and they've got a key event in 10 weeks. There's going to be this conversation around cost benefit. How do we push fat adaptation to remove a little bit of the intensity from the program to allow that to happen.

Or do we allow and embrace the fact that that athlete is just not wired to burn fat for fuel as predominant fuel source at race pace. And plan for that particular race to be of high carbohydrate, less than what they would different a conventional point of view but not what a fat adapted athlete might do. And find that grey area for that athlete. Whereas if we're talking about an athlete that has done the work to become fat adapted, more able to fuel off minimal carbohydrates per hour and still feel good. Then we're going to have a very different conversation.

Steph: Really important point. All depends on how much time you've got and what your metabolism looks like. So, it's okay for this to be a new approach for you on race day. But it still might be higher than what your end plan looks like in another 12 weeks or in your next race. So yeah, definitely keep that in mind that it's not about rushing it. Because if you're not fat adapted and you're trying to fuel off too little. That will also end up as unpleasant experience that would have been avoided if you were just realistic about where your metabolism is at by the time you get the race day.

Katee: Yeah, I remember having to give myself that reality check after being out of the race scene for a little bit, and getting back into it. I had to do a race plan was about 20 grams per hour of carbohydrates higher than what I would have done in the past. That was pretty hard to wrap my head around. Because I was so good at racing on lower carbohydrates. And very well fat adapted, but that changed.

I didn't enjoy that because I knew that it was going to be towing the line for what I could handle. Luckily, not luckily, I did the work. I didn't have gastrointestinal issues because it wasn't conventional numbers, high. Just higher than what I would have done in the past. And so, coming from the flip side, knowing that I've had a highly stressful period, slightly untrained and just knew I had to respect that I needed more. Otherwise it would have got pretty ugly.

Steph: Yeah. Again, an important lesson because fuelling plans aren't static. They can go both ways. So ideally if you're in this sport and your injury free and you’re continuing to train after a period of recovery, you should be able to get to the point where you need less. But obviously if you've had time off. If you've been smashing the carbs, if you've had injuries, illnesses, metabolic conditions. Then yeah, you might have to look down the barrel of a very different scenario in the short term. Until you rebuild and that's a really important honest conversation to have about where you're at, at that point in time.

Katee: Yeah, absolutely.

Steph: So what about types of fuel. Yeah.

Katee: I was just saying nitty gritty of amounts per hour. Work around it. So you mentioned conventional ranges recommend 90 grams an hour. For those unfamiliar with what that looks, like a standard gel is going to have between 20-23 grams of carbohydrates per portion. So imagine trying to get three gels in per hour or more. That's pretty epic. Along with whatever other food you want to do and you that's all you're going to be doing in that hour I find it unfathomable how that's even possible.

What we're talking about with well fat adapted athletes, who have their metabolism to utilize fat as a preferential fuel even at race intensity. We're talking about closer to 20 to 30 grams of carbohydrates per hour which from a logistical point of view and the pressure on the digestive system is much more favourable.

Steph: Absolutely.

Katee: You've done athletes on even lower than that, haven't you?

Steph: No no no I mean, that's only ever going to come from metabolic testing. So I think that's where like, you know, obviously, we can test a lot in training. Some people find they need very little. But obviously, then we're looking at the training sessions that replicate race day intensity. Because we know our carbohydrate requirements are always relative to intensity. Then there are usually other variables on race day which was spoken about as well.

So there's the rare example of people who you know do some metabolic testing and really don't burn through much carbohydrate at high intensity. I would still be looking at the fact that it's never are we burning zero percent carbohydrate and 100% fat. It's always like a seesaw kind of arrangement. It can be beneficial still have a really small amount of exogenous carbohydrate drip fed in. That also helps us burn fat. It stokes the fire that is the fat burning element.

So I think that a few years ago, when becoming fat adapted was vogue, there were blogs and social media posts and lots of ego statements around people doing four hours or whatever distance on nothing. And I just think that looks really unintelligent and it doesn't actually factor in the physiology of fat burning. Not to mention the flow and effect of being that depleted. Like it's not about no fuel. I think we've got to keep our smarts about us and look at yeah, let me figure out how little I need, not how much. And of course experiment with that and get that delicate balance right.

Katee: Yeah, it's a huge oxidative stress demand and that's why we see so many burnt out athletes, unfortunately.

Steph: In the extremes. They're always in the extremes. Cool.

Katee: Are you going to ask me about types of fuel?

Steph: Yeah on the topic common mistake. I wanted to get your thoughts on what else you see in types of fuels, whether it's different sugars or happy to brand slam here. Only if you're comfortable.

Katee: For the context of the listeners this is something that I've played around, and done so with you now for 10 years. Coming from previously doing triathlon and endurance for five years before that in a conventional way. Really forced to look at a different approach because it wasn't working for me. I wasn't working for many people around me. At the time there really weren't products available that didn't have have a high level of fructose which is usually the inflammatory factor that leads to gastrointestinal distress. So the gels would be higher fructose than there would be glucose. And so there weren't many options back in the day. There was this great brand Vega. That was our number one option. It was pretty good. But it wasn't great.

And that's where Steph's recipe for Freedom Fuel came about. If you're not aware of that, Google it. So you can make your own homemade gels to minimize the fructose. That was and has been a game changer for my clients, your clients, and for you and I. Just brilliant. Knowing that you can make a homemade gel and it has the same constitution of carbohydrates and in this case some fats from MCT and electrolyte profile, as a standard gel off the shelf. So you're also saving money which is brilliant.

So yeah, in addition to utilizing like a homemade gel then I've seen a lot of success with homemade bars from your recipes. Then for those that want to utilize a bars that are off the shelf and packaged food, I do like the hammer bars. So they're more of a raw food bar. Again low in fructose, they do have some fats in there to stabilize blood sugar, they're soft and easy to digest.

They're usually my key go to's. And then those who don't want to do homemade gels, my number one recommendation is V fuel and that is also a no fructose gels and has MCT in it for blood sugar control and adding those those fats. There is a secret ingredient recipe in V fuel obviously I don't know what it is. It's the only gel that's ever given me energy and not made me feel flat.

Steph: Yeah.

Katee: Like I just burned all my matches from having a gel.

Steph: It has some beautiful recovering nutrients in there as well. I think are actually anti inflammatory. So that is an extra benefit, of course. The conversation around fructose is really fascinating for me. As you mentioned, it's highly inflammatory. So in the space where we're talking about quitting sugar we're actually really actually specifically talking about quitting fructose, number one.

It also causes a lot of water be to be drawn into the gut, which is why it's associated with gastrointestinal issues that are far too common but very avoidable when it comes

to endurance sports. What I find the most fascinating is the only reason why fructose was ever brought into the equation, is because you cannot transport 90 grams of glucose in your body.

You need to have this two to one ratio. So it's two molecules of glucose, one molecule of fructose to get you up those really high volumes. Long story short, they're transported around the body by different glucose transporters, so glut 4 and glut 3, I think I'm going back to my exercise physiology from the head to go, so I might not be remembering everything accurately.

But the point of my story is the reason why we saw the significance of fructose is because we're having these conversations around more, take more. So we can't take more glucose, but we can take this combination of sugars to get us these really high numbers. Then magically Gatorade two to one glucose to fructose, Endura is two to one glucose to fructose, and nearly every single sport nutrition product that was around back then, I'm talking early 2000s or before, was two to one. That's because we're still in that conversation of take more, figure out how to consume more which is the undoing so most people.

So, the opposite is true. Yeah. When you're fat adapted and you're only needing small amounts. You can do that with glucose alone because you're well under your capacity of transporting the glucose around the body. So fructose is irrelevant and there's most of your problem solved. So it's great news.

Katee: Yeah, huge game changer for me and many others. So the other option for people is liquid fuel, so mixing a powder with water. V fuel have a great one. And then there's U can, would be my top two recommendations. If I'm putting some brands out there. Again, you have to trial this for yourself and see what works for you.

There's been plenty of episodes on this show about the gut microbiome and from that I'm sure listeners can appreciate how individual this process is. We all have different levels of bacteria and we're going to respond differently to different levels of sugars and combinations of fats and protein.

Steph: Always multifactorial, for sure.

Katee: Yes try those out and then yes, electrolytes is different conversation.

Steph: Yeah, well just before go there. I was just thinking what would be really important to discuss is how to make a decision between liquids and solids. You mentioned some great options both homemade and store bought, which I think are important to have both up our sleeve. But what about if we go back to that intensity conversation. And then we look at our capacity to digest solids vs liquids under intensity. But also Ironman, you're going to need food right. So we often see a combination of liquids and solids, but I'll let you expand on that.

Katee: Yes. So for example, if we're talking about a sprint race, I would go for a liquid carb or drink or gel a bar. Much higher intensity harder to chew and swallow at that high level of respiratory and heart rate. Just not a smart idea in my eyes.

Steph: You'll be choking.

Katee: Ironman intensity you want, you can handle eating solid foods. We recommend it from a hunger point of view as well and flavor fatigue, you get from gels and that sweetness for 8 to 17 hours. The mix of fuel I like doing for a number of reasons, psychological being one of them, different stimulation, and different tastes. And so you don't get that flavor fatigue or the nausea from having so much sweetness. Because with making your own bars, buying bars, or making even muffins, you can make them more on the savory side to balance out all sweetness when you're doing really long events.

When you get into the whole trail or trail running community, I find they're much much more creative with their fuel, so beef jerky or liver pate or prosciutto. The options are endless really. You find what works for you. And when you're doing long events like that that mental stimulation of knowing you've got a food that you look forward to, rather than avoiding fuel because you don't feel like it can make a really big difference.

I like to, in a long-distance event, I like athletes to have a liquid carb from a drink, a bar, and a gel. So they're rotating the three of them. And in that liquid carb would also be electrolytes, or they might have it separately.

That way with a mixed terrain race, you can use your liquid carbohydrates at higher intensity or climbing intervals. Then your solids on flats or descents when you've got the skills. So that's my reason for mixing it up but it's so individual.

Then you've got the conversation of how do I carry it all. And that's important to factor in from a logistics point of view. It's all well and good to come up with nutrition plan, practicing and training, and go yeah that works really well and I have good energy and pulling out from training well, not too sore. Then you get to race day, and how am "how am I gonna fit all this on my bike. How am I going to carry it".

So that's another major benefit to becoming fat adapted. You don't have those issues. You're carrying much less fuel.

Steph: Totally. I laugh because I still always get sent pictures of a bike with like 25 gels taped to the top tube. I never get sick of that hilarious conversation. That's right. There are people that are still doing this, like, I can't wait to see the light, so to speak.

Katee: I saw a banana strapped with electrical tape to the top tube.

Steph: I remember once when I was spectating one of your races. I'll never forget the guy that pulled into transition and got a cold sausage roll out of his transition bag. What the hell? It's pastry in the back of your throat. You must be choking. At least he'd stopped. But

what an interesting choice for race day. Mind blowing. I must admit though...] I wasn't close enough but I had a bloody good chuckle.

Back to your comment about ultras, I'm a massive potato chip girl. That's my one weakness. My clients love hearing they can get those beautiful coconut oil potato chips and integrate it into their plan. Yeah we want savory, like you say. Ultra's are full days or more for a lot of people. You can't look down the barrel of just sweet food. It's going to be messy. The way we think about where a solid would be integrated, is would you be eating a meal if you weren't racing.

For a lot of us that are fat adapted we don't eat for 5 or so hours. So if it's a race under five, you know, liquids as a general rule, could definitely work. Of course, once you've tested that. But as we go beyond five, in the real world, you'd be eating. So that's where we think solids are going to beneficial. And then the longer we go, the more we need to get creative as you say, and look at combinations. So that we don't get the point where we're like oh my god I cannot take anymore on board. And things unravel as a result.

Katee: Yeah. The potato chip one is a great recommendation because it's lightweight as well. That's an excellent suggestion. I just thought of something we should probably touch on around the intensity picture. To give people a concept of what we mean by at intensity and needing perhaps more carbohydrates than you would at low intensity. You might have heard the term on the show crossover point. COP. So crossover point is where you're burning more carbohydrates than you are fat for fuel and it should preferential source. So we want to find out what that heart rate is and above that point is where you're going to that's what we call the higher intensity. You're going to need higher volumes of carbohydrate and/or calories.

If you're doing an event and you can stay below that cross over point your needs are going to be much less as well. So that's irrespective of the benefit of being fat adapted is you can push that cross over point to a higher heart rate. That's next level fat adaptation which is really beneficial.

Steph: Yes, for sure. That some good information that you can get via metabolic testing, which you do with your exercise physiologist or your coach might have some may work with. But you'd also be able to use your MAF heart rate, if didn't have that in the meantime.

Katee: Yeah, aerobic threshold or MAF will also be a great measure of whether you should up your carbohydrates and be fluid with the plan. So this is actually a good point.

Anything can happen on race day. The winds might blow, the heat might be 10 degrees hotter than you realize. You might have a slow leaking flat that you can't fix on the bike. And all those things might compound to higher heart than you'd planned for your track. And that's where you're going to need to be adaptable. If you notice that your average heart is sitting higher then you're also going to need some additional fuel to counterbalance that.

Steph: Yes thank you for reminding me. So that's the plan B conversation that we touched on before. I see too many people go in with a plan and all that carry what they're taking. Either their heart rates higher, they drop a bottle or they're out there for longer because of technical issues. That's when things can really sadly unravel because you could have actually had a plan B. Firstly carry extra. All my athletes know they carry more than what they aiming to consume. But also being adaptable. So not being so fixed on your plan that you're that person vomiting down the side of the run course. Or unprepared for the variables that unknown that appear. And the longer you race, the more it will all happen to you at some point in time.

Katee: For the Aussie listeners, even international that have come to Australia race in the last one to two years, you'll know that a triathlon won't always be a triathlon. And that year in Bustleton where we were swimming with sharks for the start. We swam for a bit and then they kept us on the beach for about an hour before we started the bike. Then the following year was another incident and it was delayed or they didn't even swim at all.

And that's a really great example where I was talking to athletes afterwards, I hear I stuck my plan. I don't know what went wrong. Well everything started an hour later. Even though you were quote unquote rest on the beach, you're probably a little bit anxious and burning through a little bit of fuel from that anxiety. And yet you don't plan for that. That's not in a race plan. “oh there could be a shark therefor the swims going to get delayed”.

Steph: There has to be a new battle plan from now on.

Katee: Yes, trying to be flexible for any situation that comes about.

Steph: Yeah. Love it, love it. One other practical consideration I was thinking of was the heat. So how does that change requirements, but also our choices.

Katee: In an ideal world, you've trained in the heat or the climate that you are going to be racing in. If not simulated at home at least. So that you've got an idea of how your heart rate or your power output changes with those conditions. We all have a different tolerance to heat and how much it will impact us or slow down or raise our heart rate.

It's been a heatwave recently and it's been really interesting with athletes commenting training. Because it was x degrees higher and hotter and humid, I couldn't stick to my MAF. MAF was just impossible. I would have been walking.

That's the point. Your body's telling you it's under additional stress and you need to pull back. And so in a race situation, again respecting that knowing that in the heat, if your a responder to heat, that you're going to need to play at that top end of your fuel plan for additional calories and carbohydrates. But also have a spectrum scale for your electrolyte and fluid plan. And be adaptable with that.

Steph: Yeah, for sure. And of course, our favorite freedom fuel with berries doesn't love the heat. So you've got to factor that in depending on where you're racing. I've had plenty

of clients made it without berries. I've tried it. It's too sweet for me because the berries are obviously really quite tart and they offset the sweetness. But you can you can definitely experiment with that. But please don't get to the point where you've got fermented fuel on the bike. Because you've forgotten that berries ferment in the heat in the in the sun. So, that's why V fuel is always a good plan B to have practiced because if you're going into a climate. You need something that's preserved, that isn't going to change in that molecular structure like freedom fuel will in the heat. Especially long course, it's sitting out there for a good part of the day by the time we get to the run.

Katee: Yeah, my strategy for that has been, they utilize freedom to on the bike. They freeze it beforehand. Then use V fuel on the run.

Steph: Which is good for avoiding flavour fatigue and the practicalities especially for a 42, V fuels much easier to carry. Which a lot of people just like to give themselves that that leeway and take the pressure off having to have, you know, race belts, which isn't always a preference. Usually the best way to carry freedom fuel for a marathon and beyond.

Yeah. Awesome. So cool. Anything else you wanted to add or anything else pops up. There's so much information there. And definitely some big takeaways especially, practice, practice, practice.

Katee: Yeah, I guess, to give listeners a bit of a buy in perhaps who haven't been down this road yet. And they're curious about possibilities of what might happen if they do adjust things. I've had plenty of athletes who were quite nervous or resistant to making these changes because for five, two years, whatever it may be, they've known a certain way. It's time to do it differently. I understand that can be confronting.

So the best way to have confidence in this new way of doing things is to gather that data. So write out your comments in your training plan, have you do that. Get laboratory testing if you can. And if you can't, make sure you're doing field testing in training, and the coach will be able to help you with that to get your heart rates right. Then match that with a plan of fuelling per hour. I've seen athletes who've previously trained sorry raced Ironman at 60 grams of carbohydrates per hour, go to 25 grams per hour with enhanced performance, definitely not reduced, including professionals.

This isn't just a conversation for age groupers. It's very possible to be fat adapted and fuel on that lower carbohydrate end as a professional athlete pushing top end. There's quite a few pro athletes coming out now and talking about that approach, which is fantastic.

Steph: I love that because I think unfortunately the argument around research is someone's typical default. When looking at all the research around two to one or 300 cals or whatever it might be. Of course there's all the research because its bloody funded by Gatorade. We all know that clinical trials are very expensive. So we don't have a lot of research in fat adaptation, although you know we know Jeff Volek and Steve Phinney and some amazing pioneers are changing that. It takes time to be published a top tier

journal.  So if you went to a researcheyou’re at least five years behind. But I love that people are now looking to the likes of Sammy Incamen, Tim Reid, there's so many more that are really pushing the whole fat adaptation, low fuelling, fix your metabolism kind of conversation. It is flowing down to our age groupers and creating a beautiful change. It's awesome to see.

Katee: Yeah if I can do a little plug. I interviewed Nathan Sheer on my podcast and a pro athlete who's gone LCHF, day to day and then become fat adaptive for his fuelling efficiency. He's a data nerd, and he's got the lab testing and all those numbers from his training and he's FTP and how his output changed race to race when he made those changes. That's a fantastic conversation for those who perhaps are a little bit sceptical or drop data nerds and like to know the nitty gritty.

Steph: Love it. I'll get the deets and I'll put that episode show notes. Thank you Katie I've loved this conversation. Please do let us know where we can find out more about you online. And thanks again for your time.

Katee: Thank you. Yes, head to the website holisticendurance.com.au or Facebook, Instagram, same thing, Holistic Endurance. Keep an eye out, I am about to launch a new product which is super exciting. Called The Rejuvenation Protocol which will help you track how effective you're training nutrition plan has been. Because we're looking at soreness, fatigue, hydration, and all those elements and giving metrics to that and giving you [inaudible] really doing an analysis when it comes to creating your race plan about what has worked and what hasn't.

Steph: Awesome. We can't wait to hear more. Thanks for giving us a little bit of the down low.

Katee: Always first to hear.

Steph: News flash.

Steph: Awesome. Thanks again. Well chat to you soon.

Katee: Bye.