

EAT IT!

TALKING WITH A SPORT SCIENTIST ABOUT HOW AND WHY NUTRITION COULD BE THE NEXT GREAT UNEXPLORED AREA OF TRAINING

By Adam Wheeler, Photos by Ray Archer/Source

An athlete looks in the mirror. Any doubts they see regarding physicality, injury recovery and mentality can all be answered by a number of specialists they might have in their camp or at their call. The sportsperson that stares at the reflection and keeps asking 'what else?' might do well to turn their gaze to the refrigerator. This is the opinion of Sports Scientist Stephan Nuesser. The German advocates that a dedicated and specialised approach to nutrition is the next frontier for marginal gains...and a whole lot more.

Asking the trainer behind the SNDC company and concept for some insight (and he has worked with a range of MXGP athletes in the last fifteen years) produced a revealing conversation that just might banish the cookie jar...

Haven't people already factored a lot of knowledge about nutrition into their training?

I'd say that in the past people looked at food and nutrition in terms of replacing energy that they need to perform. They would say 'I need to perform like this, and I need this much energy to make it happen'. Ten years ago, I wasn't looking that much at nutrition and focussing more on the training activity. Now we know a lot more and have more information about how certain nutrients influence metabolic processes.

The three macro-nutrients that play an important role are: carbohydrates, fat and proteins. These three and their composition are vital in everyday use but also for the training and the competition someone does. Total energy is important but, in my view, not essential. For sure you still need a balance for what goes in and what comes out but what is more important is how these macro-nutrients affect metabolic processes.

OK, so break that down a bit more...

Well, let's start with carbohydrates. They are basically just energy. They have no other important role in the metabolism of the human body. If you look at proteins then they are also a source of energy, but they do more: they synthesise enzymes and antibodies and they maintain and repair tissue like muscles and organs, hair and skin. They produce hormones and they also carry haemoglobins.

Is that why people go crazy over protein foods and shakes?

Yes, protein is an important macro-nutrient, particularly for athletes. But the third macro-nutrient – fat – is also a source of energy but it's important for vitamin absorption, for example vitamins E, D, A and K. It also has a role in structural material for cells, membranes, and hormone production and inflammation. It is also an insulator for core and body temperature. So, these three have quite different functions for metabolism in the human body. You mentioned the proteins. It's important that you have enough per day. Roughly we should look between 1.5 and 2g of protein per kilogram of body weight per day.

What would be an example of that?

First of all it depends on the body weight, so for 80kg (140g) per day you might need: 200g Skyr or Greek yogurt (20g), 200g chicken breast (45g), 3 eggs (18g), 100g Gouda cheese (24g), 100g lentils (25g), 250g Broccoli (8g).

“THERE IS A LOT OF POTENTIAL IN NUTRITION. IN OTHER SPORTS LIKE CYCLING THEY HAVE BEEN PUTTING A LOT OF EMPHASIS INTO IT DURING THE LAST FEW YEARS WHICH THEY DIDN'T A DECADE AGO...”

I have a saying: 'you cannot manage what you don't measure'. To know your intake of the three macro-nutrients you need to keep a food diary for a few days. There are certain Apps that can help with that and tell you a calorie, fats, protein and carb count. These are the first steps to optimise nutrition. You need to know where you start, what you ingest and what demands you have. Proteins are built from twenty amino acids and there are nine that are essential and should come through food; in other words the body cannot produce these by itself. You have to look at the distribution of the amino acids to have the best results or 'function' of your proteins. Certain amino acids stimu-

late muscle tissue synthesis more than others. Broad chain amino acids stimulate muscle repair and growth to a higher extent than others. Animal based protein has a better function that plant based. That's why it's difficult if you are a vegan to get all the right nutrients and the right amounts.

Carbs?

A glycaemic index tells you how quick sugars go into your bloodstream. A '100' is like glucose or fructose – pure sugars – and they go super quick into the blood. If you have a high rate on the glycaemic index then it also has a high insulin response: once your blood sugar goes



up the pancreas secrete insulin, which immediately reduces these sugar 'peaks'. They become a very quick booster instead an energy supply. It would be better to have carbohydrate foods with a lower glycaemic index, so they go slower into the bloodstream and have a slower insulin response and be more stable and more available for the period of time you need it.

What would be an example?

Starch. A potato. It will deliver energy much longer than a spoon of sugar. Wholemeal foods generally have a lower glycaemic index. Brown bread will be slower than white, the same for rice. Generally, looking at the metabolic processes of foods is important if you want to have everything about your sport on a higher level. For recovery nutrition plays a huge part. You can't really improve it through training. With a combination of food you can really influence your recovery processes. High loads of carbohydrates support a lot of inflammation process in the body which is not so helpful to increase recovery. The right amount and combination of carbs plus proteins influence the time frame and efficiency of processes quite a lot.

Typically, a guy who is just starting to aim for a professional level in a motorcycle racing career, especially for something as physical as motocross, will be pretty young. Specific nutrition seems like a minefield for them. Weighing food seems like an easy first step although the whole subject feels complicated...

I think it is not as complicated as it might look.

Once you have worked out the base - measuring to manage - and are knowing what you eat for a period of five days then you can start to optimise it. You might already have some good parts in your nutrition which you can maintain and some others that are not so good for your performance, which you can then reduce or swap. If riders are seeking nutrition or performance improvements then, firstly, I would see what they eat, then try to reduce the items that are not helping. I'll make them a food list. You can eat as many 'green' foods as you want. 'Yellow' ones are ones you should try to limit and 'red' should be avoided if possible. The athletes

can look at these traffic lights and make their selection without any big limitations on quantity. We'll keep an eye on calories but the type of food is more essential. Then it is about support advice and practical tips, like what meals they can have in the morning and before races, between races and what drinks they should have. Mostly it is based on natural

food - pure food as the base - and then some supplements to meet demand. In motorsport - and motocross especially - there is a high demand for electrolytes. I measure sodium loss, which can be done with small systems now like patches on your body where you collect and analyse sweat so we can manage the sodium implementation over a race day. If you look at it roughly then you can say you need 1g of salt or sodium per hour in warm conditions, it easily comes up to 5-6g of salt per day and we know how to apply it to the drinks needed. Like most things in sport now it is becoming more specific and specialised and more about details.

Will that really make a difference? Again, young guys will be learning about their bodies and their potential so will swapping a protein set really make gains for their performance, say, late into a moto?

Swapping products from normal food to wholemeal food will make a difference but looking at the distribution of the macro-nutrients also. Not eating 600-800g of carbs a day: what effect will that have? If I lower it then I increase my fat metabolism and can improve my recovery. There is a lot of potential in nutrition. In other sports like cycling they have been putting a lot of emphasis into it during the last few years which they didn't a decade ago. Cycling and other sports rely on body weight. You'll see endurance athletes getting super-skinny because that has a big bearing on performance: the more power-per-kilo you produce the better you are up the hill! Many sports like to have the optimum balance between power and body weight. I never really had that too much in mind for motocross but it could apply to the MX2 class and the search for the best bodyweight for the start. If you are looking to get your bike as light as possible with titanium and carbon,





and if you can lose another 2-3kg on body weight then it's worth getting into the details and getting more specialised.

That's the puzzle: making the weight but keeping the same power and strength...

Yeah, and reducing your weight but still optimising metabolic processes. Your energy metabolism works, your recovery, you have less inflammation: you can manipulate this in a positive way with the right foods and the right macro-nutrient combination.

To do that would you need to stay in a constant cycle of testing? Could you notice a performance difference just from seeing data and results in a blood test?

The first biggest improvement or change would be felt first-hand. I did it and I felt it personally. The athletes following a programme provide anecdotal accounts of feeling better and that affects performance in competition. Not specifically motocross but also runners, cyclists and all kinds of endurance athletes. Also, they feel fresher in recovery after an intense training session. Those subjective changes are noticeable but they can also be seen in the lab. We can measure inflammation markers, we can measure blood values, we can also see fuel distribution during exercise thanks to biometrics tests, like the amount of carb burn and the percentages. We can measure the metabolism through exercise and training.

Is that a complicated or slow testing process?

The blood tests are specific but that's done in my lab and with a next-day delivery. But you wouldn't need to make that test every day. You need to give your body time for adaptation. The metabolic pathways need to get used to the situation. A blood test every three months would be enough. When we do a performance test then we also get the information on how the energy distribution is in terms of fats and carbohydrates. It is not like athletes are coming

every couple of weeks and wanting evidence of changes, once they feel it subjectively they are already quite happy. They don't need it in black and white and on paper.

What about the psychological side of this? Can nutrition be a placebo in some cases? Another box for an athlete to tick in the search for elite-level confidence? Also, some athletes have commented on how much a nutrition plan can be so hard to follow for a sustained period of time....

Hmm, I don't think you can directly apply it to just elite performance. I'd apply my approach to nutrition as a benefit for health and longevity. High loads of carbs produce stages of insulin resistance and that means you need to release more and more insulin to control blood-sugar levels. That's the first step to diabetes and is related to other diseases such as coronary – strokes, heart attacks - and sometimes Alzheimer's and cancer. So, I don't want the athlete just to be fitter but also less at risk of suffering from metabolic-based diseases. The type of athlete also comes into play. If I have a marathon runner or a cyclist at Tour de France level then they will be looking at all possibilities to improve physical performance. They are also open-minded and motivated to work on each piece of the puzzle to get it better. My feeling with motocrossers at the moment is that quite a few are coming into GPs younger and they don't have that fully commitment professional mindset. Many do their training because it is necessary and they need a level on the bike. Many of them could already do more. Once they look at nutrition and see and feel the differences then there is no question about maintaining it. It is also important to have a coach or trainer that helps support you through that adaptation and change. It is quite complex, and there are always questions. You need someone to give practical and knowledgeable advice.

Find someone with experience and who can apply it to your daily structure with the foods you like to eat so it becomes maintainable. It doesn't make sense to completely change your diet and eat spinach all day if you hate it.

Motocrossers do their hardcore base work in the winter then tide-over their training during the season. Would a decent nutrition plan have to last 365 days a year or would there be times when they could blow-out?

Time away or 'off' from training means they can also take a break from nutrition guidance. They should be able to eat what they want. But what I see is that people who have kept a plan don't go over the limit anyway. They will eat some of the pizza but not gorge on it because they want to feel good. They might go 'left and right' a bit but not way-off the reservation. When it comes to macro-nutrients then the daily intake varies depending on the training. It will be different if the day is hard endurance training or a riding day or a gym day or high intensity. With the nutrients you can stimulate and support metabolic pathways, so if I want to improve my aerobic fitness then fat metabolism is quite important. If I reduce my carbohydrates then I increase my fat metabolism. If I do high-intensity then I need the Type 2 muscles fibres, like short intense power output and they need carbs so we need to see what combination we have to make before that exercise. If we have a heavy day then how much protein do you need for recovery for the coming days? So, with the amount and the combination you can support your training methods, load and stress.

How quickly does the body react to the in-take? If I have a month off then getting back on plan will be a swift turnaround? I know everybody is different but is there a general term?

Hmm, I'd say between four-six weeks.

Wow. Quite a while then. You see people crash-dieting and achieving a lot quite quickly...

People need to find a new structure and routine. That is a process that takes two weeks and knowing what to eat. If you go into more detail for endurance athletes then estimate four weeks. Crash diets are just a tool for quick weight loss but not for durable metabolic changes. All diets will work for weight loss, but the big question is how long can you maintain it and keep that body weight? So that's why you need to find a way of nutrition you can hold for a long period of time.

Are we talking about a field that is evolving quickly but mainly for those types of athletes that – for example – will be wanting a bit extra to try and beat Tim Gajser or Jeffrey Herlings at the weekend? Or is it something that a parent who thinks their kid could be a professional athlete should also be looking into?

I would say definitely yes to both. As I said, it's not just about performance but the general metabolic health. You could say that any second person, in any country, struggles with one type of a metabolic disease or being overweight. This is the case in Germany at least. Looking into nutrition also means looking into long-term health. Don't just follow the guidelines or the knowledge from the 1970s, which could actually lead to a public health disaster.

Is sugar really the big huge enemy? There seems to be food 'fashions'. What should people be avoiding?

Sugar! In my view it is highly toxic.

That's very depressing.

It's dangerous. It is highly addictive. There were tests done with mice where they gave them heroin and sugar and then allowed them to go for a second dose and they selected sugar. It has huge addictive potential. I know what you are saying about fashion foods but if you get into the small details then most of the information we receive about nutrition is industry-controlled. As an example: in the 1970s in the

U.S. there was a big debate because President Eisenhower had a few heart attacks in the '60s and they wanted to find out why it was happening and about heart health generally. There was one group of researchers who said 'It's the cholesterol! High cholesterol plug the arterial walls and if you eat animal fats then you have a higher risk'. There was another group that said 'It's the sugars! We are eating more and more carbohydrates and more sugar, that's the reason for the plug and heart disease'. The American food and drug administration group started a task force to find out the cause. The leader of the group was a titan of the sugar industry! So, in the end it was the cholesterol and the animal fats that were demonised for the heart diseases. In the '70s we were then told not to eat much fat or butter or eggs or foods that maintain cholesterol. This turned out to be completely unproven. Cholesterol is actually a super-minor factor in the risk of coronary heart disease. Now we are eating more and more processed food. If you look in the supermarket and pick up a product that has more than five ingredients then it is not a natural food any more. In all processed foods we either put sugar, fats or salt to make it tastier. We use special corn syrup that is super-cheap to produce. Or we have plant-based fat oils which also have a high health risk because they are very unstable. If you heat them up then they produce trans fats which are connected to cancer development and so on. The more processed foods you eat then the higher the risk of disease or getting ill. Eating how we used to in the 1950-60s is the way to go to get better public health.

It must be difficult to avoid processed food these days, especially with all the plant-based options like burgers, tofu etc...

You just have to be aware of it. If you buy meat then get it from the butchers. If you buy veg then get it from the fresh counter in the supermarket. Vegetables in a can or a glass? Then check what's in there, look for preservatives.



If you buy fresh then it is not so difficult to avoid processed. Most dairy is fine. If you buy a plain Greek yoghurt then get some berries to put inside. You don't need to buy the yoghurt with the berries and the sugar already in there. Use butter and olive oil for cooking and avoid the ready-mixed stuff. You could make your own mayonnaise; it's not so difficult with three ingredients and is better than the supermarket one with ten ingredients. Nowadays you can also buy ketchup without added sugar. It takes a bit more time and effort, but I think that's needed so you don't have a heart attack by the age of fifty, or diabetes. People need to realise that keeping it simple and nutrition and exercise are the best things for you. People exercise but they are missing the knowledge and the view on nutrition and the impact it can have.

Lastly, what's the first step? Is it finding a book? An App? Usually the beginning of any scheme is the toughest part...

The first step would be to measure what you eat. Take a few days – it doesn't have to be many, say from Wednesday to Sunday – and use a free, available app to type in exactly what you eat and how much. You'll need to have a little kitchen scale. Many Apps already have a barcode system so you just need to scan the food and then just evaluate the quantity. You'll

then have an overview of the daily calories, liquids and what your macro-nutrient distribution looks like. It becomes quite an easy daily practice. Once you have the daily calories and the nutrients then it becomes a bit more complicated because you need to have someone with some knowledge to give you advice on what direction you should go and that also depends on what sport you do. Unfortunately, there are not so many good sports nutritionists. It's not that easy to find them, and they know enough about the whole picture. Every sports club will have nutrition advice but it's the standard 'eat enough fruit and vegetables and eats enough carbs'. It's not individual enough in my opinion. You'll need practical guidance and a structure that you can retain for a long period of time. It is also a field that is still developing, and the training keeps getting specialised. Nutrition is still in the early stages for improved sports performance.