

SQUEEZY[®]
SPORTS
NUTRITION

BASICS and MYTHS:
SPORTS NUTRITION for CYCLISTS

Introduction



(Photo: Ingo Kruck / roadcycling.de)

Cyclists know everything there is to know from the weight of their bike, their maximum heart rate, how to measure and read their power output using wattage. It is safe to say, many cyclists are obsessed by numbers and statistics and how they can use these facts to optimise their performance. However, more often than not, the knowledge about their own engine and how best to look after it is patchy.

Fact is, by making some simple changes to your diet and spending a little bit of time to understand how nutrition works for an athlete, some big gains in improving your performance can be achieved. Most people, including car owning cyclists, know its fuel consumption by how many miles per gallon.

When asked the same question about body fuel consumption, i.e. calorie expenditure, answers are often vague and based on rough estimations and guesses. With this article we want to help shedding some light onto the darkness of sports nutrition and bring some explanation about nutrition during endurance sport, specifically cycling.

Nutrition and Cycling – The Chapters

1. The Magnificent 7 – Building Blocks of a Healthy Balanced Diet
2. Your Engine Cannot Function on an Empty Tank – the Different Energy Sources for Athletes
3. Supplements & Vitamins – What Do I Really Need?
4. For the Love of Carbs – Carbs Are Not All the Same
5. The Right Amount of Fuel – How much, what, when?
6. The Importance of the Open Window
7. Weight Management & Athletes – The Basics & Common Mistakes

Chapter I. – The Magnificent 7



(Photo: Dennis Schmitt / pixelio.de)

Seven days of the week, Seven Wonders of the World, Seven Deadly Sins, Snow White and Seven Dwarfs; not to forget the Seven Year Itch: Seven is a magic number and features a lot in fairy tales, folklore and religion. It is seen to be the number of perfection and completeness.

So it is no surprise that the key building blocks of our nutrition amount to seven.

1. Carbohydrates
2. Protein
3. Fat
4. Minerals
5. Vitamins
6. Fibre
7. Water

For endurance athletes, some of these building blocks are extremely important to stay healthy and perform at their optimum. We will expand on that later on in this article.

Chapter II. Your Engine Cannot Function on an Empty Tank



(Photo: FotoHiero / pixelio.de)

It does not come as a surprise that our car engine stalls when we ignore the little red warning light and run out of fuel. The same principle applies to our body. But unlike a car, we do not have this electronic ‚aid memoire‘ to signal that you are running low on fuel. Instead you need to listen to the other signals your body sends you when it is threatening to stall and before it is too late. Before we look at how to stoke the engine that is the human body, let us investigate our body’s primary energy sources more closely.

Two sources of energy are of particular interest to the athlete:

- **Fat:** That is, in this instance, your body fat
- **Glycogen:** Carbohydrates that have been converted and are stored in the muscles and in the liver

Starting with the one item many athletes are keen to reduce: their body fat. There are two key factors to consider:

1. For the body to generate energy from its inherit fat reserve is a complicated and slow biochemical process. As a result the relative proportion of body fat used to generate energy decreases as intensity increases. Quite simply, the higher the intensity, the less body fat used to provide the necessary energy.
2. Key fact to remember: *“Fat burns in the fire of the carbohydrates.”*

What do we mean by that? Quite simply: to ensure that the body’s energy system burns fat effectively for energy, it requires a certain amount of glycogen within its stores – the muscles and the liver.

In theory our bodies have fat reserves to generate enough fuel to ride the distance of Tour de France – a staggering 71,600 kcal. That is a lot of fuel we potentially have on tap. However, to use those reserves we require glycogen stores that are constantly filled to the brim - and we would have to cycle very slowly!

The Source of Fuel for the Endurance Athlete

With that in mind let's look at the essential source of fuel for the endurance athlete: the glycogen stores and the carbohydrates which feed those stores.

As mentioned previously, our bodies only store glycogen in the muscles and in the liver. The stores' maximum capacity is reached at circa 1,100 kcal. With the liver being one of the key fuel stores it pays not to drink too much alcohol.

However, even when the glycogen stores are filled to 100% of their capacity, they will only last for a maximum of 90 minutes at high intensity. That is not very long in relation to how long we are sometimes out on our bikes. You can compare it with having a sports car which you can only drive for 120 miles before you have to refuel at the nearest petrol station. You would not get very far with that car!

Luckily, we do not rely on petrol stations to fill up our tanks – unless we have run out of fuel, i.e. food, and are getting dangerously close to stalling our engine! But before it would get that far we can top up our glycogen stores during exercise with the necessary carbohydrates through energy gels, energy bars and energy drinks.

In addition to that, you need to consider:

- Firstly, our brain exclusively uses glycogen as a source of energy to function. And we need our brain during riding: a fuelled brain ensures we can concentrate, coordinate and stay sharp and focussed.
- Secondly, a massive depletion in the glycogen stores can compromise your recovery and weaken your immune system

From that, we can conclude:-

- You have to ensure that your glycogen stores are filled before intensive and long efforts – for example through “carbo loading” and pasta parties.
- It is important to take on carbohydrates during long intensive efforts or events, at least when they last longer than one hour, to ensure a consistent performance, an alert mind and a good recovery.

Carbohydrates, though, are not all the same. Which carbohydrates are suitable, when and how much you would need to consume at any given time – these are questions we answer in the following chapters.

Chapter III. Vitamins and Supplements – How Much Do I Really Need?



(Photo: Ingo Kruck / roadcycling.de)

We could fill a whole series of books with this one chapter alone. One line of thoughts claim that by taking the correct supplements you can prevent deficiencies, help to relieve symptoms and boost energy and performance. Others are convinced that people only need to eat a balanced diet of fresh fruit, vegetables and whole-grain food to stay healthy and get everything their body needs in order to stay on top of its game.

As it is with most of these type of arguments that divides opinion, the truth probably lies somewhere in between.

Let's look at it more closely.

Vitamin and mineral deficiencies occur due to a number of reasons:

1. An unhealthy, unbalanced diet
2. Certain diseases can cause a compromised uptake of nutrients and result in nutritional deficiencies (e.g. coeliac disease)
3. An increased demand of energy placed on the body through high stress levels and increased intensity, e.g. sporting activity

This chapter targets you, the athlete. We will therefore not elaborate on the first point. Simple changes to eating and drinking habits, e.g. ditching the daily take-away and not snacking on crisps and chocolate every night, can bring some quick-wins and great results.

If you are concerned that there is something fundamentally not right or you have been diagnosed with an illness that can cause nutritional deficiencies you should speak to a doctor and/or dietician. Simple blood tests can bring more clarity.

In the context of this article it is the third group that is of interest – us, active people who exercise regularly.

What type of minerals, which vitamins, amino acids or even trace elements are key to an endurance athlete? Which supplements should we take, if any? And when should we take them?

The Question of When

Imagine you want to drive from London to Edinburgh. Your car is serviced regularly and has passed its annual MOT. So you only have to worry about filling up the engine with the petrol needed during the journey. Anything else, such as brake fluid or oil would not need be checked or even replaced during the trip.

Our body works on a similar principle as a car – and with that in mind, keep it simple: think about responding to your body's requirements like you respond to maintaining your car: during exercise the body only requires fuel in the form of carbohydrates, water and, potentially, sodium (salt). All of these essential ingredients are used in the mainstream energy products that are available on the market.

All the other minerals and nutrients can and should be taken on board during normal levels of activity and before or after training/competition. Your body has plenty of capacity to store these to ensure a constant supply as and when needed.

The rule is simple: The more soluble parts there are in a gel or a drink, the higher is the osmolality and therefore the longer it will take to be absorbed.

When it comes to nutrition, it is the quality and not the quantity that is of essence.

Unnecessary and excessive amounts of minerals, amino acids and vitamins during an intense workout can cause an „overload“. This can lead to the body wanting to shift the excess as quickly as possible. The result can be vomiting, severe stomach upsets and stomach pains which can make your ride miserable and could mean that you have to abandon your event before you know it.

Note: Be mindful what you are taking and check what you really require during the ride you are planning.

The Question of What

The answer to the question of what is a little more complicated, therefore we concentrate in this article on the essentials.

Minerals

If you regularly suffer with cramps you can try to take magnesium as a supplement to see if that helps. There has not yet been conclusive research results that confirm magnesium helps to reduce cramping but there is an unshaken belief in the world of sport that it helps.

Individuals who mainly eat „acidic“ foods are advised to balance that with „alkaline“ forming foods and minerals. There are now some good products available that are free from lactose, gluten etc. which support a balanced acid-base balance in your body (e.g. Basozyx)

Vitamins

With some vitamins it can be helpful to support your body by taking them as a supplement, especially those which are not readily available throughout the year or through diet alone. During the dark winter months it is a good idea to take a Vitamin D supplement. Vegetarians and vegans need to keep an eye on their level of Vitamin B12 and should use a supplement if needed. When the immune system is weak or compromised it can be useful to take Vitamin C combined with Zinc. We will come back to this later on.

Protein / Amino Acids

Your body cannot produce amino acids which are essential building blocks to ensure correct function. Therefore, it relies on diet and nutrition to get access to them from protein. Proteins consist of up to 100 amino acids, nine of which are the essential amino acids which you need to cover through the food you are taking in. Sources of the essential amino acids are proteins such as dietary products. Therefore, it is important for vegetarians and vegans to ensure they sufficiently cover their intake of proteins through a variety of other sources.

The breakdown of protein in the diet happens in the kidney. To ensure the kidneys are not overloaded and put under unnecessary strain through excess protein, the quantity of protein needs to be limited to no more than 2g per kilogram in body weight. It can be simpler, and also easier to cope with for our body, to take the essential amino acids through a supplement. In that case, 5g per day are sufficient to cover your daily requirement.

In summary: It can be useful when you train regularly to support your diet with certain supplements of vitamins and minerals. However, the decision to supplement the diet should always be based on fact, e.g. a diagnosis of a deficiency (e.g. low iron levels) or a prevention.

If you have any deficiencies which need to be corrected with supplements this can be easily determined by a thorough blood test. Your GP can organise for some bloods to be taken for an initial investigation and results are usually available within a week. If you want your GP to look for certain elements it is worth to explain to him what it is you want to have checked (e.g. level of Coenzyme Q10).

To conclude this chapter, a little word of advice: taking supplements does not guarantee that it will be made available in the blood stream and is taken to where they are needed the most. This is termed Bioavailability. Often the actual real food has a huge advantage over the supplement.

Chapter IV. For the Love of Carbs - Carbs are not all the same



(Photo: Ingo Kruck / roadcycling.de)

Continuing with the car analogy: you get different fuel (e.g. diesel, petrol, gas). The same goes for this most important energy source: there are different types of carbohydrate (fuel) that provide the energy you need.

Looking at it scientifically, the carbohydrates are chemically divided into monosaccharides, disaccharides and polysaccharides. What exactly does that mean? Monosaccharides are simple sugars such as fructose or glucose. They are quickly absorbed in the blood stream and cause a quick rise in blood sugar level and conversion into accessible energy. It is understandable that some think this is exactly what an endurance athlete wants in training and competition. However, this is not the case.

As well as letting your blood sugar levels rocket, these simple sugars (monosaccharides and disaccharides) cause the pancreas to produce a high amount of insulin in a short time. The hormone insulin acts as a “key” to unlock the cells for glucose. As a result of the high insulin levels, blood sugar level plummets quickly below its normal level. The low sugar level (hypoglycemic) causes a significant drop in performance. To counteract this, you would quickly have to eat again more of the simple sugars. Therefore, to be able to maintain a steady and constant level of performance, you would have to constantly eat a lot of these sugars during your event, race or training.

Sugar: A Drug?

At this point in the article we want to briefly cover Type II Diabetes – one of the most rapidly rising illnesses in the modern Western World as a direct result of our changes in diet and eating habits.

Much of today's food contains a high proportion of simple sugars. Consequently, people experience a spiral or see-saw effect: after eating the blood sugar level increases quickly, insulin gets released, the blood sugar drops below the norm and hunger pains return. So you eat more – and for a quick fix, you eat another sugary snack. Only to repeat the process of rising and dropping blood sugars. Over time this constant rise and fall of the blood sugar and the resulting high levels of insulin can cause a resistance to insulin. This marks the beginning of diabetes.

Back to the athletes: sports nutrition products tend to utilise sugars such as maltodextrin. These sugars, known as polysaccharides, are complex carbohydrates which are metabolised at a slower rate and therefore prevent the sudden increase in blood sugar levels with a resulting slump, decrease in performance and increased hunger. Especially for endurance sports it is important to achieve a good balance of carbs where the majority should consist of the complex carbohydrates. This will reduce the risk of a hypoglacamic slump. Simple sugars can be taken in small amounts in the form of glucose for a quick surge of energy when needed.

ANWENDUNGSEMPFEHLUNG	vor der Belastung		Training	
	•••	•••	•••	•••
GEL			•••	•••
SQUEEZY ENERGY GEL			•••	•••
SQUEEZY TOMATO GEL			•••	•••
SQUEEZY ENERGY SUPER GEL			•••	•••
SQUEEZY DRINK GEL			•••	•••
GETRÄNKE				
SQUEEZY ENERGY DRINK	•••		•••	•••
SQUEEZY ENERGY DRINK CONCENTRATE	•••		•••	•••
SQUEEZY ENERGY SUPER DRINK	••• (1)		•••	•••
SQUEEZY ENERGY FORTI DRINK	••• (1)		•••	•••
SQUEEZY CARBO LOAD DRINK	•••		•••	•••
SQUEEZY RECOVERY DRINK	•••		•••	•••
RIEGEL				
SQUEEZY ENERGY BAR	•••		•••	•••
SQUEEZY ENERGY SUPER BAR	•••		•••	•••
SQUEEZY RECOVERY BAR	•••		•••	•••
FRUCHTGUMMI				
SQUEEZY ENERGY FRUIT GUM	•••		•••	•••
ATHLETIC				
SQUEEZY ATHLETIC DIETARY FOOD	•••		•••	•••
SQUEEZY ATHLETIC BAR	•••		•••	•••

••• geeignet (1) nicht unmittelbar vor der Belastung

Every manufacturer of sports products has to list the ingredients that make up their products. However, there is also a lot of information available nowadays which can be very overwhelming. A lot of athletes do not just want to know what is in the product but also how best to use it, e.g. how much and when to take the product (here the recommended usage of SQUEEZY products).

(Photo: Ingo Kruck / roadcycling.de)

At this point we want to touch on an important fact: Many people suffer from a fructose intolerance. Often it is not diagnosed or only manifests itself during the high intensity efforts during training and events. Typical signs are gastro-intestinal problems during the intense effort. Therefore it is important to ensure to only use products (drinks, gels and bars) that do not contain any fructose if you are fructose intolerant.

Let's start with our prime fuel – the carbohydrates. How many you need to take, when and how will be covered in the next chapter.

Chapter V. – The Right Amount of Fuel: How much, when, what?



(Photo: Ingo Kruck / roadcycling.de)

Most of the mistakes in sports nutrition by hobby-athletes are made in this area: fuelling your engine with carbohydrates.

There are those who think they can train at high end endurance level (70%-80% of the maximum target heart rate), or even higher intensity, for hours without eating or drinking any energy products. At the other extreme are those who take everything that is on offer at the feed stations, eat as much as they can whilst they are riding and then come unstuck when the body wants to rid itself of all this excess.

The Most Important Facts

In this article we assume a training session or competition at a middle to high intensity level lasting longer than 60 – 90 minutes. For lower intensity training you will have to follow different parameters which we will cover in Chapter 7.

Let's divide the intake of carbs into three areas:

- Before sports
- During sports
- After sports

Before Sports & Carbs

You need to ensure that your glycogen stores in your muscles and in the liver are sufficiently filled before your training session/race.

It is not for no reason that at big events the organisers organise a pasta party the day before and you can buy products for “carbo loading” at the trade shows. All this is to encourage you to stoke your engine and fill up the tank.

So, remember: instead of going hungry and worry about maintaining or lowering your fight weight on the days leading up to the event, you need to focus on filling up the energy stores with carbohydrates. The amateur athlete should especially focus on the day before big events or long hard training sessions.

Carbs During Sports

A basic and simple rule sums up the amount of carbohydrates you require during a training ride, event or competition:

- 30-60g per hour for the hobby athlete at medium intensity
- 60-80g per hour for the competitive athlete
- 80-100g per hour for the semi-pro and professional athlete

Please note – this is important: This refers to the amount of carbohydrates, **not** the total quantity of a gel, bar or drink. You need to check the composition of the products you are planning to use and then calculate the amount of drinks, gels and bars you would require per hour.

Everybody is different and every athlete has their own preference. If you prefer gels, bars, drinks, jelly babies or a mix of all – it is your choice – whatever works best for you. It is worth remembering that gels, drinks and wine gums (such as jelly babies) are digested a lot quicker and therefore more readily available and converted into energy than solid energy bars. Solid foods such as energy bars can also be quite heavy on the stomach and cause gastro-intestinal problems.

More important than the source of the carbohydrate is to keep a watch out on the amount that is taken. Again, taking more does not automatically mean an improved performance. Taking on too much carbohydrates can actually have the opposite effect and cause a break down in performance.

Hard to believe but there is hardly one professional athlete who can digest more than 100g of carbohydrates per hour.

Equally important is to remember: You need to drink plenty of water to maintain your fluid balance when taking on the carbohydrates. As a rule of thumb your body needs 100ml of water for every 4-8g of carbohydrates.

After sports and carbs will be covered in the next chapter.

Chapter VI. – The Importance of the “Open Window”



(Photo: Ingo Kruck / roadcycling.de)

High intensities bring risk and opportunity balancing on a sharp edge.

The Risk

For years, scientific studies have proven that after a training session or races at high intensity our immune system is weakened. As a result we are more susceptible to infections. Referred to as the “Open Window”, it cannot be avoided. The higher the intensity the more “open” is the window, i.e. the immune system becomes increasingly compromised.

The Opportunity

At the same time, studies have shown that after a hard training session your cells are wide open to take on nutrients – some say for up to an hour, others say for only half an hour.

The Result

Quite simply: Within half an hour after an intense training session or competition you should take on important nutrients. With the cells wide open, your body can absorb these nutrients a lot more quickly and efficiently. Before you dig into your fish and chips or your chocolate sandwich, let us explain what that really means:

- You need carbohydrates to restock the glycogen stores – so you are ready to go
- You need proteins (amino acids) for the muscle recovery
- You need vitamins and minerals to strengthen the immune system – in particular Vitamin C and zinc – to prevent any nasties attacking you

If you want to take these as part of a post-ride meal or through especially formulated recovery products is your own personal preference.

Before you dig into your curry, consider that “heavy” foods that are difficult to digest are not as easily and quickly absorbed within the first half an hour. So choose your post-ride meal carefully.

At this point we want to reiterate the importance of consuming the right amount of carbs during the session: the less you are in deficit at the end of the exercise, the smaller is the „Open Window“ in your immune system. Therefore it lends itself to ensure that you take on enough carbohydrates during your training/event.

Chapter VII. – Athletes & Weight Management – The Basics and the same Mistakes



(Photo: Ingo Kruck / roadcycling.de)

Ever wondered, why the climbing specialists are always the slightest and skinniest of the bunch? The more mass that has to be carried uphill, the harder it is. From circa 7% incline this starts to really take effect. For each extra kilogram of weight you have to generate an additional 5 Watts. For example, an additional 10kg of weight requires 50 Watts that need to be pushed through the pedal to haul yourself to the top.

But how will I manage to lose weight without compromising or losing my power to weight ratio? Let's start with the „worst case scenario“– the “Zero Calorie” Diet. It illustrates quite well the basics of food and energy consumption.

The “Zero Calorie” Diet

Our lifestyle might have changed but our body has not caught up with modern life. Therefore it still reacts like it did when food was scarce and we had to go days, if not weeks, without eating properly: if we stop eating for a period of time our body will break down the biggest energy sucker there is: our muscles. As the muscles break down, the protein is converted into energy. At the same time, the basic calorie requirement reduces because less muscles require less calories.

If you then, after a period of time, start to eat normally again, you start the well-documented “yoyo effect”: you weigh more than before your diet and you have less muscle mass. Your body is programmed to hold on to as much energy from the food it now suddenly receives again as it can so it has plenty to fall back on when the next next “dry” period hits.

For a cyclist there is nothing worse than losing muscle mass and power whilst also losing the weight. Of course, you want to be as light as possible but at the same time you do not want

to compromise your strength. As cyclists, we are looking to reduce body fat, not muscle mass.

How do I reduce Body Fat without Losing Muscle?

To answer this question, let's keep it simple and go back to basics: A diet only works when you follow a hypocaloric food intake. That means you consume less energy than you use.

The key hormone in this process is the insulin. As described in Chapter IV, insulin unlocks the cells for the glucose to enter to provide energy. Unfortunately, this also means that with high levels of insulin in your blood the body cannot get energy from body fat. That means, the body cannot burn fat when insulin is unlocked.

Therefore, it is imperative to have a low level of insulin in the body to ensure the burning of fat. In turn, this means we have to sustain a very constant blood sugar level.

The Glycaemic Index

Scientists developed the glycaemic index (GI) to measure the effect of food items on the blood sugar level. The Glycaemic Index (GI) is a ranking of carbohydrate-containing foods based on the overall effect on blood glucose levels. The more the blood sugar level rise after consuming a food, and the quicker therefore it is absorbed, the higher is its GI (glycaemic index). Glucose is used as the standard, where 100 is equivalent amount to pure glucose.

If you want to keep spikes in blood sugar and the rise in insulin that follows low you have to consume foods and drinks that are listed with a low GI. We recommend to look at the LOGI-Method or go to the Glyx-Institute to learn more.

And who has not come across those people who eat little and often throughout the day but complain that they do not lose any weight.

But it would come as no surprise if they checked their daily sugar intake: for breakfast they might eat slices of white toast with jam, then at work the first coffee of the day with a spoonful of sugar. For lunch a nice light salad washed down with a coke. The afternoon snack consists of a biscuit with a cup of tea – and maybe another spoonful of sugar.

The peaks in the levels of insulin are programmed. The constantly high level of insulin in the blood does no longer allow for an effective fat burn for energy. Over years, these eating habits can lead to Type II Diabetes.

Back to the Stone Age - Evolution and Not Evolved

Thousands of years ago, we humans were very active. We had to search for food. We would run for miles, chasing our food and fighting for it. More often than not we would go for days and weeks without any proper meals. Our body is very well adapted to that life style. It naturally converts food into readily available energy and stores the rest as fat for when times are hard. Today, food is omnipresent. You can buy it on every street corner. And you can eat

and drink to your heart's content, including food full of sugars. But our body has not evolved as quickly as the world we live in. We have inherited from our ancestors a body that still thinks we are in the Stone Age and reacts accordingly to the overwhelming increase of energy available and decrease in physical exertion. Therefore, the increase in "modern" diseases such as Type II Diabetes and rising levels of obesity is a direct result of our bodies only very slowly adapting to modern life.

To summarise the important bits:

1. To reduce any excess body fat and make your love handles melt away you have to take on less energy than you use
2. At the same time you need to burn fat over a longer period of time – therefore your blood sugar level needs to be constant
3. To achieve that you need to choose food items, or even specific diet products, that have a very low glycaemic index (GI).
4. For the protection of the muscles it is important to consume amino acids or protein, especially in the evenings

Other Important Points to Consider:

Muscles are heavier than body fat which can be a cause for confusion and lead to wrong assumptions about your body composition.

It is always the same: you eat well and right, introduce nice, lean protein in your diet, you train and exercise hard. And next time you step on the scales you realise: you only have shed 1kg .If you diet and exercise and include the right amount of quality amino acids in your diet it is possible that you, for example, lose 3kg of fat but gain 2kg of muscle mass. Whilst you might have "only" lost 1kg of weight but it is relative to the comparison between what you have lost versus what you have gained is the important figure.

If you want to lose weight (in terms of body fat) correctly, it is worth having a Bioelectrical Impedance Analysis (BIA). A BIA is used to measure the body composition, in particular body fat. To get the most from your BIA measurement you need to take measurements on a regular basis such as at the beginning, during and after within a time frame. The result will provide you with an estimation of your body fat relative to the water and muscle in your body. Those results can indicate if the weight loss you are recording during your diet is due to real fat loss or water/muscle. Likewise, it can help you understand that some slower weight loss could be due to muscle gain whilst the fat is actually reducing.

There are now a number of scales on the market which claim to measure the body composition. The reliability and accuracy of these scales is still debated because significant deviations have been recorded. If you want to lose weight and use BIA we advise to do this under the guidance of a sports doctor, nutritionist or fitness expert.

The designation 'Light' does not necessarily mean healthy

We are referring to the use of artificial sweeteners that is now increasingly used in a number of health or diet products. Studies have shown that some people also react with an insulin spike when they replace normal sugar with substitutes such as aspartame. Therefore, we are critical towards its use and benefits. Since the discussion of sugar replacement is a lengthy excursion in its own right we are not able to cover it in the context of this article.

Low End Endurance Training (LEE) – The Burn of Body Fat

Just to recap on our excursion into training intensities and burning of body fat we touched on in Chapter V.

Of course, Low End Endurance training is suitable to help reduce body fat. Within in the LEE zone (65% - 75% of your maximum target heart rate) we are activating our fat burning metabolism, training our body to use fat as primary source of energy.

In this zone you can train for a few hours without taking on any food. But remember to drink plenty and to ensure that your glycogen stores are sufficiently filled.

Please also bear in mind that at low intensities the relative amount of fat used is higher than at higher endurance but during high end endurance training you will burn more energy (in the same amount of time).

The most importantly thing to remember is that Mother Nature has given us everything we need to allow us to exercise and do our sport with all the strength required; and that the fun factor during our bike rides should be our priority.

Less fast food, more slow food, less processed meals and food items and more fruit and vegetables will not just benefit you in your sport but in your general health and well-being and are important building blocks for a healthy life.

Post Script

We have now come to the end of our little guide to nutrition. We tried to avoid scientific terms, definitions and jargon to make it easily read and understood. We hope that you have found some of this information useful and will be able to draw on if for your own training.