

Hydration – The Key to Better Cycling



We often make the mistake of fettling our ride and getting all the right clothing and gear to improve our cycling but ignore looking after the engine that is you. When it comes to better cycling, we often overlook the importance of being properly hydrated. Yes, we (mostly) make sure that we have the water bottle on the bike, but do we have a plan for hydrating?

The often-quoted advice of 8 to 10 glasses of water per day is very generic and doesn't address the cyclist's unique requirements. Cycling is different than many endurance sports because we are moving through the air at 18 to 35 kilometres per hour, thereby boosting the rate of evaporation we experience. At the same time, we are losing essential electrolyte chemicals/minerals. Look at the pads in your helmet and the helmet straps. Those white powdery deposits are a combination of trace amounts of ammonia, urea (from protein being metabolized), fats and the big five – Calcium, Chloride, Magnesium, Phosphorus, Potassium and Sodium

What are the signs that you are dehydrated?

1. Headache
2. Thirst
3. Muscle Cramps
4. Weakness
5. Nausea
6. Irritability
7. And believe-it-or-not goosebumps.

Dehydration – How Does it Affect Your Cycling?

Body Water Loss	Effects
0.5%	Increased strain on heart
1%	Reduced aerobic endurance
3%	Reduced muscular endurance
4%	Reduced muscle strength; reduced fine motor skills; heat cramps
5%	Heat exhaustion; cramping; fatigue; reduced mental capacity
6%	Physical exhaustion; heatstroke; coma

Electrolyte Drinks – Are they Necessary???

If your ride lasts 2 hours or less, clean purified water will, in most situations, work quite well at replenishing the water lost to respiration and perspiration.

Once you go beyond 2 hours the loss of water and essential electrolytes will begin to effect performance. So, you may ask why not just continue hydrating with water alone? Well, using water alone can lead to an electrolyte imbalance called **Hyponatremia**. This is a condition where the sodium levels in the blood drop too low. Just using plain water can cause a dilution of the sodium in the bloodstream because you're losing sodium at an accelerated rate and not replenishing it. It is true that many of us get too much sodium in our diets and therefore should never need to supplement our intake, but we must find that balance that works best for us.

Can You Just Use Salt Tablets?

Salt tablets only provide 2 of the essential electrolytes that your body needs – sodium and chloride. They also supply too much Sodium and upset a finely tuned Sodium control system. When this happens the hormone Aldosterone signals the kidneys to stop filtering and recirculating sodium. Instead, the kidneys begin excreting sodium. Then Vasopressin, another hormone will predominate and cause fluid retention. Why is this bad? Well, increased fluid retention will cause edema (swelling) particularly in the distal extremities (feet and hands) and higher blood pressure.

So How Much Sodium is Required?

We only require about 250 mg. of sodium each day, and that is easily supplied in our diet. Athletes may require slightly more at 500 mg. Daily maximums are 2300-2400 mg. per day and our North American diet can unfortunately supply 6000 to 8000 mg. per day. In addition, the average athlete stores about 8000 mg. in tissues. **Bottom line - there isn't much call for sodium while hydrating.**

What About the Other Electrolytes?

These represent much smaller amounts in the overall electrolyte profile and can be covered by using a balanced electrolyte drink and/or through the on-bike nutrition.

How Much Fluid Should You Be Consuming?

What I am about to say may seem counterintuitive – *less is better than more*. In terms of calories, electrolytes, and fluid our bodies are only able to process 20 to 33 percent of what is being used during cycling. Your body metabolic rate during cycling rises 1200 to 2000 percent over your sedentary state. There's a lot going on and your body goes into sort of a survival mode, where blood volume is routed to working muscles, fluids are used for evaporative cooling, and oxygen is routed to the muscles, brain, heart, and other internal organs. End result; the body is not too interested in processing large quantities of fluids, calories or electrolytes.

Trying to replace everything that your body is using up often results in bloating, nausea, and cramping. Aim to replenish via an hourly intake of 590 to 740 ml per hour. Once you have finished your ride continue to hydrate and tuck-into a balanced post ride meal.

Some Common Electrolyte Products That You May Want to Consider

Gatorade (Pepsi Cola)

Inexpensive and widely available – but is it any good? Gatorade ingredients include Sodium, Citric Acid, Glycerol, Sugar, Monopotassium Phosphate, Starch, Trisodium Citrate, and Dextrose. Does this constitute a full spectrum electrolyte profile . . . not really. However, if it works for you, that is all that matters.



Powerade (Coca-Cola)

Relatively inexpensive and widely available. Powerade has a similar electrolyte profile but does contain Fructose which can give some cyclists some cramping. The ingredients: reverse osmosis water, sugar/glucose-fructose, citric acid, salt, natural flavour, potassium phosphate, ascorbic acid, magnesium chloride (magnesium), calcium chloride, calcium disodium EDTA, niacinamide (niacin), colour, pyridoxine hydrochloride (vitamin b6), cyanocobalamin (vitamin b12). Electrolyte profile: 240MG (SODIUM), 80MG (POTASSIUM);



NUUN Tablets

For those who don't want the calories (mostly from simple sugar) of other electrolyte drinks NUUN tabs make a good choice. Their electrolyte profile is - sodium (300 mg per serving – 1 tablet), chloride, calcium, potassium, and magnesium. The ingredients; Citric Acid, Dextrose, Sodium Bicarbonate, Potassium Bicarbonate, Sodium Carbonate, Natural Flavors, Malic Acid, Potassium Chloride, Magnesium Oxide, Calcium Carbonate, Stevia Leaf Extract (sweetener), Avocado Oil, Beet Powder Color, Riboflavin (for color). Some flavours have caffeine added – if you need a shot of energy.



Skratch Labs

A little on the expensive side, but hey it has the cache of Allen Lim, who was Lance Armstrong's nutrition guru – not sure if that's a good thing or not. The electrolyte profile: 380 milligrams of sodium, 39 milligrams of potassium, 44 milligrams of calcium, and 39 milligrams of magnesium per scoop. The ingredients: Cane Sugar, Dextrose, Sodium Citrate, Citric Acid, Magnesium Lactate, Calcium Citrate, Potassium Citrate, Lemon Oil, Lime Oil, Lemon Juice, Lime Juice, Ascorbic Acid (Vitamin C).



Hammer Nutrition HEED (High Energy Electrolyte Drink)

A personal favourite because it uses maltodextrin as the primary carbohydrate instead of simple sugars. Maltodextrin has a much smoother glycemic profile, so no sugar spike and crash that can occur with simple sugars. Their ingredients list also doesn't sound like something from an A-level chemistry class.

Ingredients: **2.0 = TAPIOCA Maltodextrin** – Less processed, NON-GMO, lower mono and disaccharide content/much higher percentage of polysaccharide content (courtesy of its lower Dextrose Equivalent), less sodium content, and even closer to the desired neutral pH.

Classic = Corn Maltodextrin – A high-glycemic index (GI) complex carbohydrate, ideal for providing fast-acting, long-lasting energy during exercise and for replenishing the body's energy (glycogen) stores after exercise. **Xylitol** – This natural sweetener is found in a variety of fibrous fruits and vegetables. It promotes oral health, as it does not ferment and support the acid-producing bacteria that cause tooth decay. NOTE: It is believed that xylitol is unsafe for consumption by dogs; therefore, we do not recommend you feed your dog any xylitol-containing products, including HEED or Recoverite. **Full-spectrum electrolyte profile** – The complete profile of sodium, chloride, calcium, magnesium, and potassium helps maintain performance of many important bodily functions during exercise, while also helping protect against muscle cramping. **L-Carnosine** – One of the most versatile and beneficial nutrients available. It buffers lactic acid during exercise and offers antioxidant support. **Glycine** – This amino acid is beneficial for aiding with muscle tissue repair, protecting collagen in joints, and reducing joint



pain. Additionally, glycine has a naturally sweet taste, contributing to HEED’s delicious flavor. **L-Tyrosine** – Aids in the functioning of the adrenal, pituitary, and thyroid glands, which are responsible for the production and regulation of numerous key hormones. This contributes to increased performance levels and decreased recovery time. **Manganese** – This trace mineral is necessary for optimal muscle cell enzyme reactions and for the conversion of fatty acids and protein into energy. **Chromemate® brand chromium polynicotinate** – This trace mineral helps regulate blood sugar and plays a vital role in the synthesis of glucose, fatty acids, and amino acids. The Electrolyte profile:

Serving Size: 30g (1 Level Scoop or single serving)

1 Level Scoop: 60 cc

	Amount Per Serving	% Daily Value*
Calories	110	
Total Fat	0g	0%
Saturated Fat	0g	0%
Trans Fat	0g	
Cholesterol	0mg	0%
Sodium	200mg	9%
Total Carbohydrate	28g	10%
Dietary Fiber	0g	0%
Sugars	2g	†
Added Sugars	0g	0%
Protein	0g	0%
Vitamin D	0mcg	0%
Calcium	57mg	4%
Iron	0mg	0%
Potassium	25mg	<1%
Vitamin C	45mg	50%
Vitamin B6	9mg	529%
Magnesium	31mg	7%
Manganese	2mg	87%
Chromium	25mcg	71%
Chloride	90mg	16%
L-Carnosine	52mg	†
Glycine	31mg	†
L-Tyrosine	11mg	†

Hammer Nutrition FIZZ

If you like NUUN tabs, then you may want to consider FIZZ tabs as an alternative.

Ingredients: Full-Spectrum Electrolyte Profile – This complete profile contains the following minerals: **Sodium Bicarbonate** – A well absorbed source of sodium, selected for its high dissolution rate. Bicarbonates are also used to aid digestion and help alleviate stomach distress issues. **Calcium Chloride** – An easily dissolvable source of both calcium and chloride. **Calcium Carbonate** – Chelated to carbonate (a salt of carbonic acid), calcium carbonate is a source of easily dissolvable calcium. **Magnesium Oxide** – A rich source of easily dissolvable magnesium. **Potassium Bicarbonate** – A colorless, odorless compound selected for its high dissolution rate. Bicarbonates are also used to aid digestion and help alleviate stomach distress issues. **Natural Caffeine** – COLA FLAVOR ONLY – Derived from green tea extract. **Manganese** – This trace mineral is necessary for optimal muscle cell enzyme reactions and for the conversion of fatty acids and protein into energy. **Vitamin B-6** – This water-soluble vitamin plays an active role in maintaining sodium-potassium balance. It also supports the metabolism of carbohydrates, fats, and protein. **Citric Acid** – Used in the minimal amounts needed to aid in the reaction process that creates carbon dioxide, the gas which gives effervescence to the product. **Sorbitol** – A natural calorie-free sweetener. **Stevia** – A natural, calorie-free sweetener derived from the leaves of *Stevia rebaudiana*, a plant native to Central and South America. It does not affect blood sugar levels or contribute to tooth decay like sugar does. **Avocado Oil** – A healthy oil used as a tablet-pressing lubricant. **Monk Fruit** – A natural, calorie-free sweetener that does not affect insulin production. The sweetness from monk fruit is not due to natural sugars like most fruits, but instead from its naturally occurring antioxidants called mogrosides. The Electrolyte profile:



Serving Size: 1 tablet (4.24g)

	Amount Per Serving	%DV*
Calories	7	
Total Carbohydrate	2g	1%
Vitamin B6 (as Pyridoxine Hydrochloride)	13mg	650%
Calcium (as Calcium Carbonate, Calcium Chloride)	100mg	10%
Magnesium (as Magnesium Carbonate, Magnesium Oxide)	50mg	13%
Caffeine (as Green Tea Extract)	20mg	
Manganese (as Manganese Gluconate)	3mg	150%
Chloride (as Calcium Chloride)	60mg	2%
Sodium (as Sodium Bicarbonate)	200mg	8%
Potassium (as Potassium Bicarbonate)	100mg	3%

Let's Make a Plan

1. Begin your hydration before you plan to ride. A good guide is the colour of your urine – it should be a light straw colour. If it is darker, you are already dehydrated.
2. If your ride is less than 2 hours in length clean pure water is all you need to remain hydrated.
3. Don't experiment with electrolyte products the day of your event or tour. Do your experimenting on regular club rides and see what works and what doesn't. **DO NOT USE SALT TABLETS!**

4. Proper hydration is a matter of taking in enough fluids and electrolytes to replenish about 1/3 of what has been lost to perspiration and respiration. As was noted previously, the body under exercise conditions cannot process any more fluids or electrolytes. To try to replace 100% of fluids and electrolytes invites nausea and cramping. Bottom-line you should plan on drinking 590 to 740 ml per hour (slightly more in hot conditions, but not to exceed 890ml/hr).

Post ride

Now that the body is not under the stress of exercise, it is a good time to both replace fluids lost and get some easily assimilated carbohydrates to help replace glycogen used up during your ride. There is a window of ½ to 1 hour after exercise when the body has a heightened ability to absorb carbohydrates. Specialized recovery drinks have the electrolytes, carbohydrates (30%) and protein (10%) that speeds recovery, but many cyclists swear by Chocolate Milk as their recovery drink of choice and is readily available almost anywhere.

Conclusion

As you can tell from this admittedly limited list of electrolyte products, there are a wide variety of products out there. They are produced by anyone from soft drink manufacturers to dedicated athletic nutritional companies.

I would certainly suggest – no demand- that you try these products before you attempt a long tour or a long-distance event. There is nothing worse than being queasy and cramped by a product that just doesn't work for you when you have another 60k to go. Most important though is that you hydrate – hydrate – hydrate.