

## Sweat Replacement and Hydration

Understanding proper hydration is a concept that is often misguided due to mass marketing and misleading claims that are not based on scientific evidence.

Numerous questions are raised pertaining to electrolyte replacement and proper hydration before, during and after exercise, so what does make a superior product?

### Maintaining Proper Hydration during Activity:

► Proper hydration means to replace what has been lost in amount and composition. CeraSport is a sweat replacement drink, and therefore the proportions of electrolytes found in the product match that which is lost through sweat.

► Furthermore, the ratio of potassium to sodium in the total body is not relevant to the formula for a sweat replacement.

What is relevant is the content of the fluid being lost (e.g. sweat). Most people lose more sodium than potassium, and thus the solution should have more sodium.

► For people who exercise occasionally (e.g. the weekend warrior who goes to the gym for 30 minutes), it is probably a matter of preference. In this case, it does not usually make too much of a difference what the person drinks.

► For the serious athlete who needs significant fluid replacement, it makes a big difference. This person will need high volumes of fluid to replace the sweat losses, and if he/she drinks the wrong solution, it often causes GI upset, weakness, potential for electrolyte imbalance, and in severe cases the need for IV solutions, etc.

► Sweat loss is different in different individuals, and

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Chris McDonald, 3x Ironman! Winner of Wanaka Challenge, New Zealand, Jan 2009

## Prevent Stomach Cramps

*"I am new to the sport of triathlon. I just did my first International distance in July, and I am aiming for a half this coming fall. I am trying to find that balance between electrolytes, water and carbohydrate intake. After running about 2 hours, I later had some stomach cramping. I am not sure if it was the exercise, electrolytes, not enough of them, heat, or just normal at this point?"*

In regard to the cramps you experienced post-exercise. There are a number of factors that can lead to GI distress post-exercise. These factors include, but are not limited to the duration of the activity, heat, humidity and overall nutrition and hydration status prior to the session. If an underlying level of mild dehydration exists, then it is common to experience GI distress during and/or after prolonged physical activity, especially in hot and humid weather. The combination of these factors put the body under a tremendous amount of physiological stress, resulting in GI disturbance and other symptoms.

## Sweat Replacement

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between conditioned and unconditioned persons. In general, conditioned athletes will sweat considerably, but the sodium concentration is less than the weekend warrior. One would not want too much sodium in the solution (e.g. WHO ORS) since this gives too much sodium (75 mEq / liter) and there is a risk of hypernatremia, or salt poisoning.

▶ WHO-ORS is appropriate for persons with significant diarrhea, in which case the sodium losses are higher (per liter).

▶ By contrast, the electrolyte concentrations in CeraSport are appropriate for both the serious athlete and weekend warrior. CeraLyte ORS is the solution which is optimized for diarrhea fluid replacement, as it has sodium and potassium, chloride and citrate levels that closely match the WHO ORS.

## Osmolarity and the CeraSport Advantage:

▶ The major benefit of CeraSport is related to the combination of high carbohydrate content, but without the osmotic penalty (explained in next paragraph) that comes with solutions that use sugar or glucose and the electrolyte mix.

▶ Osmolarity affects the rate of fluid absorption in the gut. The lower osmolarity of CeraSport is the key to its superiority. High osmolarity reduces absorption. If the solution a person consumes is hypertonic (e.g. higher than blood osmolarity) the osmolar forces act to bring fluid into the gut and this creates bloating and can cause diarrhea and vomiting. By contrast, low osmolarity acts, along with the glucose-mediated transport, to favor rapid absorption, while avoiding the GI symptoms.

▶ For example, the solutions that are used to prepare patients for a colonoscopy is simply a high osmolarity solution...this cleans you out pretty quickly! Why would anyone want to do this before, during or after exercising? !!

Direct comparison clinical studies between products are always best. However, based on the available information on composition of ORS solutions, CeraSport for sweat losses and CeraLyte for diarrhea losses are the best compositions and use the physiological principles learned through the development of such solutions. ■

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## Nutrition and Hydration

1. Evaluate your overall hydration status. What does your fluid intake look like on a daily basis? I suggest that you keep track and write down every single ounce of fluid that you consume over the course of 3-5 days. You may be surprised at how much you are or are not drinking. Awareness is the first step to correcting a problem. It is what we do consistently day in and day out that determines our ability to respond positively, recover and perform. Symptomatic episodes of dehydration that occur during training and/or events are more than likely a result of an underlying chronic problem, such as a nutrient deficiency or mild dehydration.
2. Evaluate your overall nutrient intake. Every single nutrient or lack of directly affects our bodies and our biochemistry. The ability to respond to, recover from and consistently perform physical activity is dependent on the quality of the food and nutrients that we are consuming on a daily basis.
3. Food consumption before and during activity is very individualistic and dependent on many factors. Part of becoming an endurance athlete is learning what specifically your body needs in order to perform at your best. This comes with experience!!
4. From a hydration standpoint I suggest the following general guidelines:

### Before Physical Activity

- Consume 12-16 ounces of CeraSport 1 to 1.5 hours before activity
- Consume 4-8 ounces of CeraSport 10-15 minutes before activity

### During Physical Activity

- Start drinking early to prevent dehydration!
- Always drink before you are thirsty.
- By the time you are thirsty you may have already lost 1-2% of your body weight due to fluid lost in sweat.
- Consume 6-8 ounces of CeraSport every 15-30 minutes of strenuous activity

### After Physical Activity

- Consume enough fluids to regain your body weight losses
- Urine is used as an indicator of hydration and should be pale yellow in color