Hydration management during physical activity is important for optimal performance and to reduce recovery time. The closer a person’s fluid intake matches their sweat losses, the better they will feel and perform.

During exercise, muscles generate more heat than when at rest, but the body needs to maintain its core temperature within a narrow range. In order to achieve a stable core body temperature the body produces sweat, which leads to subsequent fluid evaporation, cooling of the skin, the blood, and finally the inner body.

If dehydration occurs, the blood volume decreases and the various functions of the circulatory system are compromised. Oxygen and nutrient transport to muscle and other tissues is affected, as is the removal of waste products (e.g., lactic acid). Dehydration increases overall physiologic strain, revealed by increased body core temperature, increased heart rate and increased perception of fatigue. Exercise performance suffers.

Some studies suggest a fall in exercise performance of 2% or more for every 1% body weight loss as a result of dehydration.

For elite athletes or when hydration is of particular concern, the urine specific gravity may be determined (via hand-held refractometer).

3. Monitor for the signs and symptoms of dehydration

In addition to the common signs and symptoms of dehydration, monitor for additional effects:

- Reduced skin turgor (elasticity of the skin)
- Dryness of the mucous membranes
- Muscle cramps
- Impaired concentration

How to best prevent and relieve dehydration

Replacing lost fluids and electrolytes with an oral rehydration solution (Hydralyte) is the most important aspect of managing dehydration.

Oral rehydration solutions are scientifically formulated to contain the correct balance of glucose and electrolytes for rapid rehydration.
Hydralyte versus other hydration beverages

WATER

If a person is suffering from mild to moderate dehydration, water alone may not be optimal for recovery:

- Water does not contain appreciable quantities of electrolytes, to replace those lost through sweat and urine.
- Water uptake, in the absence of sodium and glucose, occurs by the slower process of passive diffusion.

STANDARD SPORTS DRINKS OR SUGARY BEVERAGES

- Rapid rehydration depends on the active co-transport of glucose and sodium molecules through the surface layer of cells of the small intestine. Unlike oral rehydration solutions, sports drinks do not contain the ideal balance of these ingredients. Rehydration is therefore likely to be sub-optimal.
- These beverages contain approximately FOUR times the sugar and one quarter of the electrolytes as Hydralyte.
- The high sugar concentration of many sports drinks may result in slower passage through the gastrointestinal tract, and feelings of fullness and discomfort.

Hydralyte formulation

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Function</th>
<th>Hydralyte per Liter (1.1 QT)</th>
<th>Standard sports drink (per Liter – approximate values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>Helps body to retain fluid</td>
<td>45–60 mEq</td>
<td>12–23 mEq</td>
</tr>
<tr>
<td>Potassium</td>
<td>Essential for nerve and muscle function</td>
<td>20 mEq</td>
<td>4–9 mEq</td>
</tr>
<tr>
<td>Chloride</td>
<td>Helps body to retain fluid</td>
<td>35–45 mEq</td>
<td>NA</td>
</tr>
<tr>
<td>Primary sugar</td>
<td>Assists with absorption of fluid and electrolytes</td>
<td>0.6 oz (glucose)</td>
<td>2.1–2.6 oz (glucose/fructose/sucrose)</td>
</tr>
<tr>
<td>Osmolality</td>
<td>WHO recommendation = 245 mOsm/L</td>
<td>Variable – not standardized</td>
<td></td>
</tr>
<tr>
<td>Calories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per Liter</td>
<td>80 (powder, solution) – 110 (effervescent tablets)</td>
<td>260–320</td>
<td></td>
</tr>
</tbody>
</table>

Benefits of Hydralyte

The most important physiological features are:

1. The correct balance of sodium and glucose leads to optimal activity of the sodium-glucose transporters in the intestinal lumen – this allows for rapid hydration.

Sodium and glucose bind to the transporter protein – driven by high sodium concentrations in the small intestine. This dual binding causes the transport protein to change shape, delivering sodium and glucose into the cell internals. At the same time, water moves into the cell internals by osmosis.

Sodium and glucose are both actively transported out of the cell into the blood, along with water.

2. The solution is hypotonic – this allows for effective rehydration while minimizing potential side effects such as unnecessary calories or a feeling of fullness/bloating.

It is important to know that water alone or sugary drinks (i.e. soda or sports drinks) do not contain the correct balance of sodium or glucose to allow for rapid hydration.

To join our health professional network and access additional resources please visit: www.hydralyte.com/healthprofessionals

QUESTIONS? Email us at education@hydralyte.com