

CONSIDERATIONS FOR HYDRATION AND NUTRITION FOR ATHLETES

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1. Facts to be aware of;

- a. There is no science that supports that humans need 8 glasses of water a day.
- b. The actual science stated that in a day, through food and fluids we consume 8 glasses of water a day.
- c. In general, we only need 48 ounces of fluid a day, which includes fluid found in food.
- d. Athletes do not need more fluids than the general public, except during practice and competition.
- e. The water industry has convinced the public that consuming water in ridiculous amounts is specifically related to health and wellness.
- f. There are more hyponatremic (water intoxication) events in sports in the U.S. than dehydration events in sport, when compared to other countries. The consequences of hyponatremia are often times more severe than dehydration.

2. For Athletes

- a. They do not need to over-hydrate during the day.
- b. If they are consuming fluids throughout the day, they should only consume fluids with a sodium gradient to help in the absorption, such as Propel.
- c. Athletes involved in sports that involve short burst of speed or power;
 - i. Athletes that are very fast or very powerful are generally more endowed with Type IIx fibers. These fibers specifically have lower intracellular sodium concentrations.
 - ii. If this athlete over-hydrates with a non-sodium fluid, they will suffer from severe muscle cramping more often when compared to an endurance athlete.
- d. Vitamin waters are a complete waste of money, and most do not have sodium to help in the absorption of the fluid.
- e. Drinking only water throughout the day is a terrible idea for athletes.
- f. **Energy drinks such as 5-hour energy, Red Bull, Amp, Monster can contribute to significant and catastrophic cardiac events in athletes. These drinks are banned in several countries because of the link to cardiac death. Children should NEVER be given these drinks. There is evidence that they can contribute to heart valve damage. These drinks can alter thermoregulation, fine motor skills and cause heart arrhythmias. Energy drinks do not actually give the exact amount of caffeine in the drink and the amount is often 4-5 times the amount allowed by the FDA in soda drinks. There is no controlled research on adrenaline release in high stakes contest with the intake of energy drinks. The clinical results however related to death are pretty impressive.**

3. Sport Performance

- a. Sport performance can be enhanced with a carbohydrate (CHO) solution, such as Gatorade.
- b. In most sports, the athlete will be able to delay the onset of fatigue with a CHO drink, prior to the game, during substitutions and half-time. This has been supported by a vast amount of scientific research. Gatorade or PowerAde are a valuable product for delaying the onset of fatigue.
- c. For athletes, if body weight (weight gain) is a concern (which will affect speed), fluid replacement can be with G2 which is a lower caloric drink with moderate levels of CHO and it still has the sodium gradient. This can be used at half-time. Propel will work for substitutions. If weight is not an issue, then Gatorade or PowerAde will work during substitutions. Performance is always enhanced with a CHO drink, so if calories are an issue, think about reducing calories away from the competition.
- d. Half-time suggestions for reloading carbohydrates for soccer, football, lacrosse, and basketball would include;
 - i. Cliff bars
 - ii. Luna bars
 - iii. Power bars
 - iv. Fig newtons
 - v. Gel packs

4. Nutrition Considerations Related to Performance & Recovery

- a. The most important recovery time is the first 15 minutes upon completion of the game.
- b. High glycemic index foods are best within the first 15 minutes after a game and are critical to recovery for the next game or practice.
 - i. Gatorade Recovery is best
 - ii. Gatorade
 - iii. PowerAde
 - iv. Candy bar
 - v. Gummy bears
 - vi. Fig Newtons
- c. All meals should be high in carbohydrates. In addition, the evening meal should have a full serving of protein (red meat or lean meat are best for athletes).
- d. Dairy products should be avoided for 3 hours prior to any game.
- e. Fruit juices or sauces with acid (tomato sauce) should not be consumed for up to 5 hours prior to competition.
- f. Do not drink orange juice prior to competition or use orange slices during competition.
- g. High fiber foods should not be consumed for up to 5 hours prior to competition.
- h. French toast is one of the best pre-game meals because of a perfect combination of protein and carbohydrate.

5. The Myth of Carbo-Loading

- a. Athletes should be consuming approximately 55-65% carbohydrates daily in their diet.
- b. The idea of pre-game carbo-loading came from marathon research that was based on carbohydrate depletion for 5 days prior to the loading.
- c. Since most athletes consume a diet fairly high in carbohydrates or at least they should be doing this daily (55-65% CHO, 15-17% protein, remaining in fat intake), there is no need to carbo-load.
- d. Carbo-loading the night before a meet or game could increase body weight significantly which would then decrease performance.
- e. The idea of having a pre-game meal together is a great social event. As soon as you add the word LOAD, the implication is that the athletes need to load up. Additional weight gain is has a negative correlation with sport performance in a majority of sporting events.
- f. Generally, athletes will be faster if they are lighter on competition day, not heavier.

Heat and Humidity Consideration

- a. The colder the fluid, the quicker the fluid is absorbed. This is so important. Keep the drinks on ice or partially frozen if possible.
- b. Body fat is an insulator. The more body fat the athlete has, the more difficult it is to dissipate heat.
- c. Keeping head hair wet will contribute to cooling off.
- d. Taking a cold shower prior to a game can aid in decreasing the core body temperature.
- e. Wearing an ice vest while on the sidelines will lower the core body temperature.
- f. Putting ice on the back of the neck will help lower the core body temperature.
- g. Wearing sun screen will prevent sweat evaporation which is how the body cools itself. Do not wear sun screen while participating in a sport. Exposure to vitamin D (sun) raises testosterone levels which is a positive correlation to sport performance and bone health. You cannot absorb vitamin D if you are wearing sun screen.
- h. The number one cause of heat related illnesses is sleep deprivation.
- i. High school athletes, specifically males going through growth spurts require 9-10 hours of sleep. Anything less than 8 hours will compromise their ability to thermo-regulate.

6. The recipe for a catastrophic heat illness;

- a. O-lineman or D-lineman in football who obviously have excessive fat mass
- b. Less than 8 hours of sleep
- c. Drinking water all day long
- d. Long hair or dreadlocks
- e. Excessive caffeine (energy drinks such as Red Bull, Amp, etc.)
- f. Creatine use
- g. Helmet on head
- h. Temperatures above 85°F

References can be supplied upon request.

Constant, F. & Jequier, E. (2010). Water as an essential nutrient: the physiological basis of hydration. *European Journal of Clinical Nutrition*. 64, 115-123.