

## NUTRITIONAL CONSIDERATIONS FOR ATHLETES

By Dr. Stacy Ingraham, The Training Edge

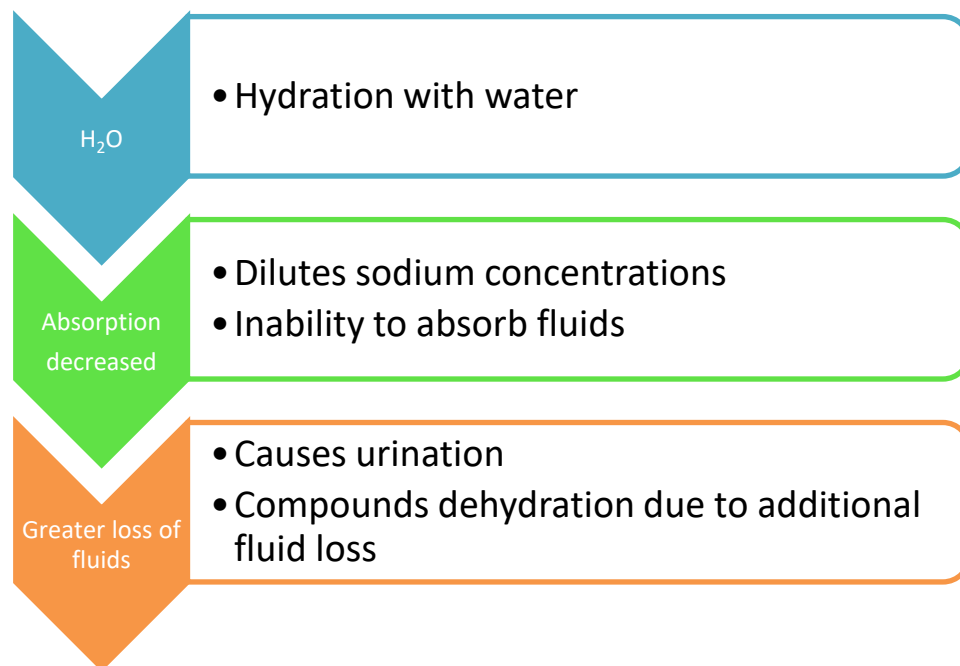
### Nutritional Considerations for the 21<sup>st</sup> Century

- Dehydration
- Hyponatremia (water intoxication)
- Calorically loaded drinks
- Energy Drinks redefined
- Budget issues
- Surplus
- Bacterial environments

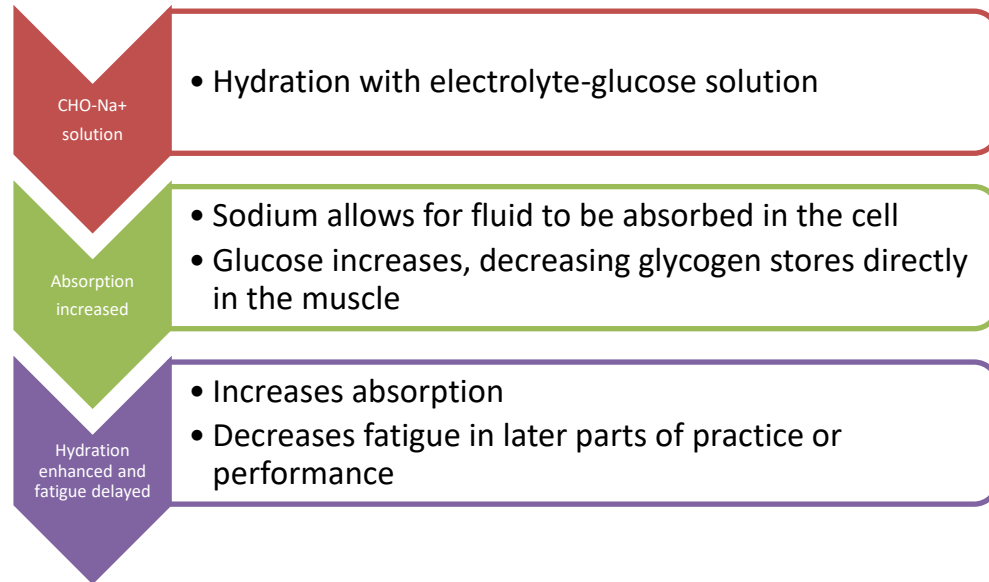
### Dehydration

- Hydration is best accomplished with a non-acidic glucose and sodium solution prior to and during competition.
- Sodium allows for the fluid to be absorbed into the muscle cell.
- Glucose replenishes the rapidly decreasing available glucose at the cellular level in the muscle.
- Drinking fluids every 15-20 minutes of competition is optimum for performance enhancement.

### Water Only Hydration in Sport



## Glucose-Sodium Fluid Hydration in Sport



### Fluid Recommendations

- Gatorade's Propel throughout the day or a water-sodium solution with a hint of flavor
- Water with meals
- Vitamin water turns in to expensive urine.
- Electrolytes (Gatorade-type products) during practice and competition or a water/sodium/glucose concentration
- Gatorade-type products following intense practices and all contests
  - 15-20 minute window of opportunity to replace glycogen stores in muscle for recovery
  - High glycemic foods
  - High carbohydrates
  - Consume a higher protein diet within 6 hours of completing high intensity bout, plus ample carbohydrates
    - 1.8-2.0 grams of protein per kg of body weight
    - 8-10 grams of carbohydrate per kg of body weight
- Caffeine is NOT a diuretic in a dehydrated or active state!!!!

### Recipe for an Electrolyte Solution

In a 500mL bottle, add 3 tablespoons of sugar and 1/8 teaspoon of salt. This solution creates a base with a 6 percent carbohydrate solution and 100 milligrams of sodium, the equivalent to a bottle of Gatorade.

Or

Add to 2 liters of water:

- 1 kool-aid package
- 5 mL salt
- 5 mL sea salt
- 125 mL sugar

### Energy Drinks Re-Defined

Today's energy drinks are not to be confused with sports drinks. Energy drinks are **discouraged** for athletes. Energy drinks today contain large amounts of caffeine and ephedra-like properties which can negatively alter thermoregulation and heart rate response to exercise. Additionally, there is evidence that energy drinks can cause heart valve damage in adolescent hearts.

Examples of these drinks are;

- **Red Bull**
- **Rockstar**
- **Burn**
- **Monster**
- **Full Throttle**
- **Amp**

### Additional Things to Consider Related To Nutrition

- Carbohydrates are the major source of energy during
  - Very high intensity anaerobic exercise
  - High intensity (>65%  $VO_2$ max) aerobic exercise
  - Prolonged aerobic exercise events
  - Intermittent high-intensity exercise sports
- All athletes should be on a diet that is;
  - 65% carbohydrates (minimally)
  - 12-15% protein
  - <30% fat
- Based on the above diet, carbohydrate loading is unnecessary and can contribute to 1-5 lbs in weight gain.
- Sport nutritionists recommend that athletes consume about 8-10 grams of carbohydrate per kilogram body weight daily
  - For a 70-kg athlete, this would amount to 560 to 700 grams of carbohydrate daily, or the equivalent of 2,240 to 2,800 Calories

- On a 3,500-Calorie daily intake, the carbohydrate would provide 65-80% of daily energy intake.
  - This amount of daily carbohydrate would help restore muscle glycogen levels
- Per kg body weight, sport nutritionists generally recommend about 5-7 grams of carbohydrate daily for athletes in general training, and about 7-10 for endurance athletes
- Research suggests high-carbohydrate diets may help training both physiologically and psychologically,
- Not all athletes need very high carbohydrate diets. Even some elite trained endurance athletes may sustain training on lower amounts, but training may be more stressful psychologically.
- Products to Consume During Competition or between events
  - Gel packs
  - Goos
  - Sports beans
  - Squincher
  - Gel blocks
- Breakfast is the most important meal of the day for everyone, especially athletes. Breakfast is to “Break the Fast.” Pre-race breakfast; French toast is the very best meal.
- Athletes should be grazing, not held to three meals a day. They should be consuming 5-7 smaller snack / meals a day. One of the best grazing food is cereal. Carrying around baggies of dry cereal like golden grahams is ideal.
  - Pre-game meals should;
    - Not include anything acidic
    - No juice
    - Not include anything with tomato sauce
    - Not include anything diary
    - Low fat
    - Have moderate amounts of protein
    - Be very high carbohydrate-low glycemic index
- Vitamins and Minerals
  - It is recommended that athletes in Minnesota take 600 IU of vitamin D<sub>3</sub> daily
  - Supplementation of Vitamin E at 400 IU daily has been associated with reduction in muscle soreness.
  - Women who are menstruating should take 600 mg/day ferrous sulfate a day. Take it with vitamin C or orange juice or spaghetti sauce. Do not take it in the presence of calcium or caffeine.
  - For men and women if blood test come back with serum ferritin <25, an iron supplement is recommended throughout the season, unless there is family history of hemochromatosis.
- Following hard interval workouts, long runs, weight workouts, plyometrics, the meal of choice would include;

- Dark poultry, such as chicken or turkey thighs or drumsticks, steak or hamburger.
- Eggs are an excellent source of protein.
- Broccoli either raw or microwaved, spinach, fruits and berries are excellent sources of nutritious and nutrient dense calories.

**Consumption Equations based on Time Range Prior to Competition Start**

<b>Time Prior to Competition</b>	<b>Grams/kg of body weight</b>	<b>Body Weight (kg)</b>	<b>Total Grams of CHO</b>	<b>Total calories of CHO</b>
	<b>(A)</b>	<b>(B)</b>	<b>(A) X (B) = (C)</b>	<b>(C) X 4</b>
1 hour prior to competition	1.0			
1 hour prior to competition- example	1.0	55 kg	55 grams	220 calories
2 hours prior to competition	2.0			
3 hours prior to competition	3.0			
4 hours prior to competition	4.0			

**Leaning out for Sport**

The evidence is clear, the leaner you are, the more likely you are to reach your sport potential.

**Recommendations for leaning out.**

1. Know your daily caloric requirements.
2. Eliminate all high fat snacks; cookies, cakes, pastries, crackers, ice cream, chips, etc. In replacement snack on the;
  - a. Eggs (boiled eggs are a great snack)
  - b. Meat
  - c. Cheese
  - d. Nuts
3. Eliminate calorically loaded drinks. No soda with calories, Gatorade (use G2 or propel), drink water with meals.
4. Use the dessert plate instead of a dinner plate. No second servings. Suggestions for meals.
  - a. Breakfast
    - i. Eggs
    - ii. Fruit
    - iii. Yogurt

b. Lunch

- i. Lean meat (chicken, turkey, salmon)
- ii. Rice, pasta or potatoes
- iii. Vegetables
- Or
- iv. Salad, yogurt, boiled eggs

c. Dinner

- i. Salad using spinach, arugula & kale. Add any or all;
  - 1. cooked chicken
  - 2. sunflower or pumpkin seeds
  - 3. peppers
  - 4. tomatoes
  - 5. broccoli
  - 6. hard boil eggs
  - 7. salt
  - 8. fat-free dressing
- ii. or
  - 1. Lean meat (chicken, turkey, salmon)
  - 2. Rice, pasta or potatoes
  - 3. Vegetables