PROPER NUTRITION BEFORE, DURING AND AFTER EXERCISE

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It is becoming all too common today. A young or even professional athlete collapses during practice and dies from dehydration or heat stroke. The true irony of this tragic situation is that both of these conditions may be prevented. It all centers around eating and drinking the right foods at the right times for the planned activity. It really is as simple as it sounds.

The American College of Sports Medicine (ACSM) has developed specific guidelines for the maintenance and restoration of proper hydration before and during exercise. Muscles are 75% water and in a dehydrated state they will become less responsive and tend to cramp. The ACSM's position is "that adequate fluid replacement helps maintain hydration and, therefore, promotes the health, safety and optimal physical performance of individual participating performance in regular physical activity." These recommendations are endorsed by the United States Olympic Committee Division of Sports Medicine and can be easily applied.

Research has demonstrated that the athlete who enters in competition in a dehydrated state is at a disadvantage. To off set this, athletes must maintain proper hydration levels on a daily basis. "It is recommended that individuals consume a nutritionally balanced diet and drink adequate fluids during the 24 hour period before an event, especially during the period that includes the meal prior to exercise" according to the ACSM guidelines. It is also well documented, as well as logical, that exercising in the heat accentuates the performance impairing effects of dehydration. This is accentuated in sports that require several layers of protective clothing which causes further heat buildup. Always remember to dress appropriately for both the activity and the conditions you will be exposed to while exercising.

For training and competition the recommendation is to drink about 17 ounces of fluid approximately 2 hours before exercise. This will ensure that your hydration level is adequate and also allows time for the excretion of excess ingested water. While training, the recommended amount of fluid is 4.6 liters daily (or just under 5 quarts). Research has shown that relying on voluntary fluid consumption during the day rarely meets this level and leads to entering into competition or practice in a dehydrated state. Remember to drink even when you are not thirsty to keep from dehydrating.

To ensure you're getting enough fluid, drink from a refillable container throughout the day that holds a measurable amount of liquid. For example, Tupperware quart sized "sippy-bottles" can be found in most supermarkets. Finally, remember to monitor the color and volume of urine. Infrequent and dark colored urine is a strong indicator of dehydration. When properly hydrated your frequency of urination during training, competition and off days should be the same and color should be light.

As for during exercise, the American College of Sports Medicine states "athletes should start drinking early and at a regular intervals in an attempt to consume fluids at a rate sufficient to replace all the water lost through sweating or consume the maximal amount that can be tolerated." In other words, in training and competition, drink as much as you can. Research has shown that even low amounts of dehydration (a 2% loss of body weight) impairs performance, so drink as much as you can while exercising and do not wait until you're thirsty.

The first step to maintaining proper levels of hydration is to drink; the second step is to make sure that the fluids are getting absorbed in the body. Fluids that are slightly cool, 59° to 72°F, are absorbed the best. Furthermore, the ACSM noted that drinks which taste better and that contain sodium (0.5-0.7 grams per liter of water) will be consumed in greater amounts than plain water. Sodium "promotes fluid retention and the possibility of preventing hyponatremia." (Hyponatremia is a condition when there is not enough sodium in the body relative to the amount of fluid present. It is well documented that drinking only water during prolonged exercise can create this life-threatening imbalance.) In addition, better tasting drinks are more palatable and the presence of sodium and other minerals will stimulate the body's thirst mechanism - just like eating salted popcorn at the movies makes you thirsty. Coaches take note here: to get your athletes to remain hydrated, use tasty drinks that contain sodium and other minerals such as potassium and magnesium.

The ACSM delineates different requirements for maintaining hydration for exercise lasting under one hour and for intense exercise lasting longer. For shorter exercise periods - less than one hour - "there is little evidence of physiological or physical performance differences between consuming a carbohydrate-electrolyte drink or plain water." For periods of activity longer than one hour the recommendation is the "addition of proper amounts of carbohydrates and /or electrolytes to a fluid replacement solution. Carbohydrates can be sugars (glucose or sucrose) or starch (e.g. maltodextrin)." Look for sports drinks that supply about 60 grams of carbohydrates per quart. Over 75 grams per quart (approximately one liter) will run the risk of irritating your stomach. Be aware that high amounts of fructose when taken alone has been shown to cause vomiting and diarrhea so be sure that sports drinks which contain fructose are blended with other carbohydrates such as sucrose, glucose and maltodextrin. In summary, drink primarily water during shorter workouts under one hour, yet during long workouts and tournaments that may last all day, a source of carbohydrate is definitely needed to maintain energy levels.

After exercise, liquids are necessary to replace both lost fluids and nutrients. Sweat contains water, sodium, chloride, magnesium and other minerals. Athletes who exercise in excess of two hours per day can lose considerable amounts of nutrients commonly called 'electrolytes.' Low levels of these electrolyte minerals will lead to cramping and loss of coordination. The rapid and complete replacement of electrolyte minerals found in muscle is essential in accelerating the recovery from training and competition. In this regard the ACSM recommends to "drink at least one pint of fluid for every pound of body weight" lost through sweat during exercise.

The bottom line is to maintain proper hydration on a daily basis and to fully and rapidly replace the fluid and nutrients lost during exercise. Water alone is fine for short workouts, however, to recover from training more than once a day, in warm climates, during competition or from long workouts, electrolytes as well as carbohydrates need to be replenished. The window of opportunity to replace the carbohydrates burned from exercise is 20 minutes. It is essential that you have some carbohydrates within 20 minutes of completing a workout. Drink some juice or a sports drink with a 50:50 ratio of water or have a piece of fruit. This refuels your muscles the fastest to prepare them for your next workout.

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