## Fluids

Water may be the most critical single nutrient needed to ensure that the athlete can perform up to his/her trained or conditioned ability. Since heat production is increased with ALL forms of exercise, it is necessary for athletes to maintain water balance so this excess heat can be dissipated through the production of sweat. With the evaporation of sweat, heat is lost from the blood that circulates near the skin. The rate of sweat loss varies between people and with the temperature, but it is common to see water losses of up to 3 liters (over 6 quarts!) per hour in trained athletes exercising in hot and humid environments. Water losses that represent 6% of body weight may occur with 2 hours of training in high heat.

DEHYDRATION occurs when fluid losses are greater than 1% of body weight, and athletic ability is impaired with a 2% loss of body weight. This means a 100 lb athlete who loses 2 pounds during exercise may no longer be performing up to his/her trained ability because of the excessive water loss. Typical symptoms of inadequate fluid intake during exercise include: thirst, fatigue, loss of coordination, mental confusion, irritability, dry skin, elevated body temperature, and reduced urine output. Heat stroke, caused by severe heat injury and inadequate hydration, has a mortality rate of 80%. To assure that an athlete learns to drink sufficient amounts of fluid during exercise, weight should be taken before exercise and after exercise. The difference in weight in pounds is equal to the the amount of fluid, in pints, the athlete should have consumed during exercise. For instance, an athlete losing 4 pounds during exercise should learn to consume 4 additional pints of fluid during that activity.

GENERAL GUIDELINES:

- Adequate daily consumption of fluids to **avoid** thirst.
- Limit consumption of caffeine and alcohol containing fluids. They act as diuretics and can increase fluid loss.
- Drink at least 8 to 16 oz of fluid 2 hours before exercise
- Drink at least 4 to 8 oz of fluid immediately before exercise
- Drink at least 4 to 8 oz of fluid every 15 to 20 minutes during exercise (whether thirsty or not)
- Drink at least 8 to 16 oz of fluid after exercise
- Drink at least 8 oz of fluid with each meal
- Drink at least 8 oz of fluid between meals.

Note: Sports drinks *should* be used in place of water, regardless of the length or intensity of the activity. They encourage drinking, and improve the delivery of both carbohydrate and water to the muscles. They also, importantly, help to maintain blood volume.