

Nutrition

Fact Sheet

Fueling the School-Aged Athlete – Drink to Keep Hydrated



Water – Vital for Life

Most people have heard the saying you can live without food for a month but only survive without water for a few days.

Water is vital because it is

- necessary for transporting nutrients in the body,
- a component of blood, and
- found in every cell of the body.

For athletes, water is especially important because it helps cool the body and maintain a safe core temperature. Through the process of perspiration and evaporation an athlete can continue to work hard without becoming dangerously overheated.

Lack of Water

Not replacing water lost during physical activity can prevent an athlete from reaching his maximum potential. A loss of 2% or more of body weight as water can impair athletic performance (Maughan & Shirreffs, 2008).

School-aged athletes may be more sensitive to water loss. One study found it took only a 1% loss of body weight as water to produce a decrease in aerobic performance in boys (Wilk, Yuxiu, & Bar-Or, 2002).

Dehydration can occur when an athlete does not drink enough water or loses too much water from sweating. Exercising vigorously in cold weather or extreme heat can increase the risk for dehydration (McArdle, Katch, & Katch, 2008). Dehydration can lead to heat-related illnesses.



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Heat cramps, heat exhaustion, and heat stroke are forms of heat-related illness. Severe heat-related illness requires immediate medical help and is often life-threatening. Mild to severe symptoms of heat-related illness include

- clammy skin and muscle spasms;
- fatigue, dizziness, nausea, vomiting, rapid pulse; and
- mental confusion, hot skin with or without sweating, and coma (Howe & Boden, 2007).

The combination of high environmental temperature and humidity can be extremely dangerous for school-aged athletes. Heat-related illness is more common when the environment is very humid because less sweat is evaporated. The American College of Sports Medicine (ACSM) recommends canceling sporting events when environmental heat stress (measured by the wet bulb globe temperature) is high (Howe & Boden, 2007).

Intentional Dehydration – An Unsafe Practice

Some school-aged athletes in sports with weight categories like wrestling, boxing, or weight lifting believe they need to attain a certain weight to compete. To quickly drop weight, they dehydrate before a sporting event by restricting fluids, excessively exercising, using laxatives, diuretics, or hot environments, such as saunas or plastic sweat suits. (American Academy of Pediatrics [AAP], 2005). As a result, the risk of heat-related illness dramatically increases when an individual starts exercising in a dehydrated state (McArdle et al., 2008). Intentionally dehydrating to lose weight can be dangerous and should be avoided. This practice can decrease performance because the athlete feels weak, and, in extreme cases, it may be life-threatening.

Monitoring Hydration

School-aged athletes should be encouraged to pay attention to their hydration status and realize the more they sweat the more they need to drink. Replacing water lost during sweating will maintain hydration. Thirst is considered the best gauge for an individual athlete's fluid needs during exercise (Beltrami, Hew-Butler, & Noakes, 2008). However in many sports situations, athletes have been shown to drink too little or too much (Maughan & Shirreffs, 2008). There may not be opportunities to drink during exercise, or thirst may be ignored. Compared to adults, children dehydrate easier, and their thirst mechanism is not well developed (AAP, 2005). A study found junior hockey players replaced only 60% of their sweat losses during practice despite numerous



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opportunities to drink (Palmer & Spriet, 2008). Thirst may not be enough to prompt young athletes to drink and stay hydrated. Monitoring hydration in young athletes typically includes

- weighing before and after exercise, and
- observing the color and amount of urine produced.

Usually well-hydrated individuals produce urine in large volumes, light in color, and without a strong smell (McArdle et al., 2008). Dark yellow urine can be an indicator the body needs more fluid, but certain vitamins and drugs may also cause color changes.

Fluid Replacement Strategies

Because of limited research, school-aged athletes are often advised to follow the hydration recommendation made for adult athletes (Shirreffs, Casa, & Carter III, 2007). In general, drinking some fluid before, during, and after intense exercise is advised to prevent dehydration. Fluid intake should be tailored to the individual athlete because of differences in sweat rate and sweat composition (ACSM, 2007). The fluid replacement strategies for a large football player practicing in summer heat will be dramatically different from a petite gymnast practicing in a cool gym.

The Goals of Fluid Replacement

Goals	Accomplished by
Before exercise – normal hydration	<ul style="list-style-type: none">• routine drinking and eating• 2–4 hours prior to event, slowly drink beverages
During exercise – prevent excessive dehydration that decreases performance	<ul style="list-style-type: none">• drink when necessary based on sweat rate and duration of exercise• individual sweat rate is the difference in weight before and after an hour of exercise. One pound of sweat loss represents 16 ounces of fluid. Meet individual needs by periodically drinking, such as 8 ounces every 30 minutes for a sweat rate of 1 pound per hour.• for high intensity events longer than 1 hour, carbohydrates and electrolytes from beverage and/or food might be appropriate
After exercise – replacing fluid and electrolyte losses	<ul style="list-style-type: none">• with sufficient time, adequate water, regular meals, and snacks that include some salty foods will restore normal hydration.

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Tips for Keeping School-Aged Athletes Hydrated

- Remember milk, juice, other beverages, and soup all count as fluids.
- Bring a water bottle to school or drink from the water fountain between classes to satisfy thirst.
- Pack a water bottle for practice.
- Make drinks available on side-lines.
- Schedule fluid breaks every 15–20 minutes during activity longer than an hour.
- Drink 2–3 cups of fluid for every pound lost to regain weight lost during exercise.
- Remind children to drink water.



Drinking Too Much

If water consumption is greater than water output, blood sodium levels drop and water intoxication can occur. Symptoms include headaches, blurred vision, cramps, convulsions, and possibly death. This can happen when athletes drink too much plain water or in extreme endurance events, from excessive loss of body sodium (ACSM, 2007). Monitoring weight is important because an athlete that gains weight during a competition is drinking more than they need.

- Drinking too much or too little could affect a school-aged athlete's performance and health.
- School-aged athletes should monitor their hydration by paying attention to thirst, sweat rate, and urine output and color.
- Determining how much to drink should be customized to meet each individual athlete's needs according to the goals of fluid replacement (see *The Goals of Fluid Replacement* table).

For More Information

American College of Sports Medicine. www.acsm.org

American Dietetic Association. www.eatright.org

Best Beverage Bets. www.opi.mt.gov/PDF/Health/Fit/beveragefinal.pdf

Bottled Water Basics. www.epa.gov

Nutrition for Everyone-Basics-Water. www.cdc.gov

National Athletic Trainers' Association. Parents' and Coaches' Guide to Dehydration and Other Heat Illnesses in Children. www.nata.org

President's Council on Physical Fitness and Sports. www.fitness.gov

SCAN—Sports, Cardiovascular, and Wellness Nutritionists – A Practice Group of the American Dietetic Association. www.scandpg.org

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For more information, contact NFSMI at 800-321-3054 or www.nfsmi.org.

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