NCAA®

GUIDE LINE 2c

Prevention of Heat Illness

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Practice or competition in hot and/or humid environmental conditions poses special problems for student-athletes. Heat stress and resulting heat illness is a primary concern in these conditions. Although deaths from heat illness are rare, constant surveillance and education are necessary to prevent heat-related problems. The following practices should be observed:

1. An initial complete medical history and physical evaluation, followed by the completion of a yearly health-status questionnaire before practice begins, should be required. A history of previous heat illness, and the type and duration of training activities for the previous month, also are essential.

2. Prevention of heat illness begins with aerobic conditioning, which provides partial acclimatization to the heat. Student-athletes should gradually increase exposure to hot and/or humid environmental conditions over a period of seven to 10 days to achieve heat acclimatization. Each exposure should involve a gradual increase in the intensity and duration of exercise until the exercise is comparable to that likely to occur in competition. When conditions are extreme, training or competition should be held during a cooler time of day. Hydration should be maintained during training and acclimatization.

3. Clothing and protective gear can increase heat stress. Dark colors absorb solar radiation, and clothing and protective gear interfere with the evaporation of sweat and other avenues of heat loss. Frequent rest periods should be scheduled so that the gear and clothing can be loosened to allow heat loss. During the acclimatization process, it may be advisable to use a minimum of protective gear and clothing and to practice in T-shirts, shorts, socks and shoes. Excessive tape and outer clothing that restrict sweat evaporation should be avoided. Rubberized suits should never be used.

4. To identify heat stress conditions, regular measurements of environmental conditions are recommended. Use the ambient temperature and humidity to assess heat stress (see Figure 1). Utilize the wet-bulb temperature, dry-bulb temperature and globe temperature to assess the potential impact of humidity, air temperature and solar radiation. A wet-bulb temperature higher than 75 degrees Fahrenheit (24 degrees Celsius) or warm-weather humidity above 90 percent may represent dangerous conditions, especially if the sun is shining or the athletes are not acclimatized. A wet-bulb globe temperature (WBGT) higher than 82 degrees Fahrenheit (28 degrees Celsius) suggests that careful control of all activity be undertaken.

5. Dehydration (hypohydration) must be avoided not only because it hinders performance, but also

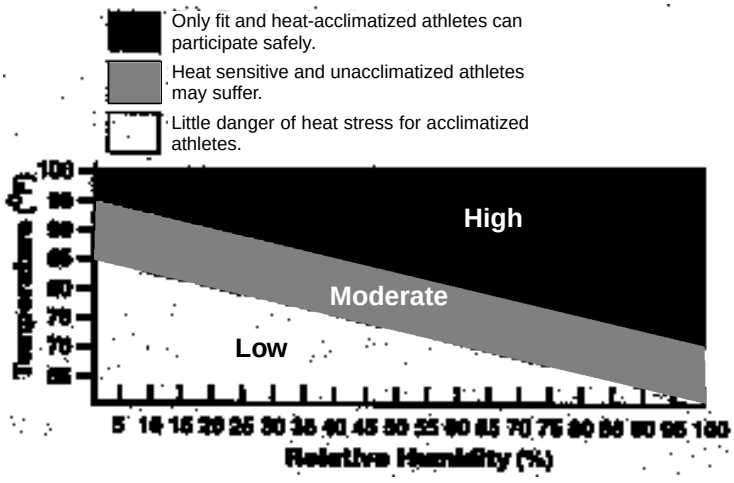

Figure 1: Temperature-Humidity Activity Index

because it can result in profound heat illness. Fluid replacement must be readily available. Student-athletes should be encouraged to drink as much and as frequently as comfort allows. They should drink one to two cups of water in the hour preceeding practice or competition, and continue drinking during activity (every 15-20 minutes). For activity up to two hours in duration, most weight loss represents water loss, and that fluid loss should be replaced as soon as possible. Following activity, the athlete should rehydrate with a volume that exceeds the amount lost during the activity. A two-pound weight loss represents approximately one quart of fluid loss.

Carbohydrate/electrolyte drinks, while not necessary to maintain performance, seem to enhance fluid intake. If carbohydrate-replacement fluids are provided, care must be taken to ensure adequate gastric emptying of the fluid. Therefore, carbohydrate concentration should not exceed eight percent. Electrolyte solutions are seldom necessary since sodium and potassium should be maintained with a normal diet.

6. By recording the body weight of each student-athlete before and after workout or practice, progressive hypohydration or loss of body fluids can be detected, and the potential harmful effects of hypohydration can be avoided. Those who lose five percent of their body weight or more over a period of several days should be evaluated medically and their activity restricted until rehydration has occurred.

7. Some student-athletes may be more susceptible to heat illness. Susceptible individuals include those with: inadequate acclimatization or aerobic fitness, excess body fat, a history of heat illness, a febrile condition, inadequate rehydration, and those who regularly push themselves to capacity. Also, prescription and over-the-counter drugs, such as antihistamines and pseudoephedrine, may increase the risk of heat illness.

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8. Student-athletes should be informed of and monitored for signs of heat illness such as: cessation of sweating, weakness, cramping, rapid and weak pulse, pale or flushed skin, excessive fatigue, nausea, unsteadiness, disturbance of vision and incoherency. If heat illness is suspected, prompt emergency treatment is recommended. When training in hot and/or humid conditions, athletes should train with a partner or be under observation by a coach or athletic trainer.

First aid for heat illness

Heat exhaustion—Symptoms usually include profound weakness and exhaustion, and often dizziness, syncope, muscle cramps and nausea. Heat exhaustion is a form of shock due to depletion of body fluids. First aid should include rest in a cool, shaded environment. Fluids should be given orally. A physician should determine the need for electrolytes and additional medical care. Although rapid recovery is not unusual, student-athletes suffering from heat exhaustion should not be allowed to practice or compete for the remainder of that day.

Heatstroke—Heatstroke is a medical emergency. Medical care must be obtained at once; a delay in treatment can be fatal. This condition is characterized by a very high body temperature and usually (but not always) a hot, dry skin, which indicates failure of the primary temperature-regulating mechanism (sweating), and possibly seizure or coma. First aid includes immediate cooling of the body without causing the student-athlete to shiver. Recommended methods for cooling include using ice, immersion in cold water, or wetting the body and fanning vigorously. Victims of heatstroke should be hospitalized and monitored carefully.

References

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