Marathons in the heat, "tough man" races in extreme conditions, and preseason football in late summer. These are just some of the examples of exercise and competition that pose special problems for the physically active individual. Proper planning and the presence of adequately trained personnel can make these extreme conditions manageable and much safer. If handled properly, these situations should be little more than an inconvenience for participants. If not addressed, the consequences can lead to the worst kind of tragedy; a preventable death. Sport- and exercise-related deaths due to hyper- or hypothermia are rare, but they can occur. In fact, heat stroke is the third most common cause of exercise-induced death in US high school athletes, following head injuries and cardiac disorders.\(^1\) The athletic trainer must be aware of the environmental conditions that can influence safe participation and be prepared with a plan of action. Following proper standards of professional care, professional position statements and guidelines, and educating participants about prevention and risks will lessen the danger of a serious, and often preventable, catastrophe.

This chapter addresses the environmental issues of hyperthermia (heat), hypothermia (cold), and lightning safety.

Upon completion of this chapter, the student will be able to:

- Explain the metabolic factors that contribute to thermoregulation
- Recognize the metabolic and environmental factors that contribute to heat loss and heat gain
- Name the signs and symptoms of heat- and cold-related injury and illnesses
- Outline appropriate prevention strategies to avoid heat- and cold-related conditions