In any type of physical activity or sport, athletes are susceptible to allergic reactions. Allergic reactions are immunological responses to stimuli including insect bites or stings, dust, pollen, plants, foods, medications, and exercise. The body’s outward immunological response can range from mild urticaria, or hives, to life-threatening situations such as respiratory distress.

Although this article addresses the management of allergic reactions that might occur in athletes, its major focus is on emergency management of anaphylactic shock, which can develop from a variety of stimuli. Anaphylactic shock can be best defined as an acute immunological hypersensitivity to an allergen (Booher & Thibodeau, 2000). Prompt medical care is needed for any athlete who is experiencing anaphylaxis, especially if the response affects the athlete’s airway, breathing, or circulation. In some cases, emergency treatment (i.e., epinephrine) is required to control the allergic reaction. Epinephrine acts as a vasoconstrictor to relieve signs and symptoms associated with anaphylactic shock.

Athletes commonly participate in outdoor physical activity, which can increase contact with allergens that cause “hay fever” or trigger asthma episodes or anaphylaxis. It is important to define the various types of allergens that might cause anaphylaxis. The early recognition, management, and treatment of the signs and symptoms connected with anaphylactic shock are discussed in this article. The options for treating individuals with known immunological hypersensitivities should be known to athletic trainers and therapists.

**Key Points**

- Athletic trainers and therapists must be aware of the emergency management protocol for allergic reactions.
- Anaphylaxis can become a life-threatening situation.
- Educating the athlete can help prevent the onset of severe symptoms.

**Key Words:** anaphylaxis, allergen, epinephrine pen

**Causes of Allergic Reactions**

It is imperative that the athletic trainer or therapist obtain a thorough medical history from athletes before sport participation to identify any previous allergic reactions. Understanding the different types of allergic reactions can significantly aid in the recognition, management, and treatment of anaphylaxis (Blumenthal & Sherman, 1997; Grant, Murray, & Bergeron, 1994). Types of physical stimuli that cause allergic reactions fit into the following categories.

**Direct Contact**

Certain physical agents that come into direct contact with the skin can cause an acute allergic reaction. Latex in gloves (Lee & Kim 1998) and quick-drying adherents used in athletic taping and agricultural chemicals used on athletic fields can cause an allergic response. A small percentage of athletes also experience cold urticaria, or an acute allergic reaction to...
the direct application of ice (Horan, Sheffer, & Briner, 1992).

Exercise

Although exercise itself is not an allergen, it can induce signs and symptoms associated with various allergic reactions. The signs and symptoms associated with asthma and exercise-induced bronchospasm, as well as heat urticaria (prickly heat), can be caused by physical activity (Blumenthal & Sherman, 1997).

Foods

A wide variety of foods including spices, shellfish, legumes, fruits, and vegetables (see Figure 1) can cause an allergic reaction. These reactions are usually attributed to an inherited predisposition for hypersensitivity to the food item. Reactions to food are usually not as rapid as those seen with insect bites or stings.

Inhaled Substances

Known allergens that are inhaled include dust, pollen, and chemicals. Inadvertently inhaling the quick-drying adhesive sprays used for athletic taping could cause a chemical allergic reaction (Velasquez & Drummond, 1999). In the outdoor environment, the exposure to inhaled substances such as pollen is year-round.

Insect Bites and Stings

The venom from a variety of bees, wasps, and spiders can cause a reaction. Reactions to insect bites or stings can vary from hives to respiratory distress or failure, which can occur within a matter of minutes.

Medications

Anaphylaxis can occur as a result of an allergic reaction to an absorbed, ingested, injected, or inhaled medication. As stated previously, it is imperative to obtain a thorough medical history to identify known over-the-counter or prescription medications (e.g., sulfa drugs, penicillin) that are known to cause acute allergic reactions in the athlete.

Pathophysiology, Signs, and Symptoms of Anaphylactic Shock

Athletic participation can result in exposure to a wide variety of physical stimuli that could cause an allergic reaction. In anaphylactic shock, the athlete might display some or all of the signs and symptoms associated with a variety of allergic reactions (Booher & Thibodeau, 2000; Grant et al., 1994). From a pathophysiological perspective (Table 1), the body recognizes that an allergen is present and then initiates a widespread release of histamine and other vasodilators (Nowak & Handford, 1999). The body’s initial response to the release of histamine and other chemicals is peripheral vasodilation, which then begins the cascade of physiological events that can produce the various signs and symptoms of anaphylactic shock. Epinephrine and/or antihistamines should be administered to decrease the body’s adverse response to the allergen. Immediate recognition of the signs and symptoms and prompt treatment are vital in preventing anaphylactic shock, which can lead to serious injury or death.

Emergency Management

In the medical management of an allergic reaction, it is vital to have a well-established emergency medical plan. The plan will facilitate the care of an athlete who is experiencing significant medical problems, a developing reaction, or an initial non-emergent reaction that later progresses.

Figure 1 Foods that can cause an allergic reaction.