

# Awareness is key to preventing heat- and cold-induced athletic injuries

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Extreme heat or cold can cause dangerous and potentially fatal side effects in athletes. A literature review appearing in the December 2012 issue of the *Journal of the American Academy of Orthopaedic Surgeons* (JAAOS) provides an overview of the risk factors, signs and symptoms, and management of various conditions related to excessive heat and cold exposure.

"Both extreme heat and cold can be challenging for athletes during training and competition," said lead study author Benjamin Noonan, MD, MS. "One role of the team physician is to educate coaches and athletes on the risks of exposure to these conditions and how to best prevent and manage their adverse side effects."

## Cold Exposure

Injuries related to excessive cold also are caused by an imbalance between [heat production](#) and heat loss, and can cause the body's core temperature to significantly drop, and/or an extreme drop in the tissue temperature and loss of blood flow in the extremities. Appropriate and adequate clothing can prevent cold-related injuries. [Heat dissipation](#) is greatly enhanced once clothing becomes saturated from sweat, rain or snow. The primary cold-related injuries include:

- Hypothermia

- Frostbite

## Heat Illness

Heat-related illness are common, with heat stroke—the most severe side effect of [extreme heat](#) exposure—being the third leading cause of death in athletes after cardiac disorders and neck traumas, according to the review. "This is tragic because the consequences of severe heat illness can be mitigated by early detection and recognition by the team physician," said Dr. Noonan.

Heat stroke is commonly reported during the first four days of sports practice each year. "A slow introduction into activity to allow for acclimation in the summer months, instead of jumping into two football practices a day," can help prevent heat illness, said Dr. Noonan. Also, athletes should take plenty of water breaks. If an athlete presents with the symptoms of heat illness or stroke, "we should not hesitate to check rectal temperature to gauge [heat illness](#) severity; as we think that early recognition and intervention lead to improved outcomes."

Increases in core body temperature during exercise are the result of changes in the balance of how much heat the body is producing and releasing. Heat is generated during exercise, most often in working muscles, and must be transferred to the skin and released into the environment to avoid overheating. Heat that is not released contributes to elevated core body temperature, and can result in mild to severe, and even life-threatening, illness and injury. Heat-related conditions—from least to most severe—are:

- Heat Edema (Swelling)
- Heat Syncope (Fainting)
- Heat-associated Cramping

- Heat Exhaustion
- [Heat Stroke](#)

Provided by American Academy of Orthopaedic Surgeons

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