

Injuries on the Golf Course — Do You Know What to Do?

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A GOLF COURSE is a great place to spend three to four hours in pursuit of recreation, but overzealous pursuit of that recreation can result in significant injuries. Although golf is not considered a high-risk game, people die on golf courses every year, and many more are injured or suffer a serious medical problem. Common, yet serious problems are heat stroke, heart attack, lightning injury, and bee or wasp stings.

While people vary widely in their ability to tolerate heat, several factors have been identified that predict who will be most likely to suffer some form of heat reaction. These include poor aerobic conditioning, obesity, increasing age and blood pressure, male sex, alcohol consumption, and drug use (prescription and narcotic).

Excessive heat exposure and intolerance to it produce a series of events, beginning with heat cramps and heat fatigue, then progressing to heat exhaustion, and finally to heat stroke. No one really knows what produces heat cramps, but it can be assumed it is caused by the lack of several essential salts and minerals. Observations show individuals have fewer cramps when their fluid intake is adequate and their diet includes citrus fruits, bananas, fresh salads, and table salt.

Heat fatigue refers to the unusually rapid onset of weakness and fatigue in the unacclimatized athlete exposed to high temperature and humidity. When the condition is not treated with prompt rest and fluid replacement, it may progress to heat exhaustion, which is characterized by severe fatigue, nausea, a throbbing headache, and the feeling you may lose consciousness.

The fainting sensation is caused by dilation of the veins in an attempt to carry more blood to the skin's surface and release built-up heat. This dilation of the veins causes pooling of blood in

the lower extremities and decreased blood pressure, which results in the sensation of, or actual blacking out.

Heat stroke is a true medical emergency manifested by the cessation of sweating, a body temperature of 105 degrees, and mental confusion and disorientation.

The most efficient and safest way to treat these heat reactions is total body fanning after wetting with moderately warm water. Prompt replacement of fluids and electrolytes is also essential, but remember that in 99% of the cases, the number-one problem is water depletion, not the loss of salt. Giving salt pills to someone who is hot, woozy, perspiring, and who is experiencing muscle cramps is not likely to help him. He needs to be given plenty of cool liquids (preferably water) after getting him out of the sun, removing most of his clothes, and fanning him off with towels. Also, laying him down with his feet elevated will help resolve the feeling he'll faint.

If in fact it appears you are dealing with true heat stroke, an EMS unit should be called.

Prevention of these heat reactions makes more sense than treating them once they occur. Be certain plenty of water is available, and that shaded benches are scattered liberally throughout the course. A clearly visible thermometer and an area to post severe heat conditions should be provided.

Heart disease is one of the leading causes of death in the United States. How can you recognize the signs of a heart attack or an impending heart attack on the golf course?

Obviously, if the individual is conscious it would be very helpful to get a brief description of how he is feeling. Some common symptoms of a heart attack are a severe heavy pressure-like chest pain that may radiate into the neck, shoulders, or arms. This is frequently accompanied

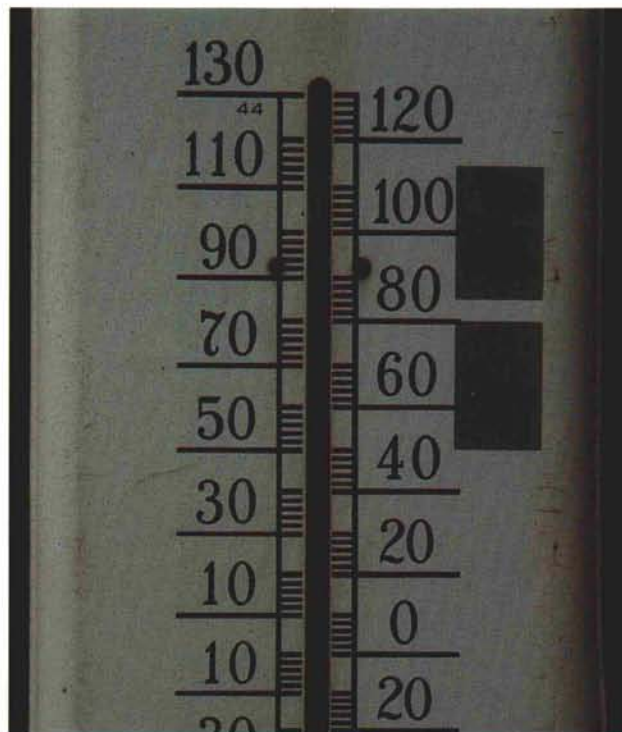
by the sensation of shortness of breath, nausea, profuse sweating, rapid heart-beat, and dizziness.

Typically this pain is related to exercise; it grows worse with activity, and becomes better with rest. Arrange for transportation to the clubhouse or shop area. Discourage the victim from smoking a cigarette or having a drink of alcohol to calm his nerves. Find a physician and arrange for transportation to a clinic or hospital. Do not let the victim drive himself away from the course.

If you are faced with the unfortunate situation of finding an unconscious or semi-conscious person, immediate action is imperative. At this point, hopefully, you have taken a CPR course from your local Red Cross office. Immediately send someone for an EMS unit. Next, be certain to clear the victim's airway. Sometimes this simple step can be life saving. Check for a pulse and respiration, and begin CPR if you can't find either. If possible, while you're waiting for EMS to arrive, check for any med-alert necklace or bracelet that may provide clues to the victim's current condition. Continue CPR until EMS arrives.

Like the ancient Greeks who believed lightning bolts were cast from the heavens by an angry Zeus, most golfers believe nothing short of an act of God should interfere with their round. Too frequently they continue their game despite a rapidly approaching thunderstorm. From 400 to 600 people die every year from lightning injuries and other natural disasters. Thousands more are injured but survive. Many of these injuries occur on the golf course.

Lightning is nothing more than a discharge of electrical energy equalizing the potential difference between negatively charged storm clouds and the positively charged earth. Normally the air insulates against the discharge of this electrical field until a potential difference of ap-



(Top) Good communication between course personnel can save lives.

(Left) First-aid supplies should be readily available.

(Above) As temperatures rise, so do the chances of heat-related injuries.

proximately 30,000 volts exists. At that point a leader stroke dives to the ground. When that happens, our unfortunate golfer or crew member comes into danger. He's a sitting duck to help dissipate this enormous amount of electrical energy, particularly if he's wearing metal objects (good conductors) like golf spikes on his shoes, walking across a moist fairway or green, or holding metal golf clubs or tools.

Victims of a lightning strike may be injured in three different ways. They may be directly hit by a lightning discharge. They may receive a splash injury, which occurs when the lightning bolt seeking the path of least resistance jumps from a vertical object with high resistance, like from a tree to the human body. Thirdly, if lightning strikes the open ground, a person walking or standing nearby may be injured. Of victims seriously injured, it is estimated that 20 to 30 percent die, and perhaps 70 percent suffer permanent damage.

The medical consequences of a lightning strike include a large variety of injuries, depending on the exact circumstances of the accident. A variety of cardiovascular, musculoskeletal, eye and ear injuries, and skin damage have been reported in medical literature.

Again, as in the treatment of heat injuries, the best way to treat lightning accidents is prevention. Current weather conditions should be monitored. If a

severe weather warning is issued or lightning is sighted, a warning should be sounded to clear the course. Anyone caught in the open should immediately discard metal objects and squat down or curl up in the lowest area of ground nearby. If a rubber or plastic raincoat, or any other non-absorbing material is available, squatting on this may provide protection from any ground currents if a lightning bolt should strike the ground nearby.

If a lightning strike does occur, prompt attention should be directed to the victim's apparent injuries. Any bone or joint injury should be splinted before he is taken to a medical facility. If the victim is unconscious but breathing and has a pulse, I would advise not moving him until an EMS unit has arrived to insure his spine is properly stabilized before he is transported. CPR should be initiated to anyone with apparent cardiopulmonary arrest, even if he has been unattended for several minutes, because there have been many reports of miraculous recoveries from lightning-induced cardiac arrest.

Bee or wasp stings usually are present with painful, red, swollen papules at the site of the sting. These can be simply managed by applying ice and elevating the area to minimize swelling. Over-the-counter drugs like Benadryl will help decrease the itching and local reaction. The more dangerous reaction to a bee

or wasp sting is called an anaphylactic response. This may include a fall in blood pressure, difficulty breathing, and generalized hives. It can occur quite suddenly, and it requires prompt medical intervention. Faced with this situation, immediately transport the victim to the nearest medical facility.

Hopefully none of these medical problems will ever occur on your golf course. Possibly some preventive education will help ensure that they don't, but if the worst should happen, prompt decisive action may minimize the consequences.

REFERENCES

Kenny, W. Larry: Physiological Correlates of Heat Intolerance. *Sports Magazine* 2:279-286 (1985).

Hanson, Peter G.: Heat Injury in Runners. *Physician and Sports Medicine* 7:6:93, June 1979.

Jaffe, Rebecca: Sports Medicine Emergencies. *Primary Care* Vol. 13, No. 1, March 1986.

Cooper, M. A.: Lightning Injuries: *Prognostic Signs for Death*. *ANN Emerg. Med.* 1980: 9(3): 134-8.

Apfelberg, D. B., Masters, F. W.: Pathophysiology and Treatment of Lightning Injuries. *J. Trauma* 1974: 14 (June): 453-60.

Strasser, E. J., Davis, R. M., Menclay, M.J.: Lightning Injuries. *J. Trauma* 1977: 17(4): 315-9.

Craig, Steven R.: When Lightning Strikes. *Postgrad Med.* Vol. 79, No. 4, March 1986.

	Heat Fatigue	Heat Exhaustion	Heat Stroke
Symptoms	Hot, fatigue	Fatigue, nausea, headache	Disorientation, incoherent speech
Mental Status	Clear	Usually conscious but may faint	Confused or unconscious
Body Temperature	100.4 - 103	104+	105.8+
Skin	Flushed	Pale	Flushed
Sweat	Profuse	Profuse	May not be sweating
Treatment	Oral fluids, allow to cool down	Fanning and IV fluids by EMS personnel	Cool with ice, IV fluids, and prompt transfer to hospital