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Don't Forget the Sunscreen to Stay Healthy

By Robert Gallo, MD



Sunny skies and warm temperatures make us go back to our favorite outdoor sporting activities. While there are many health benefits of an active lifestyle, outdoor sport enthusiasts must keep in mind the potential adverse effects of prolonged sun exposure.

Studies have demonstrated that athletes participating in endurance sports with potential for prolonged exposure to ultraviolet radiation have increased rates of skin cancer. The risk of skin cancer tends to correlate with hours of exposure. Factors such as increased altitude and sweating, which increases the light sensitivity of the skin, may increase these effects. Children are particularly sensitive to the effect of prolonged ultraviolet radiation: intermittent sun exposure and burns during childhood have been associated with an increased risk of skin cancer as an adult.

Sunscreen may not be completely protective against skin cancer. While sunscreen has been proven to decrease the incidence of squamous cell carcinoma, its benefit in reducing the risk of basal cell carcinoma and melanoma has not been so clearly described. Some studies have suggested that sunscreen may be detrimental because participants tend to remain active in the sun longer than they otherwise would have been if they had not been using sunscreen.

The American Academy of Dermatologists has offered several suggestions to protect against the harmful effects of prolonged sun exposure:

- **If possible, avoid training between the hours of 10 a.m. and 4 p.m.**, when the ultraviolet radiation is most intense.
- **Sunscreen should be applied at least 20 minutes before beginning outside exercise**, in all areas not covered by clothing, and reapplied every two hours.
- **Always use water-resistant sunscreen** with a UVA and UVB protection and a Sun Protection Factor (SPF) of at least 30.
- **Avoid suntanning** — Tanning is a sign of damaged skin and a “base tan” does not protect against sunburn.
- **To prevent melanoma in the eyes, wear sunglasses.**

References

- Ambros-Rudolph CM, Hofmann-Wellenhof R, Richtig E, Müller-Fürstner M, Soyer HP, Kerl H. Malignant melanoma in marathon runners. *Arch Dermatol*. 2006 Nov;142(11):1471-4. American Academy of Dermatology
- Autier P. Sunscreen abuse for intentional sun exposure. *Br J Dermatol*. 2009 Nov;161 Suppl 3:40-5.
- Kennedy C, Bajdik CD, Willemze R, De Gruijl FR, Bouwes Bavinck JN. Leiden Skin Cancer Study. The influence of painful sunburns and lifetime sun exposure on the risk of actinic keratoses, seborrheic warts, melanocytic nevi, atypical nevi, and skin cancer. *J Invest Dermatol*. 2003 Jun;120(6):1087-93.
- Lin JS, Eder M, Weinmann S, Zuber SP, Beil TL, Plaut D, Lutz K. Behavioral Counseling to Prevent Skin Cancer: Systematic Evidence Review to Update the 2003 U.S. Preventive Services Task Force Recommendation [Internet]. SourceRockville (MD): Agency for Healthcare Research and Quality (US); 2011 Feb. Report No.: 11-05152-EF-1.
- Moehrle M. Outdoor sports and skin cancer. *Clin Dermatol*. 2008 Jan-Feb;26(1):12-5.



Keep an Eye Out for Heat Illness This Summer

By Kenneth Fine, MD



Heat illness is the third most common cause of death in athletes behind cardiac and head injuries, but is distinguished from these other causes because it is entirely preventable. Proper awareness, prevention, and treatment will hopefully decrease the approximately 400 deaths per year in the United States.

Causes

Heat illness is caused when the body's heat regulation system fails and is unable to maintain a safe body temperature. Cooling off by sweating is the most important method the body uses to spread out heat during exercise. Factors that can lead to heat illness include increased heat and humidity, improper clothing, poor conditioning, obesity, poor hydration, and certain medical conditions such as sickle cell trait. Some drugs and medications can also predispose an individual to heat illness, including amphetamines, anti-depressants, alcohol, diuretics, and thyroid medications.

Types of Heat Illness

- **Heat edema:** Swelling of hands and feet occurs, usually in older and less conditioned athletes. There are usually no permanent or dangerous effects.
- **Heat syncope:** Passing out after exercise in hot conditions. This may be due to dehydration and loss of blood flow to the brain.
- **Heat cramps:** Cramps may occur in large muscle groups, such as the quadriceps, hamstrings (thigh), or gastrocnemius (calf). These cramps

are due to exertion and may be due to decreased hydration or loss of electrolytes, especially sodium.

- **Heat rash:** Red papules (spots) occur in areas of friction that are covered by clothing (neck, groin, waist, armpits). Generally, there are no permanent or dangerous consequences.
- **Heat exhaustion:** Nausea, vomiting, fatigue, excessive sweating, and dizziness are symptoms of this condition, which, if not treated, may lead to heat stroke, which is life-threatening. Heat exhaustion is distinguished from heat stroke by a normal mental status and a core body temperature less than 40°C (104°F).
- **Heat stroke:** This is the most severe form of heat illness and may lead to permanent injury and death. Symptoms of heat stroke include body temperature more than 104°F and mental confusion or change in consciousness.
- **Hyponatremia:** This condition is caused by decreased sodium in the bloodstream and may be fatal. Over-hydrating with water after extreme sweating in long events such as marathons and not replacing electrolytes, namely sodium, may lead to hyponatremia.

Treatment

Recognizing heat illness at an early stage is critical for preventing serious complications. Athletes with any of the more mild heat illnesses should be removed from their activity and moved to a cool environment. If conscious and able to drink, the athlete should be given oral fluids. Water is

acceptable but fluids with electrolytes (sports drinks) are preferable. The athlete can also be cooled with ice packs to the groin, armpit, and neck. In more serious cases, especially if heat stroke is suspected, emergency medical personnel must be called and the athlete should be transported to a hospital via ambulance.

Prevention

It is extremely important that athletes acclimatize to hot weather by gradually increasing their work-out times and intensity over a period of at least one to two weeks. Awareness of the heat index and modification or avoidance of physical activity in extremely hot conditions should be considered. However, it must be emphasized that heat illness can occur even in less than extreme heat. Other tips to prevent heat illness:

- Wear loose, light fitting clothing
- Avoid medications that predispose to heat illness
- Hydrate regularly and often

If the athlete is already thirsty, it may be difficult to adequately hydrate quickly enough. A general guideline is for children to drink 2–3 cups of water every hour and teens to drink 5–6 cups per hour. Water is adequate for hydration for most athletic events. However, for events lasting more than 2 hours, sports drinks with electrolytes should be encouraged in order to prevent hyponatremia. The most important factor in preventing heat illness is early recognition by coaches and medical personnel.

For more information on heat illness, download our free tip sheet at www.STOPSportsInjuries.org/heatillness.

Play Youth Sports But Learn to Be Safe

By Kevin G Shea, MD, and Christopher K. Ewing, DO



Forty years ago approximately 4 million boys and girls participated in high school athletics nationwide, 7.4% of which were girls.¹ Today this figure has nearly doubled to 7.6 million participants with 41% being girls.¹ For both genders the rate of participation continues to rise at an average rate of 45,000 athletes a year. The importance and benefits of participation in youth sports are well documented. With childhood obesity rates triple what they were a generation ago, sports participation should be actively encouraged.² However, being active comes with the risk of injury.

Among high school athletes participating during the 2010–2011 athletic year, the most common regions of the body injured for each sport include:

- **Football** — It carries the highest overall risk of injury of any high school sport at 3.5 injuries for every 1,000 times the athlete participates in a practice or game.^{1,3} The top three locations of injury were: head/face (24%), knee (17%), and hand/wrist (11%).³
- **Soccer** — For female athletes the top three locations of injury were: ankle (29%), head/face (22%), and knee (15%).³ In contrast, 26% of male soccer injuries occurred at the head/face, 18% at the ankle, and 17% at the knee.³
- **Basketball** — Basketball had the highest risk of ankle injuries for male athletes out of all sports surveyed (31%).¹ Head/face injuries (24%) were the second most common with the knee a distant third, comprising 10% of injuries.³ Female athletes followed the same trend: ankle (25%), head/face (24%), and knee (20%).³
- **Baseball and Softball** — Although both genders had the lowest rates of injuries out of all sports, the injury patterns between the two are strikingly different.³ Male athletes demonstrated a far greater chance for hip/thigh/upper leg (13%) and shoulder injuries (18%), compared to females' injuries at 3% and 4%, respectively. Females injured their wrist (24%) and ankle (19%) more, with males sustaining only 9% and 8% of injuries.

- **Volleyball** — It has the third lowest rate of injury behind softball/baseball.¹ However, these athletes are still prone to injury, with by far the majority of injuries occurring at the ankle (39%), knee (17%) and head/face (13%).³
- **Wrestling** — It has the second highest rate of injury out of the sports discussed here (2.01 injuries for every 1,000 activities).^{1,3} Wrestling athletes most commonly sustain injuries to the head/face (23%), shoulder (16%), and knee (13%).³

To help prevent injuries, it's important for athletes to remember to warm up consistently before games and practices,

wear properly fitted equipment, get a pre-season physical, and tell a parent, coach, or physician if they are experiencing any type of pain. It's not worth it to possibly make an injury worse by "playing through the pain."

References

1. National Federation of High School Associations. 2010-11 High School Athletics Participation Survey. 2011.
2. National Health and Nutrition Examination Survey, Obesity rates among all children in the United States. Centers for Disease Control and Prevention. Last Updated April 2012.
3. Comstock D, Collins CL, McIlvain NM. Data from the High School Sports-Related Injury Surveillance Study, US, 2010-11. Unpublished Raw Data, 2011. <http://injuryresearch.net/resources/1/rio/2010-11OriginalSummaryReport.pdf>.



For more information on youth sports injury prevention, visit www.STOPSportsInjuries.org



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Surfs Up and So Are Injuries

By Daniel J. Solomon, MD, Mark S. Lawler, MD, Warren G. Kramer III, MD

Recreational and competitive surfing enjoys worldwide popularity in warm coastal communities. Common, yet ever changing, to all surfing is the medium — water and waves. Thus, injuries can be categorized as environmental, impact (board, bottom, or other surfers), and overuse (from paddling).

Environmental Injuries

Environmental factors can include sun, wind, and water exposures. Long-term effects of sun-exposure or sunburns may reveal themselves years after exposure as skin cancer.

Hypothermia and dehydration can be deceptive. Some protection is afforded with proper wetsuit and preparation, but conditions should always be checked ahead of time. The combination of wind and cold-water exposure heightens risk of hypothermia.

Sea conditions, including tide, current, temperature, anticipated wave height and shape, as well as bottom consistency, should be checked before getting in the water. Unfortunately, even the best surfers are at risk for drowning and death in the changing sea. Additionally, sea creatures, including jellyfish, sea urchins, and of course, sharks, can create an unfriendly environment.

Recent research evaluated acute competitive surfing injuries and found a rate of 13 injuries per 1,000 hours. Risk of injury was 2.4 times greater when surfing in waves overhead and 2.6 times greater when surfing over a rock or reef bottom relative to a sandy bottom.

Older surfers, over age 40, have higher injury rates than those under 20.

Contact Injuries

Contact injuries, including cuts and bruises and fractures, are especially common. Many of these involve the surfers face from being hit by the board.

Non-contact injuries include shoulder overuse type injuries, as well as knee and ankle injuries.

Proper awareness and preparedness can help avoid many of these injuries and can increase performance and enjoyment of surfing, including the following:

- Having proper gear — a board free of sharp fiberglass, a nose protector, and proper length leash is critical. As mentioned, gear for sun and cold, including sunblock, rash guard, wetsuit, booties, and sometimes helmet can prevent acute and future issues.
- Understanding weather and wave conditions
- Surfing with a partner
- Hydrating properly before and after your time in the water
- Performing pre-surf conditioning and flexibility activities 15-minutes before getting in, such as stretching and jumping jacks or a short run

Core strength and swimming proficiency are also essential in making surfing a safe and enjoyable part of your active lifestyle.

References

- Nathanson A, Bird S, Dao L, Tam-Sing K. A Prospective Study of Surfing-Related Injuries Among Contest Surfers. *Am J Sports Med.* 2007.
- Nathanson A, Everline C, Renneker M. *Surf Survival, The Surfer's Health Handbook.* Skyhorse Publishing. 2011.

