Sports and the Skin

With Americans' increased interest and participation in sports has come an increase in sports-related skin disease. All physicians should be aware of the many possible manifestations.

Lewis H. Kaminester, MD, FAAD, FACP

Skin—the body's largest organ—is well designed to protect us from hostile elements in our environment, including physical agents, infectious agents, biting and stinging animals, and chemicals. We shall discuss each in turn.

**Mechanical Trauma**

Physical training affects the properties of human skin. Cutaneous hypertrophy results from habitual endurance training. The skin may thus adapt to physiologic stress by increasing its mass and structural strength. However, when stress levels exceed tolerance levels, injury occurs.

Abrasions and lacerations are widespread, especially in contact sports. When present, they must be cleaned thoroughly. All dirt and other foreign particles, like asphalt or gravel, must be removed. This fosters healing and helps prevent infection. Residual particulate matter deep in the skin can produce a tattoo, most common on the knees, ankles, and elbows. After bleeding is controlled, wash the wound with soap and water, then apply an antibacterial cleanser, an antibacterial ointment, and a dressing. The occlusive ointment promotes faster reepithelialization under the crust—and thus quicker healing with less scar formation.

Such wounds can be prevented by use of proper equipment (eg, face masks in ice hockey and racketball, kneepads in volleyball and roller skating, and elbow pads for cyclists) and inspection of playing fields and swimming areas to remove hazardous rocks, glass, and other debris.

Friction injuries are common, especially to the hands and feet. Blisters involve shearing forces against the epidermal layers of the skin, which result in fluid accumulation between the epidermis and dermis (Figure 1A). Such blisters can be caused by improper footwear or repeated trauma to uncallused skin (as in rowing, tennis, weight lifting, gymnastics, and bowling). Studies using experimentally induced blisters on palms and feet show that healing occurs fastest after repeated draining of the blister fluid within the first 36 hours while leaving the top of the blister intact.

Calluses are thickened areas of skin caused by chronic rubbing and pressure. Calluses are protective; they most commonly appear beneath the metatarsal heads at the balls of the feet, along the medial edges of the big toes, and on the palms. When calluses get dry, they can undergo painful fissuring. Treatment involves first softening the callus with warm-water compresses, then paring it down and having the patient apply moisturizing creams or ointments regularly. Keratolytic products alone may be used in the absence of fissuring.

Proper footwear is essential to minimize recurrence of both blisters and calluses on the feet. Chronic foot irritation can lead to ulceration and secondary infection (Figure 1B). Redistribution of

Lewis H. Kaminester is Diplomate, American Board of Dermatology, and practices dermatology in North Palm Beach, Florida.

APRIL 1986

197
weight via footpads and arch supports is often curative. Wearing protective gloves can prevent blister formation on the hands. However, some athletes like the "macho" look of calluses on their hands.

**Corns** are localized calluses with hard, often yellowish-colored cores. When pared, the core becomes more visible; paring also reveals loss of skin lines without punctate bleeding points (helping to distinguish corns from plantar warts). Corns may be severely painful and debilitating. Treatment involves removal of the offending pressure source (usually over a bony prominence) and use of 40% salicylic acid plasters after paring the exophytic growth.

**Calcaneal petechiae** ("black heel") originally described in basketball players, can also occur in other sports with lots of jumping, twisting, turning, and sudden stops. The eruption is usually bilateral and fairly symmetrical, located on the posterior and lateral convex aspects of the heels (Figure 1C). These discrete, confluent posttraumatic petechiae are asymptomatic and require no treatment. Protective pieces of felt inside the shoes or sneakers may prevent recurrence.

A **subungual hematoma** may follow strong impact of the big toenail against the inside of a sneaker or other object. Old lesions may mimic melanomas. Pain and subsequent nail-plate damage can be prevented by boring a hole through the top of the plate with a small drill or a well-heated, unfolded paper clip. Repeated injury can result in loss of the toenail plate (Figure 1D). Prevention again involves wearing proper footwear.

**Jogger's toe** actually involves subungual hemorrhages in several (commonly the third, fourth, and fifth) toes. This appears due to constant pounding of the foot during running. Erythema and edema may precede the ecchymoses. Persistent jogger's toe can lead to onycholysis (separation of the nail plate from the nail bed), thickening of the toenail bed, and nail deformity.

**Tennis toe** is subungual hemorrhage of the longest (usually the first or second) toe from trauma within the sneaker.

**Turf toe** describes pain and swelling of the great toe from sports activity on artificial turf. Extensor and flexor tendons across the interphalangeal and metatarsophalangeal joints become inflamed. Inadequate shoes worn on artificial surfaces appear uniquely traumatic to the big toe—with no margin of "give." Solutions to this problem might include development of better artificial turf, shoes cushioned to minimize trauma of the great toe sliding forward into the tip, and education of coaches and athletes as to the entity's genesis and prevention.

**Jogger's nipples** can occur in men who wear loose fabric shirts (Figure 1E) and women who run without brassieres. Nipples become painful and tender; they sometimes fissure and even bleed after long-distance running. Application of ointment or protection with hypoallergenic adhesive tape can promote healing and prevent recurrence. A nipple dermatitis with associated mastitis can also be seen in boxers, presumably due to chest blows.

"Cooper's droop" refers to tearing of Cooper's ligaments within the breast tissue, causing tender (and ultimately ptotic) breasts. Full-figured women especially should wear supportive bras to prevent this acute and chronic disorder.

**Stretch marks** (striae cutis distensae) of mild to moderate proportions may occur in up to 70% of young women and 40% of young men by age 21. Their cause remains unknown. However, weight lifting can aggravate and extend such striae beyond their usual margins (Figure 1F). The upper back, shoulders, and upper flanks (near the axillae) are most commonly involved in weight lifters.

**Piedogenic papules** are herniations of fat through connective tissue layers at the lateral aspects of the heels. When weight is placed on the foot, they become more prominent and painful. They seem to afflict some weight lifters and joggers. There is no known cure, but simple rest may eliminate the pain of these lesions.

**Injuries due to Cold**

Cold-weather sports include mountain climbing, skiing, ice fishing, jogging, curling, and ice hockey. Weather often changes capriciously in cold, mountainous areas. The skin has great adaptability to low temperatures: Vasconstriction decreases cutaneous circulation to a minimum during extreme cold. However, the use of alcohol and other drugs during athletics can impair these natural homeostatic mechanisms and help precipitate some of the following problems...
more quickly.

Frostnip—the most common injury seen on the ski slopes—is superficial frostbite of the nose, cheeks, chin, or ears. The ambient temperature must be below freezing and the wind chill factor high. Affected skin is painful and erythematous. Treatment consists of rewarming the area with any available means and going indoors as soon as possible. Temporary blistering and local anesthesia may occur. Preventive measures include not washing or shaving the face on a day of cold exposure and applying oil-based creams (including sunscreens) prior to exposure. Penile frostbite, actually a type of frostnip, has been described in joggers.12

Frostbite refers to deeper freezing of cutaneous and deeper tissues. Body tissues at 15°C or below exhibit obvious erythema; the skin has both a sensation of burning and hyposthesia to stimuli other than cold. Below 10°C there is increased reddening with severe numbness. Below −2°C cellular metabolism stops. Protein denaturation occurs, along with formation of extracellular ice crystals, causing dehydration of cells. The correct treatment is rapid rewarming in water at 38°C and strict avoidance of refreezing. The freeze-thaw-freeze cycle causes increased tissue damage, so it is better to leave an affected limb frozen a little longer than to risk repeat freezing after thawing.

Epiphyseal destruction by frostbite has been documented in adolescents. A year or so after frostbite, fingers may become misshapen and shortened due to epiphyseal damage in the distal phalanges.13

Mountain climbing can put particular stress on the feet. The heels suffer when climbing up and the toes when coming down. Heavy perspiration with wet socks can cause trench foot, leading to ulcerations and infections (and predisposing to frostbite when the temperature drops). Special vent-opening parkas and pants with several zippers can help achieve better control of skin temperature elsewhere on the body surface.

Essential cold urticaria may occur in swimmers, hunters, skiers, and ice skaters. Cold wind constitutes a particularly effective stimulus. Fever, headache, arthralgia, and leukocytosis often accompany the urticarial reaction. The diagnosis is usually confirmed by inducing a hive with an ice cube against the skin. One should also check for elevated cold agglutinins in serum samples. Treatment includes protective clothing and oral antihistamines. Cold desensitization has been successful in selected cases.14

Exposure to cold weather can also plague patients who have cryoglobulinemia or cryofibrinogenemia. Intravascular precipitation of proteins after cooling can produce purpura on exposed areas, patchy livedo reticulares, cold urticaria, Raynaud’s phenomenon, and atypical ulcerations of the legs. Related underlying diseases may include subacute bacterial endocarditis, leprosy, syphilis, leukemia, liver disorders, rheumatoid arthritis, collagen-vascular abnormalities, and carcinoma.

Raynaud’s phenomenon and Raynaud’s disease refer to paroxysmal constriction of small arteries and arterioles in the extremities, usually precipitated by cold, leading to pallor and often cyanosis. Raynaud’s phenomenon is associated with an underlying disorder—such as occupational trauma in pianists, typists, and sewing machine operators; occlusive arterial disease, including Buerger’s disease in smokers; and collagen-vascular diseases, particularly lupus erythematosus, rheumatoid arthritis, and scleroderma. The term Raynaud’s disease is used when no known disorder underlies the vasoconstriction.

Chilblains, localized inflammatory lesions, represent another abnormal reaction to cold. They occur more often in children—on the fingers, heels, thighs, and nose. Erythema proceeds to blistering and then normal resolution. Avoidance of cold is the only preventive strategy.

Finally, cold temperatures and low humidity levels generally dry out the skin. This may induce itching, cracking, and irritation.

Injuries due to Heat

Cholinergic urticaria, produced only occasionally by excessive heat and exercise, is mediated by acetylcholine. Treatment consists of strictly avoiding heat and overexertion.

Miliaria can occur as tiny, superficial, thin-walled vesicles 1–2 mm in diameter (miliaria crystallina) or as minute, intensely itchy red papules in large numbers (miliaria rubra, or prickly heat). These types represent different levels of sweat duct obstruction. Individuals show

APRIL 1986

203
SPORTS AND THE SKIN:
LESIONS DUE TO MECHANICAL TRAUMA

A. Typical sports-related blister on the thumb
B. Secondarily infected wound due to chronic sneaker trauma
C. Calcaneal petechiae ("black heel") in a basketball player
D. Chronic subungual injury (from triathlon competition)
E. Jogger's nipple, caused by a coarse fabric garment
F. Extensive stretch marks in a weight lifter's axillary area

Figure 1
striking variability in their susceptibility to this problem. The only effective treatment is avoidance of sweating.

Application of excessive heat in one area of skin may produce erythema ab igne, a persistent reticulated erythema sometimes leaving residual hyperpigmentation. Athletes should be warned that overuse of hot packs can cause this problem, which was first described in older English women sitting too close to open fireplaces.

**Sun Damage**

Many sports are played outside in the sun, notably golf, tennis, baseball, and soccer. These players may thus develop the adverse effects of chronic sun exposure—premature wrinkling, flat brown solar lentigines (“liver spots”), premalignant actinic (solar) keratoses, and frank skin cancers (including basal cell carcinoma, squamous cell carcinoma, and the often fatal malignant melanoma).15,16

While early-stage skin cancers can be treated by simple excision or by electrodesiccation and curettage, they are better prevented by routine use of sunscreens with a sun protective factor (SPF) of 15 or higher. The SPF is a multiple of the time one can be exposed to the sun without getting burned. For instance, a person who can tolerate only twenty minutes of sun (unprotected) before burning should theoretically tolerate 300 minutes wearing a sunscreen with an SPF of 15. However, this often does not hold true, especially for the person engaged in vigorous sports activity; sweating as well as swimming washes away much of the protection. Thus, during exercise, sunscreens should be reapplied at least every few hours, no matter how high the SPF factor.

Sports enthusiasts taking certain medications can also develop photo-drug eruptions. Among the drugs commonly implicated in this problem are thiazide diuretics, long-acting sulfonamides, other antibiotics (tetracycline, griseofulvin, nalidixic acid), phenothiazines, diphenhydramine, and chloroquine.

**Bacterial Infections**

*Pyodermas*, including impetigo, are usually caused by streptococci, staphylococci, or both. Minor lacerations or abrasions allow bacteria to enter the skin easily. Yellowish crusting over infected, eroded skin characterizes impetigo (Figure 2A), a very contagious disease that can quickly affect whole teams. Treatment consists of debriding the crusts with hydrogen peroxide and warm water compresses (ten minutes at a time, four to six times a day), applying topical antibiotic ointment (eg, bacitracin or polymyxin B), and oral antibiotics (eg, oxacillin or erythromycin). Bullous impetigo may develop after insect bite reactions (Figure 2B).

*Furunculosis* means acute bacterial (usually staphylococcal) abscesses (“boils”) of hair follicles. Mechanical damage to the skin—even friction from belts, collars, or athletic equipment—often determines the distribution of lesions. Epidemics due to particularly virulent strains have been reported. A *carbuncle* is a deep infection involving a group of contiguous hair follicles. The term comes from the Latin word for “small, fiery coal” and describes the painful, hard red lump marking the initial stage of infection. Pus forms within the lesion after five to seven days, often with subsequent necrosis of the overlying skin, which can result in a scar. Fever, malaise, and even septicemia may accompany large carbuncles. Such a lesion can be precipitated on the back of a weight lifter or wrestler when pressure ruptures an underlying comedo or pilar cyst.

*Erysipelas*, a superficial infection of the skin (usually with group A streptococci), can complicate accidental sports wounds. An incubation period of two to five days precedes the abrupt onset of high fever, headache, malaise, and sometimes nausea and vomiting. At first the affected skin feels tense and uncomfortable, then becomes red, swollen, and very tender. Bacterial *cellulitis* is another common complication of athletic injuries. While cultures often grow no predominant organism, both erysipelas and cellulitis usually respond well to oral antibiotics.

*Erythrasma* manifests as reddish-brown patches of desquamation—usually in the intertriginous areas (axillae, toe webs, groin, etc)—caused by corynebacteria. Coral-red fluorescence under Wood’s light is diagnostic. Drying powders and topical antibacterial soaps usually cure the disease, but sometimes complete resolution requires a course of oral erythromycin.

*Pitted keratolysis* describes crater-like exfoliation on the hyperkeratotic soles of athletes who often
Figure 2

A. Impetigo of the face, showing typical yellow crusts

B. Bullous impetigo, following insect bite reactions

C. Pitted keratolysis on the heel of a football player

D. Swimming pool granuloma on the hand and fingers

E. A typical wart, on the forearm of a wrestler

F. Plantar wart, occurring at a common pressure point

SPORTS AND THE SKIN:
BACTERIAL AND VIRAL INFECTIONS

continued
also suffer from hyperhidrosis (Figure 2C). Topical 5% formalin or oral erythromycin is curative.

Swimming pool granuloma can occur in swimmers (Figure 2D). The causative agent, Mycobacterium marinum, is an acid-fast bacillus whose natural habitat is water; it invades only abraded skin. A small red nodule or pustule breaks down to form a crusted ulcer or an indurated papule. Public health authorities should be notified since epidemics can occur. Treatment may prove difficult, although oral minocycline works well in many cases.

**Viral Infections**

Warts are caused by an infectious, DNA-containing papovavirus. This agent infects only epidermal cells, via direct inoculation with infected material. The incubation period varies from one to 20 months. Warts can affect any part of the body but most often appear in areas sustaining chronic minor trauma—such as knees, elbows, feet, and shaved areas of the face or legs. They plague participants in abrasion-prone sports, such as wrestlers and football players (Figure 2E), but also form on the soles of many athletes’ feet (plantar warts).

Communal bathing and changing facilities, including athletic locker rooms, foster the spread of plantar warts (Figure 2F). Most plantar warts occur at pressure points and areas of friction; unsuitable footwear greatly increases the incidence. Once infection has occurred, new warts grow more readily at sites of additional trauma (displaying a pseudo-Koebner’s phenomenon). All athletes should therefore have early treatment of this vexing problem before spread requires greater loss of time from athletic pursuits.

Most nonplantar warts can be ablated successfully by applying liquid nitrogen directly to the lesion.\(^7\) Plantar warts generally respond (over a longer time period) to repeated paring and use of 40% salicyclic acid plasters. Since hyperhidrosis seems to foster plantar wart formation, all athletes should consider dusting a highly absorbent, talc-free powder on their feet and inside their footwear.

Coaches should be aware of other viral diseases that can spread among individuals actively engaged in sports, including herpes simplex,\(^18,\) 19 chickenpox, measles, infectious mononucleosis, and hepatitis. Anyone suspected of having such disease must submit to medical evaluation both for the individual’s good and to prevent epidemics.

**Fungal Infections**

Fungal skin infections (dermatophytooses) are ubiquitous among athletes—accounting for such common terms as “athlete’s foot” and “jock itch.” Many factors contribute: (1) Athletes sweat a lot, and moisture predisposes to fungal infections. (2) Athletes repeatedly wear special shoes or sneakers, which retain moisture. (3) Athletes share locker rooms and other communal facilities, where fungi often thrive. (4) Sharing towels and clothing can also spread fungal infection. (5) Contact sports foster direct spread of fungi from person to person. (6) Athletes frequently get minor cutaneous injuries, which facilitate entry of organisms into the skin.

Clinical features of dermatophyte infection result from a combination of keratin destruction and inflammatory host response, with variations depending upon the species of fungus, the body site infected, and the person’s immune status.

*Tinea corporis* refers to infection by any known dermatophyte on the skin of the trunk. Characteristic lesions (ringworm) usually have circular or oval configurations with raised, red, scaly edges (Figure 3A). Lesions may be single or multiple, with variable associated inflammation.

*Tinea capitis* is ringworm of the scalp. Fungi live either inside the hairs (endothrix) or on the hair shaft surfaces (ectothrix). Severe hair infection can lead to kerion and permanent hair loss. Sharing of caps, hairbrushes, and combs among team members should be prohibited. Proper diagnosis requires fungal cultures. Oral griseofulvin provides excellent treatment for these resistant fungal infections.

*Tinea barbae* is fungal infection of the beard area. It more commonly afflicts those who sustain facial abrasion, including football players and wrestlers. Shaving may spread infection.

*Tinea pedis* (ringworm of the foot, or “athlete’s foot”) is the most common form of fungal infection. Up to 10% of the United States population are believed to have dermatophyte infection of the toe webs. Swimming pool decks, shower rooms, and other communal...
areas have proven to be sources of infection. The higher incidence in males relates to men's generally heavier and more occlusive footwear. People who habitually go barefoot rarely get tinea pedis! The disease is characterized by itching (often severe), peeling, maceration, and fissuring. Associated nail involvement is also common.

Many athletes have foot infections with mixed causative agents. After fungi become established, diphtheroids or other bacteria may invade secondarily. Treatment must therefore rid the skin of the bacteria as well as the fungi (Figure 3B). Castellani's paint (carbol-fuchsin solution) can cure many toe web infections, but its purplish-red hue discolors all contiguous skin and clothing. A 30% aluminum chloride solution has proven equally effective when liberally applied twice a day to affected areas of the toes and feet, as long as fissuring and erosions are not present. Proper footwear, kept dry and clean, and use of absorbent foot powder help prevent infection and minimize recurrence.

*Tinea cruris* (ringworm of the groin, or "jock itch") affects men more than women, due to higher levels of perspiration and greater potential for moisture trapping where the scrotum rubs against the upper thighs. Itching is the predominant feature of the disease. Scaling and redness vary, but distinct margins are common (Figure 3C).

For any suspected dermatophytosis, appropriate fungal cultures should be done to confirm the diagnosis. Many cases respond to proper hygiene and use of topical antifungal agents, including clotrimazole, haloprogin, econazole, and miconazole. Oral griseofulvin may be necessary for cure of recalcitrant cases. Misused topical corticosteroid creams will temporarily reduce redness and itching, but the infection will flare up and spread once this medication has been discontinued.

*Tinea versicolor*, a mild chronic fungal infection caused by *Malassezia furfur*, causes pinkish to hypopigmented patches of slightly scaly skin, usually limited to the upper torso and arms (Figure 3D). Sweating is an aggravating factor. Fungal metabolites inhibit melanin production by pigment cells, so sun exposure heightens the discrepancy between normal and affected skin. Treatment includes use of antifungal creams, along with desquamating agents (such as salicylic acid) and selenium sulfide shampoo used as a lotion on affected skin (the last left on for five minutes and then washed off, twice a week for six weeks).

*Candidiasis* can also affect the groin, scrotum, inframammary region, and other intertriginous areas (Figure 3E/F). Satellite pustules can sometimes help distinguish it from tinea. The newer antifungal products also effectively combat this yeast infection. Preventive measures are the same as for tinea.

**Animal Hazards**

Sports participants risk all sorts of parasitic infestations—*with lice, mites, cutaneous larva migrans, schistosomes,* and so forth—a complete discussion of which would exceed the scope of this article.

Athletes who compete internationally must be aware of other animals they may encounter during their activities around the world. *Scorpions* are widely distributed in the tropics and subtropics. They cause more serious direct injuries than do other venomous arthropods. Thousands of scorpion stings are reported yearly in Mexico and Trinidad. *Spiders* are quite common among golfers in Florida. The brown recluse spider bite can cause pain, induration, and necrosis (Figure 4A).

*Hymenoptera* (bee, wasp, and fire ant) *stings and bites* cause over 30 deaths a year in the USA—more than any other venomous animal. These insects can be identified by the narrow "waist" between the thorax and abdomen.

In susceptible individuals, the sting induces immediate burning pain followed by swelling and redness. A generalized reaction may occur within 30 minutes. Most fatal reactions occur in persons over age 40. Ant bites cause pustules with surrounding erythema. The lower leg is the most common site of attack (Figure 4B).

Treatment of severe allergic reactions to insect stings and bites is that of anaphylactic shock. Local reactions may be treated with cool water compresses, oral antihistamines, intermediate-strength topical corticosteroids, and short-acting oral corticosteroids. Athletes with histories of severe allergic reactions may want to consider immunization with new vaccines against honeybee, yellow jacket, wasp, and hornet venom, but such treatment is time-consuming and expensive. To avoid
SPORTS AND THE SKIN:
INFECTIONS CAUSED BY FUNGI

A: Tinea corporis, demonstrating characteristic lesions (ringworm)
B: Mixed (fungal and bacterial) foot infection

C: Tinea cruris, showing redness and distinct margins
D: Tinea versicolor on the arm of a body builder

E: Yeast infection of the groin, including satellite pustules
F: Candidiasis of the midback, fostered by perspiration

Figure 3

continued
SPORTS AND THE SKIN:
ANIMAL HAZARDS AND CONTACT DERMATITIS

A brown recluse spider bite on the leg (necrotic phase)

Ant bites on an athlete's lower leg and ankle area

Lesions inflicted by a Portuguese man-of-war jellyfish

An example of chronic contact dermatitis due to sneakers

Facial contact dermatitis caused by use of a scuba mask

Dermatitis from a rubber handle (gripped while waterskiing)

Figure 4
stinging insects, joggers and other outdoor athletes should shun wearing bright-colored clothing, shiny jewelry, perfumes, and highly scented lotions.

Mosquito bites may occur anywhere, there being over 160 species in the USA alone. Commercial repellents containing DEET are often effective. Unfortunately, mosquitoes are attracted to dark-colored clothing! Tick bites can cause Rocky Mountain spotted fever; 3–5% of cases are fatal.

Freshwater leeches attach themselves to the skin and feed until engorged, when they drop off. Swimmers and capsized boaters are at special risk. A leech should not be removed forcibly, for its jaws can remain in the wound. Heat or alcohol should be applied to make the leech release its hold.

The Portuguese man-of-war, a coelenterate, occurs throughout the Atlantic Ocean and Mediterranean Sea; it constitutes another hazard for water sports participants. The stinging organ (nematocyst) fluid contains a neurotoxin that can cause a severe inflammatory dermatitis in swimmers (Figure 4C). Even pieces of broken-off tentacles can be activated by contact with human skin. Alcohol or ammonia should be applied immediately to deactivate any nematocysts that may linger on the skin. Meat tenderizer or papaya flesh rubbed on the stings can cause immediate relief from the itching and pain, although the mechanism is obscure.

Sea urchins have calcified spines, and some species also have neurotoxin-containing glands. Athletes may step on these creatures, incurring pain and bleeding; some spiny material may be left in the wound, giving rise months later to firm nodules that develop into granulomas, often resulting in bone destruction. Immediate treatment to remove all traces of the spines can prevent these unpleasant sequelae.

Venomous fishes include the spiny dogfish, the Norway haddock, toadfishes, and even the common catfish, whose spines may cause severe pain and ulceration.

Contact Dermatitis

Shoe and sneaker dermatitis most commonly results from contact with rubber components and chromates (Figure 4D). Nickel-plated shoelace eyelets, buckles, and other shoe ornaments can also cause dermatitis in nickel-sensitive patients. Dyes, vinyl, acrylic resins, formaldehyde, antioxidants, and plasticizers are other potential allergens. Foot moisture increases the incidence of symptomatic disease. Foot powder may act as a mechanical barrier to allergens as well as lessening perspiration. Absorbent socks and hypoallergenic athletic shoes should be worn.

Adhesive tape, commonly used for sports injuries, constitutes the likeliest cause of contact dermatitis in athletes. Use of hypoallergenic tape can usually remedy this problem.

Fiberglass has caused dermatitis in hockey players.

Swim goggles can induce peribital contact dermatitis and conjunctivitis, due to thiourea compounds in the neoprene sponge goggle liner. Similar reactions have been reported from scuba masks (Figure 4E) and other sports gear, like swim caps, wet suits, and rubber handles (Figure 4F).

References