

## ART106

leadership series

### Safe Outdoor Summer Exercise Part 1: the Sun

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**SUMMER IS A TIME WHEN MANY PEOPLE EXERCISE OUTDOORS. IT IS IMPORTANT FOR FITNESS LEADERS TO PROVIDE SPECIFIC OUTDOOR EXERCISE SAFETY GUIDELINES.** *This is the first in a series of three articles about outdoor summer exercise safety. The information presented in this series is for the average healthy exercising adult. Special populations (athletes, children, infants, elderly, sedentary, people on medication, pregnant women, and individuals with cardiovascular, disease, diabetes, asthma, obesity and other illnesses) may need additional information that is not covered in this article.*

**THE FIRST SUMMER OUTDOOR EXERCISE CONCERN IS THE SUN.** According to the American Cancer Society, “exposure to the sun ...can cause significant damage to the skin and unprotected exposure is a risk factor for skin cancer.” The Skin Cancer Foundation states, “skin cancer takes decades to develop, and the effects of exposure are cumulative.” Unprotected exposure can cause cancer twenty years later. Risk factors for skin cancer include family history of skin cancer, light skin, fair hair, blue eyes, personal habits (sunbathing, unprotected exposure to sunlight), people who work outdoors and people who spend long periods of time outdoors, in higher elevation or near reflective surfaces (sand, snow, water, asphalt or concrete). In the past, skin cancer was a disease of middle-aged people but has tripled since 1980 to become a disease of people in their twenties and thirties.

#### **ULTRAVIOLET RADIATION (UV) CAUSES IRREVERSIBLE DAMAGE TO THE SKIN.**

UV is high energy wavelength emitted from the sun which is “BEYOND VIOLET” (the highest energy of visible light). UV radiation risk has increased significantly in the last twenty years. There are three types of UV. UV-A is less damaging but penetrates through all layers of the skin and damages the connective tissue of the skin. UV-B causes more serious damage but only penetrates the upper layers of skin and is thought to be the dormant cause of skin cancer. UV-C is very damaging to all biological systems but is absorbed in the upper atmosphere. Upon exposure to UV rays, a hormone (Melanocyte Stimulating Hormone called MSH) is released from the pituitary gland at the base of the brain and is transported by the blood to cells (melanocytes) in the skin which produce a brown pigment (melanin). The result is a darkening of the skin, a SUNTAN. Although the tanning response is a protective response, most skin experts agree that suntan is skin damage, causing premature aging, wrinkles, skin lesions, skin cancers and malignant melanoma.

According to a special committee convened to study the impact of sunlight on the skin (Siegel, 1990); "There is no safe level of tanning. All degrees are a surrogate marker for skin damage, whether leading to premature aging or to skin cancer...suntan fades as older cells are shed, damage still occurs because the ultraviolet rays of the sun penetrate beyond your skin's visible portion..." SUNBURN is more serious visible UV damage characterized by varying degrees of red, hot, painful skin. It can be accompanied by blisters, nausea, fever, chills and may last three to five days or longer depending on the severity. SUNPOISONING is a severe sunburn. It is important to protect the skin from UV rays.

**RESEARCH ABOUT PRE-TANNING IS LIMITED AND INCONCLUSIVE.** The production of melanin is considered somewhat protective against UV rays. Tanning booths are not recommended as a means of pre-tanning because they produce UV rays to create the tan (melanin). However, limited research suggests that the DHA (dihydroxyacetone) in chemical tanning lotions may produce a tan (melanin) that may help to filter UV rays. More research is needed to fully understand the effects of chemical tanning.

**THE NATIONAL WEATHER SERVICE CLIMATE PREDICTION CENTER [www.nws.noaa.gov](http://www.nws.noaa.gov), PUBLISHES A "CURRENT UV INDEX FORECAST" MAP WHICH RATES UV EXPOSURE LEVELS FOR REGIONS OF THE UNITED STATES AT DIFFERENT TIMES OF YEAR.** UV rays are filtered by stratospheric ozone. In some places, notably the extreme South and North, the ozone layer has declined. Depletion of ozone allows increased UV ray penetration. UV intensity also depends on the angle of the sun not the heat or brightness. In the northern hemisphere, UV intensity in April is equal to that in August. The UV index changes for different solar periods. The UV INDEX should be checked when planning an extensive outdoor exercise program.

**ALTHOUGH DARK SKIN GENERALLY AFFORDS GREATER PROTECTION FROM HARMFUL EFFECTS OF UV RADIATION, IT DOES NOT PRECLUDE THAT DARK SKINNED INDIVIDUALS ARE IMMUNE TO UV RADIATION.**

#### **TABLE OF SKIN TYPES**

*risk of UV damage*

**1 - highest risk; 6 - lowest risk**

**Type 1** - people with fair skin, blue eyes, light hair, seldom tan and always burn.

**Type 2** - usually burn, have fair skin, red or blonde hair, and brown or hazel eyes.

**Type 3** - tan gradually and burn moderately, have average color skin.

**Type 4** - seldom burn, tan easily and have olive or light brown skin, dark hair and eyes.

**Type 5** - almost never burn, tan easily and are brown skinned.

**Type 6** - never burn, tan rapidly and are very dark skinned.

## **SUN PROTECTION GUIDELINES FOR EXERCISING OUTDOORS**

- Avoid outdoor exercise from 10:00 AM - 4:00 PM, when the sun pours 80% UV rays.
- Avoid exercise near sun reflective surfaces (water, sand, concrete, painted areas).
- Apply a sunscreen 20 - 30 minutes before exposure with SPF (Sun Protection Factor) of at least 15.
- Apply sunscreen liberally even on overcast days.
- Adults who burn easily or with risk factors for skin cancer should wear a sun block of 30 SPF or higher.
- Exercise produces sweat. Choose a water-resistant formula.
- Reapply sunscreen regularly during exercise (every 20 - 40 minutes).
- Wear sunscreen even if exercising for a short period of time outdoors.
- Cover all areas of skin, including ears and feet even if wearing hat and shoes.
- UV rays penetrate clothing. Wear a hat with closely knit fibers that shields the forehead and neck.
- Wear sunscreen on the face and neck even if wearing a hat.
- Wear specific tightly woven sun protective clothing, rated UPF (ultraviolet protection factor). If wearing non-UPF clothing, apply sunscreen under clothing; typical T-shirts provide only 7 UPF. The highest is 50 UPF.
- Wear sunscreen and protective clothing even if exercising in the shade. UV rays penetrate shade.
- Insect repellents reduce sunscreen effectiveness. If applying a repellent with sunscreen use a higher SPF. Select non-scented brands to reduce insect attraction.
- Go to <http://www.ConsumerReports.org>. Compare different sunscreen's effectiveness.
- Select a sunscreen that provides protection from BOTH UV-A and UV-B. • Check the expiration date and do not use expired sunscreen.
- UV penetrates eyelids and can damage eyes. Wear 99-100% UV-A & UV-B block sunglasses

**ON THE FLIP SIDE, MODERATE SUNLIGHT IS HEALTHY. THERE ARE SOME HEALTH CONCERNS ABOUT UNDEREXPOSURE TO SUNLIGHT.** Vigorous sun-protection may reduce Vitamin-D production and may also increase the risk of SAD (seasonal affective disorder). Although sunlight is implicated in skin cancer, it appears that the vitamin D production associated with sunlight, reduces the risk of breast, prostate and ovarian cancer. The bottom line is that **SOME** sunlight is necessary for health. Moderation is the key. Limit unprotected sun exposure to no more than few minutes a day and exercise during non-peak UV hours. All aerobic exercise requires bouts of activity longer than 5 minutes. So, it is important when going outdoors to exercise to protect the body from exposure to the UV rays of the sun.

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## **ART106 QUIZ**

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1 - According to the Skin Cancer Foundation, "skin cancer takes decades to develop and the effects of exposure are cumulative."

2 - Unprotected exposure can cause cancer twenty years later.

3 - People who work outdoors are less likely to develop skin cancer.

4 - Skin cancer has become a disease of people in their twenties and thirties.

5 - UV is low energy wavelength emitted from the sun.

6 - UV-C is less damaging but penetrates through all layers of the skin and damages the connective tissue of the skin.

7 - Most skin experts agree that suntan is not skin damage.

8 - The UV INDEX should be checked when planning an extensive outdoor exercise program.

9 - Type 6 are at lowest risk for skin cancer.

10 - Vigorous sun-protection may reduce Vitamin-D production and may also increase the risk of SAD (seasonal affective disorder). So, exercise outdoors is best during non-peak UV hours.