

Factors Specific to Sport that Affect how Much Solar Ultraviolet Light People who Play Sports Outside are Exposed

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Description

UVR's tendency to form DNA-damaging reactive oxygen species, increase production of local growth factors, and impair cutaneous immune function in the skin account for the well-elucidated epidemiologic and molecular links between UVR exposure and the subsequent development of both melanoma and non-melanoma skin cancers. DNA mutation and pyrimidine dimer formation occur as a result. The Snyder, et al. review article for 2020 al., demonstrated that participants in outdoor sports are particularly susceptible to all types of skin cancer. Participants in outdoor sports receive a significant amount of cumulative UV exposure and are more likely to develop pigmented lesions. Additionally, this population frequently exceeds recommended limits for UV exposure. There are also unique sport-specific factors that make this population more at risk. Participants in outdoor sports appear to be unaware of the risk of sun exposure and make inadequate or insufficient use of photoprotective measures, despite the annual rise in skin cancer rates. Athletes' increased risk of cutaneous neoplasms can be reduced by implementing preventative measures. A review of sports-specific UV exposure factors, a breakdown of the risks associated with various sports, and suggestions for preventative measures tailored to outdoor sports participants are all included in this commentary.

During the first 21 years of life, which is also when most sports are played, the majority of accumulated UVR exposure occurs. A young athlete may receive up to 1000 hrs of sunlight annually on average. Due to the fact that a lot of sports practices and competitions take place between 10 am and 4 pm, this exposure time occurs frequently during UVR peak hrs. Altitude-related increases in UVR, reflection from water and snow and ice covered surfaces, and increased photosensitivity due to sweating are additional sport-specific considerations. In point of fact, it is known that sweat significantly lowers the Minimal Erythema Dose (MED), also known as the smallest amount of UV radiation required to produce distinct skin erythema 24 hrs after exposure. Sunscreen's effectiveness may also be reduced by sweat, contact with water, and friction. Some sports prohibit the use of protective clothing like hats and sunglasses. Risks are inherent to each sport, depending on the location performed, participant interaction with elements, and nature of the sport.

UVA and UVB Rays

In addition to reflecting a significant portion of UVA and UVB rays, water allows UV rays to penetrate the water's surface and reach aquatic athletes. Additionally, aquatic sports tend to be played during warm seasons when UVR levels in the air are at their highest. Sunscreens lose their protective properties in the water, despite claims of "water resistance." SPF is tested by manufacturers using only two 20-minute water immersions with moderate activity, which are not representative of the duration or intensity of activity experienced by most aquatic athletes. 76.7 percent of 240 elite aquatic athletes, including surfers, windsurfers, and Olympic sailors, reported having at least one sunburn in the previous year, according to the study. Despite this, a sizable portion, 22.5 percent, stated that they had never applied sunscreen and were either unaware of or ignorant of the requirement for reapplication.

UV intensity is thought to increase by 8-10% for every 1,000 feet in elevation. This is because there is less UVR scattering at higher altitudes. This makes it more likely that snow and ice will form, which makes the effect of elevation even worse because they reflect a lot of radiation. Rigel measured the UVR levels of performance skiers and found that more than two thirds of the skiers studied received more than two MEDs of UV-B radiation per day. On the other hand, a study that looked at skiers and snowboarders' knowledge of the risk of sunburn revealed that very few had ever received information about how to protect themselves from the sun.

Outdoor Recreational Activities

The vast majorities of sports participants participate in a wide range of outdoor recreational activities that are carried out on land and do not involve the additional dangers that are associated with water or higher elevation. More than 440 million rounds of golf were played in 2019, making it a very popular outdoor sport. This sport deserves special attention because it is played by a group of people who primarily self-report having fair or very fair skin, lasts an average of three to four hours per round, and frequently takes place during peak UV hrs. 39% of golfers said that, despite these well-known risk factors, they didn't think playing the sport made them more

likely to get skin cancer. It has been demonstrated that marathon runners, soccer players, tennis players, and field hockey athletes all use sunscreen insufficiently or not at all. Furthermore, Moehrle, et al., describes a study that found cyclists' UV exposure was 30 times higher than the international limit. Participants in extreme sports follow this pattern as well, as ironman triathletes have reportedly experienced UVR that is 8.3 times their MED.

Reapplying sunscreen and scheduling activities during low UV index (UVI) times, typically early in the morning or late in the afternoon or evening 5, 15 are additional strategies. If an event lasts longer than expected, it's preferable to hold it in the afternoon, when UVI is constantly decreasing. Real-time monitoring and, hopefully, appropriate behavior modification would be made possible by installing UVI meters in outdoor facilities for competition and training. In addition, sports participants may benefit from having the daily UV index forecast posted on signage in locations like golf courses.

Sports federations and associations should think about what they can do to encourage or mandate the proper use of sun protection by those competing in their events. Wearing

appropriate headgear, goggles, or sunglasses, seeking shade between matches, and applying sunscreen that is resistant to water are all examples of this. In Hamant "Sunscreen availability" was cited by 46% of respondents in a study of collegiate athletes as the reason for not wearing sunscreen daily. This demonstrates the need for more sunscreen dispensers in outdoor sports facilities, both for patrons and players. Athletes' sun protection may also be improved by providing them with clothing that has a UV protection factor of 40 to 50 and is increasingly available in long sleeves and breathable fabrics. Regulations that necessitate intervention at the sports-association level include bans on hats and sunglasses, "official outfits" that do not provide adequate coverage, and competition rules that forbid applying sunscreen to specific skin areas. Last but not least, sporting events may present an opportunity for dermatological societies to implement and promote skin cancer screening campaigns. Because it is easier for children who participate in outdoor sports to learn safe sun habits at a young age and develop a healthy attitude toward being in the sun, these kinds of campaigns and other educational interventions are ideal for children who are participating in outdoor sports.