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EDITORIAL

More effective triggers for sun smart behaviours are urgently required in Australia

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SUMMARY

Skin cancer is the most common cancer diagnosed in Australia, and it is preventable. Previously, the public had limited awareness for the risks associated with ultraviolet radiation. Today Australian public health campaigns urge sun safety. Why then are Australians still not complying with the message and especially in sport?

It may be that focusing on skin cancer as the long-term risk factor of excess sun exposure is not triggering sun smart behaviours. Targeting the risk to physical appearance may be a more effective strategy. Sun protective measures should also be easy to adopt and become an integral part of the sporting uniform.

Key Words
Sun protection; sun exposure; sport; physical appearance; skin damage

INTRODUCTION

The sunny Australian summer encourages most people to participate in outdoor activities. Each year public health campaigns also urge people to be "SunSmart". Why then is the public still inclined to venture out without sun protection and especially in sport? Sport is an important aspect of Australian culture. Australia prides itself as a sporting nation. Sporting clubs around Australia are encouraged to promote sun protective measures. However, only 34 per cent of Victorian sporting clubs have a sun protection policy.[1] The sporting clubs that have developed a policy—primarily diving, lifesaving, and women's cricket—are more likely to encourage the wearing of sunscreen, broad-brimmed hats, provide portable shade, and schedule competitions outside peak ultraviolet (UV) index times.[1] These measures are essential to protect individuals when the UV index is extreme.

In Australia, athletes' use of sunscreen is low.[2] Current sunscreen guidelines recommend a minimum sun protective factor (SPF) 30+ that is also water resistant.[3] Sunscreen is most effective if applied 20 minutes before going outside and reapplied every two hours when outdoors, swimming, or perspiring.[3] The leading reasons for a failure to deploy sun-smart measures is that protective clothing is considered uncomfortable. Other barriers include: a fear that sunscreen will interfere with performance, need to reapply, a fashionable desire for tanned skin, and few role models to encourage the relevant behaviour.[2] At the same time, it has been demonstrated that sports people are more likely to engage in sun protective actions if they identify as being a member of a "SunSmart" group. Therefore, sporting clubs could be a conduit for greater compliance with the sun-smart message.

Surf lifesaving clubs promote, and in the case of members, mandate the wearing of sunscreen on the beach. This is exceptional for a sporting club. A cricket team, in contrast, takes to the field in the morning when there is a low UV index and little incentive to apply sunscreen. As the morning progresses, and with limited shade available on the field, the risk of sun damage increases. It has been found that sunscreen still provides 43 per cent of its initial protection eight hours after applying, even with physical activity or swimming.[4] Therefore, a trigger is required to initiate early application at the beginning of the cricket match to protect individuals when the UV index is peaking before the lunchtime break.

Providing shade can be a considerable financial burden for clubs that are under-resourced, although the health value is considerable as shade covers have been found to reduce UV radiation by at least 50 per cent.[5] The simplest and most protective strategies for clubs to protect players and supporters are the provisions of shade and topical sunscreen.

Sun protective clothing can be difficult to implement into the sporting uniform. For sports that require a set uniform, adding technological advancements—though

expensive—to enhance protection may add enormous value. Current new technology includes the use of UV dosimeter badges that calculate UV exposure levels and indicate the need for sunscreen, and reflective materials that restrict UV penetration into the skin.[6]

Sun protection awareness and implementation is often focused on outdoor summer sports. However, it has been recognised that some winter sports take place outside. Moreover, athletes participating in indoor sports and indoor winter sports also have training sessions outdoors, and thereby require UV protection. Participants in alpine sports are at increased risk of UV radiation due to light reflection from snow and ice-covered surfaces. The UV radiation also increases by 4 per cent for every 300m increase in altitude.[5] Just under half of all skiers and snowboarders recall being sunburnt on the slopes.[7] Other winter sports, including Australian Rules Football, rugby, soccer, and netball have pre-season training, early season matches, and finals when the UV index is high.

Statutory agencies may focus on the sporting clubs' implementation of sun protective measures, while sporting clubs are shifting responsibility onto the individual sports person. The New South Wales (NSW) Cancer Council has developed a "10-Step Sun Protection Checklist" for sporting clubs.[8] It focuses on a sun protection policy, enforcing sun protective measures, having role models who emphasise sun protection, and providing education.[8] Victorian Health (VicHealth) published a "healthy sporting environments demonstration project" finding 81 per cent of sporting clubs agreed with the statement "You can provide sunscreen but you can't make people use it".[9] Eighty-seven per cent of clubs stated that sun protection was "easy" and were happy to take responsibility for the basic equipment and infrastructure, but believed sun protection was an individual responsibility.[9] The difficulty engaging sportspeople in sun protection stems from a lack of commitment to comply with safety measures. There is a need for more effective ways to communicate the risks of ultraviolet radiation.[9]

The highest risk of sun damage takes place around midday with the peak time between 10am and 2pm.[3] The risk of sun damage to the skin increases with sweat generated from heat and physical exercise. This is due to the increase in photosensitivity of the skin thought to be caused by hydration of the horny skin layer augmenting UV absorption by the stratum corneum.[10]

The medical impact of UV radiation depends on the UV index, skin type, and level of exposure. The UV index is a measure of the amount of UV that reaches the earth's surface. UV exposure is often difficult to predict in Australia as temperature per se is not a good proxy for UV radiation.[5] Light cloud can be penetrated by 90 per cent of UV radiation, snow reflects 80 per cent, and sand reflects 25 per cent of UV radiation.[5] It has also been demonstrated that 40 per cent of UV radiation can penetrate 30cm below the water's surface.[5] Consequently, increased risk of UV radiation in many circumstances is possible and often underestimated.

Social trends and conflicting benefits of UV are influential with respect to the use of sun protection. Having a tan is often considered desirable. UV exposure is important for vitamin D synthesis required for muscle function, immune stimulation, bone strength, and prevention of multiple diseases and some cancers. However, research has calculated only eight minutes in summer and 24 minutes in winter of sun exposure to the hands and face is required for health benefits. Beyond this amount the skin is at risk of harm.[11] In developed countries artificial tanning devices are a popular means of browning skin, but have been linked to melanoma, especially in individuals who have their first exposure before 30 years of age. Almost all Australian state and territory governments have now enforced a ban on commercial tanning salons, which can emit UV radiation six times as powerful as the midday sun in summer.[12] The closure of tanning salons restricts the exposure to dangerous UV radiation and protects against the risk of skin cancer.

Previously, the lack of sun protection was solely attributed to the public's poor awareness of the risks associated with UV light exposure.[13] However, research has demonstrated at least 80 per cent of young Australians are aware of sun protective measures.[14] While people understand the need for protection, they are not complying with the messages.[14] The traditional public health messages have had limited impact on high-risk groups. This could potentially be due to the focus on cancer as the main reason to urge sun smart behaviour. Alternatively, the focus could be placed on factors that are of a more immediate concern to younger people; for example, the risk of damage to their physical appearance.[15]

Skin cancer is the most commonly diagnosed cancer in Australia; the country's melanoma rates are amongst the highest in the world.[16] It is established that exposure to UV radiation is the most significant risk factor for all skin cancers.[17] The Australian climate is generally hot with UV radiation peaking at the end of December. However, it is common for the UV index to remain high even during the cooler seasons.[18] Therefore, sun protection measures are necessary throughout the year.

Sunglasses prevent conjunctival squamous cell carcinomas, cataracts, macular degeneration, and pterygium. In Melbourne, 36.2 per cent of people wear sunglasses with only slightly increasing numbers each year.[19] Sunglasses need to have an eye protection factor (EPF) of 9–10 to be considered protective against UV radiation. Brands and prices of sunglasses have no direct correlation to EPF, which is often deceiving for the buyer.[20] The recommended hats for sun protection are currently unfashionable, including broad brimmed, bucket, or legionnaire styles. Poor compliance with the optimal protective hats will continue until an influential role model promotes them or the current fashion for peaked caps changes.

Childhood sun exposure is a risk factor for melanoma.[13] Children are required by schools to wear a broad brimmed hat and play under shaded areas. The enforced "no hat, play in shade" rule for junior students has led to an increased compliance with protective measures.[3] However, outdoor sport in after-school hours can increase the risk of early sun damage if protective measures are not enforced with the same vigour. Regular outdoor sports as well as swimming and athletics carnivals increase the risk of unhealthy sun exposure, particularly in early ages and are associated with skin cancer later in life.[21]

In recent years, the potential to deploy information technology to relay individualised public health messages has increased.[22] Current smart phone applications are thought to be cost effective, educational, and reach a vast population group.[23] The current Victorian "SunSmart" application has been increasingly popular in educating the public on UV radiation and sun protection times. However, this application is not reaching the younger population or making an impact on UV radiation exposure. Recent studies have also looked at the effectiveness of sending a daily text message to young people as a reminder to apply sunscreen.[24] Interestingly, conflicting studies have emerged on the effectiveness of the reminder system triggering regular sunscreen application, even though young people are frequently prompted and the benefits of sunscreen are well understood.

A long-term and more effective trigger mechanism is needed to promote sun smart behaviour. Advanced digital programs present the possibility of exposing damage to future appearance. Using a photoaged image of themselves a person can visualise what they would look like in the future if they adopt unhealthy habits; for instance, smoking and a poor diet.[22] This method has also been used to illustrate the impact sun damage has on a person's appearance. This technology has been found to trigger healthy behaviours based on a threat to personal appearance.[13] Even though young Australians have been found to be resistant to social media interventions,[25] the use of an application to visualise the impact on physical appearance may promote better lifestyle choices. There is little or no evidence to suggest Australians are not motivated to make healthy choices; however, the relevant behaviours are not being promoted effectively.

Two other factors that are also essential to get people to change their behaviour: they need to accept that something is wrong; and they need to believe they can do what is necessary to achieve the desired goal. It is particularly important that the sun smart message is heeded in sports where there is a particular risk that people expose themselves to considerable risk. The habit of applying sunscreen needs to be effectively promoted, on the beach, pitch, or snow slope. To be effective, sun protective measures could be incorporated into the sporting uniform so that deploying the protection is a routine part of stepping into any outdoor sporting arena.

The "something wrong" is the problem. Many people fail to move into the shade or apply sunscreen because they desire tanned skin. They may be influenced by peer pressure from people who are resistant to any notion that lying under the sun is risky to their health. Some people may feel that adopting sun protective measures spoils their enjoyment and therefore fail to change their behaviour. The negative impact of UV exposure to human skin has been well documented. It is clear that more sun smart behaviours are needed, and effective triggers to cause this change in human behaviour must be developed, not only for people participating in sports, but for all people of Australia.

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