Use of ALTIUS® Single-Use Performance-Tinted Contact Lenses During Water Activities

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Athletes and recreationists who participate in water activities will benefit from reduction of brightness and glare and, if outside, protection from solar ultraviolet (UV) radiation. Many of these individuals also may need vision correction in order to see clearly. Glare results from direct exposure to the sun and bright artificial lighting, whether outdoors or indoors, and also from reflections of those light sources from the surface of the water.[1] The most common chronic eye health complaint associated with outdoor water activities is an abnormal growth of the conjunctiva onto the cornea, known as pterygium, often referred to as "surfer's eye".[2] The condition is not limited to surfing, occurring in any environment to anyone who experiences long-term exposure of the eyes to UV, whether on water or land.

Tinted prescription and over-the-counter sunglass lenses with polarization and UV protection can be effective for fishing and boating as well as driving. Unfortunately, spectacles are not effective for most water sports and activities, including swimming, surfing, water skiing, jet skiing, playing water polo, or even in a hot tub. Spectacles can easily fog, accumulate water, become dislodged, or, during sporting activities, harm or injure the wearer or other participants during the course of play. Similar and other complications can occur with close-fitting swim goggles.[3-5]

Contact lenses can provide vision correction and UV protection.[6] Importantly, tinted contact lenses can reduce glare and increase visual comfort similar to or even better than sunglasses.[6] In addition, while the risk of ocular injury in sports is very low,[7] the errant finger or elbow of an opponent or even teammate can cause a corneal abrasion or laceration; contact lenses, while not traditional "impact-protective" eyewear, could mitigate or even prevent damage to the wearer's cornea in such situations.[8]

Nonetheless, care must be taken with the use of contact lenses during water activities. In fact, the US Food & Drug Administration (FDA) still advises that contact lenses should not be worn at all when swimming or using a hot tub, but FDA does not consider or differentiate contact lens modalities or hygiene.[9] Both the American Optometric Association[10] and American Academy of Ophthalmology[11] offer a less strict guideline, suggesting that, if contact lenses must be worn when swimming, the user should also wear tight-fitting swim goggles in order to avoid exposure of the contact lenses to water, whether it be sea water, fresh water in a river or lake, or chlorinated water in a pool.

But for many professional and elite amateur water sports, even the best swim goggles may not be appropriate, safe, or even allowed by the rules of the sport. For example, while surfers could benefit from the use of swim goggles, there are several valid arguments against their use.[12] Likewise, while the American Academy of Pediatrics[13] recommends that children who participate in water polo wear swim goggles during practice and competition, National Collegiate Athletics Association (NCAA) water polo rules[14] require the athlete to obtain a prescription and written approval for the use of swim goggles and other protective equipment that is not part of a standard uniform. Interestingly, international water polo rules provided by World Aquatics (formerly Fédération Internationale de Natation [FINA])[15] are silent on

the use of swim goggles or other protective equipment, other than to state that players "shall remove any articles likely to cause injury." Consequently, many athletes who surf, water ski, or play water polo do not wear swim goggles.

Contact lenses with UV protection and, especially, with tint seem to be the natural and automatic alternative to spectacles and sunglasses, even without power for vision correction. However, the primary significant risk of wearing contact lenses during water activities is eye infection due to adherence to the lenses of microscopic organisms, contaminants, and irritants normally found in any water.[16-17] A rare but potentially very serious infection, which can cause pain and blindness if left untreated, is Acanthamoeba keratitis (AK). In developing countries, AK can account for 2% of culture-positive corneal ulcers in non-contact lens wearers.[18] The Centers for Disease Control and Prevention estimate that 85% of AK cases in developed countries occur in contact lens wearers, with an incidence of up to 33 per million contact lens wearers.[19]

Several recent studies have analyzed the incidence of AK in developed countries and the involvement of contact lenses. A study from Australia, evaluating data over a 15-year period, demonstrated that the risk of use of daily disposable contact lenses (4/52) is less than that due to corneal trauma or foreign body (9/52).[20] A study from the UK, over a 1-year period, showed 3 out of 9 cases involved patients wearing daily disposable contact lenses.[21] It is unclear as to whether or not any of those patients used proper hygiene techniques, such as not wearing the lenses longer than recommended and not storing and wearing the lenses for multiple days. Another recent study in the UK demonstrated that, even though the overall risk is low, wearers of reusable contact lenses (both daily-wear soft and rigid contact lenses) have over a threefold increase in risk of developing AK compared to daily-disposable contact lens wearers.[22] Thus, daily-disposable contact lenses, when worn and used as instructed, can significantly reduce the risk of infection compared to other contact lens types and create no significantly greater risk than not wearing contact lenses at all.

Contact lenses can provide vision correction to individuals in situations where they cannot or should not wear spectacles or swim goggles. When participating in water activities, the best defense to exposure to excessive brightness, glare, and UV radiation is provided by a tinted contact lens with UV protection.

Proper selection of contact lens type and subsequent compliance with hygiene and care protocols are essential to allowing the lenses to function as intended to improve the wearer's vision and, more importantly, to keep wearer's eyes safe.[6] Daily-disposable single-use contact lenses with UV absorbance and tint, when worn and used correctly, are protective and do not increase the risk of infectious eye conditions more than not wearing contact lenses. Specifically, ALTIUS® single-use performance tinted contact lenses block 100% of UV and over 99% of total blue light (up to 500 nm) in either available tint, Amber and Grey-Green.[23] The risks and benefits for any individual should be fully discussed with an eyecare practitioner, to determine if contact lenses will be safe and effective for that individual.

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