



MUST-HAVE SUN & SPORTS EYEWEAR FEATURES

Know what recommendations to make to all potential sunwear patients.

THE RIGHT FIT Frames should fit snugly, allowing the wearer to do what it is she or he enjoys doing outdoors without worrying about discomfort.

BY DEBRA R. WHITE

Eyecare professionals (ECPs) who care about the visual comfort and well being of their patients' vision have come to realize that when patients step outside, fashion or sports sunwear is needed. Whether they wear prescription or plano lenses, sunwear is emerging as "the other first pair" every eyewear patient should own and wear.

While many people use some kind of sunwear, the question to ask is, "Do their sunglasses have all the features they should?" Not all sunwear is created equal. Some have a simple set of dark-colored lenses held in a frame while others have premium lenses and a frame with advanced features. To provide the visual comfort and health you want all your patients to attain, what features should you be recommending in sun and sports eyewear?

UV PROTECTION

Arguably the most important feature a sunglass wearer needs is ultra-violet (UV) protection. With all the evidence that indicates the harm UV light poses for the eye, ECPs should ensure that every pair of sunglasses they provide has as close to 100% UV absorption as

possible. UV rays also pose a threat to the skin surrounding the eyes.

Most people are aware of the need to protect their skin against UV but let their children play outside without sunwear. It is important for ECPs to recommend sunwear to young children because most of the UV absorbed by the eye in a lifetime occurs before they are young adults. Equally as important is protecting the eyes from blue and blue/violet light. Passing through the cornea and crystalline lens, blue light has the ability to cause cumulative damage to the retina and skin surrounding the eye just like UV does.

Australia has an interesting health campaign known as "Slip, Slop, Slap, and Wrap." This stands for slip on a shirt, slop on sunscreen, slap on a hat, and wrap on sunglasses. This program emerged based on a growing concern over the high number of skin cancers and eye pathologies attributable to UV radiation.

Most of today's ophthalmic lens materials provide excellent UV protection. These include polycarbonate, Trivex®, NXT®, SR-91®, Plutonite®, and most mid- and high-index materials. In general, absorptive lens colors such as brown and amber will assist in absorbing the blue and blue/violet range of visible light. >>

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COURSE DESCRIPTION

As sunwear continues to become a more appealing purchase for eyewear buyers, eyecare professionals need to question what features should good quality sunwear possess. Not all sunwear is created equal, so what features should you be recommending to your patients so that they obtain the level of performance as well as visual and wearing comfort they deserve? This course will provide the answers.

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SUNWEAR FEATURES



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“SUNWEAR IS EMERGING AS ‘THE OTHER FIRST PAIR’ EVERY EYEWEAR PATIENT SHOULD OWN AND WEAR.”

LENS COLOR

In the past, ECPs recommended gray or brown sun lenses based on individual color preferences. While gray and brown are still very popular options, there are myriad absorptive colors that are known to provide visual benefits in selected lighting conditions. Many sunwear companies have field-tested lens colors with athletes and people spending time outdoors in a variety of situations. Check out some tried-and-true suggestions from a variety of experts below.

Knowing which colors benefit the specific activities your patients participate in will help you make the right recommendation so that they can enjoy their outdoor activity all the more.

COLOR DENSITY & PHOTOCROMICS

Since lighting conditions can change throughout the day, knowing what absorptive percentage (lens color density) to recommend is another important feature your patients’ sunwear should have.

When your patient encounters early morning light, sunsets, and rainy days (very low light conditions), recommend a lens that transmits approximately 80% (20% absorption). For daytime low light conditions, a 35% transmittance works well (65% absorption). A little less than full sun conditions would benefit from lenses that transmit approximately 28% (72% absorption). Sun lenses for a very bright sunny day should

transmit about 12% (88% absorption).

Features such as interchangeable lenses for use during unpredictable lighting conditions offer sunglass wearers the option of having the right color and density as lighting conditions change. For those who find changing lenses inconvenient or would prefer to have the lenses change their color density automatically, photochromic lenses are the recommendation to make. These lenses darken as the ambient light becomes brighter and lighten as the light becomes dimmer. Good quality photochromics can change from nearly clear to about 85% dark in seconds and lighten back again almost just as quickly. You’ll find them available in dozens of lens materials and styles. And don’t forget that photochromic lenses inherently protect against harmful UV radiation.

Since photochromic lenses require UV to darken them, they do not perform efficiently behind the windshield of an automobile. One product addresses this problem by offering a lens that activates in part to visible light—Younger Optics’ Drivewear® Activated by Transitions™. These lenses turn a high contrast green/yellow color in overcast conditions, copper in bright light behind a car’s windshield, and dark reddish-brown in bright outside light. For added visual comfort, Drivewear lenses are polarized, too.

For certain eye conditions, being outdoors can be extremely uncomfortable. That’s why patients

UV PROTECTED Arguably the most important feature a sunglass wearer needs is UV protection.

LENS TINTS FOR EVERY ACTIVITY

ACTIVITY	BROWN	GRAY	GREEN	VERMILLION/ROSE	YELLOW	BLUE	AMBER/ORANGE
BASEBALL	X						
BASKETBALL	X	X					
BIKING	X			X	X	X	X
DRIVING	X/D	X/D	X/D				X/D
FISHING	*	*	*				
GARDENING	X	X	X				
GOLF	X		X	X	X	X	
HIKING	X		X		X		
MOTORCYCLING	*	*	*	*			
READING	X	X	X				
RUNNING	X	X			X		X
SHOOTING	X		X	X	X	X	X
SKIING/SNOWBOARDING				X	X		X
TENNIS	X				X	X	X
WATER SPORTS	*	*					

* = Polarized in that color D = Younger Optics’ Drivewear® Activated by Transitions™

with albinism, retinitis pigmentosa, macular degeneration, and developing cataracts and glaucoma may appreciate your recommendation of specialized sunwear. Some possible choices are very dark photochromic glass lenses designed to absorb light of specific wavelengths as well as certain fit-over sunglasses and solar shields that provide the protection and comfort that many of these people so desperately want and need. Be mindful that glass lenses do not absorb UV sufficiently in their natural clear state. To be efficient UV absorbers, they must be coated or have UV inhibitors in the glass.

ANTI-REFLECTANCE

Anti-reflective (AR) treatment is fast emerging as an essential feature on sun lenses. In fact, many ECPs view it as a critical part of all high-performance sun lenses. Once your outdoor patients experience the features and benefits of AR on their sun lenses, they will wonder how they ever lived without it.

Like all lenses, sun lens surfaces act like a mirror and reflect light. In addition, sun lenses are dark so their mirror-like reflections become even more obvious than they would on clear lenses. Back-surface reflections are particularly troublesome and patients often complain of seeing a huge reflection of their own eye on that surface under certain lighting conditions. Not only is it annoying, but it also detracts from the quality of vision necessary for active outdoors people. Recommending AR treatment on the back surface of sun lenses eliminates this problem.

Most premium AR treatments feature hydrophobic/oleophobic external layers. The benefit here is that this layer repels raindrops, finger smudges, and sweat. That means that lenses stay cleaner longer and clean easily with just a swipe or two of a microfiber lens cloth. In addition, some premium AR treatments have an anti-static property that wards off dust, lint, and other debris. This also helps to keep the lenses cleaner longer and makes them easy to clean.

POLARIZATION

One sun lens feature that has become quite popular is polarization. This is because polarized lenses reduce a type of light reflection that can interfere with vision known as plane polarized glare.

When light strikes a shiny surface such as water, snow, and blacktop at an angle, it can become plane polarized. When this occurs, light waves that normally vibrate in all directions are converted to light waves that only vibrate in one direction. These altered wave-



PHOTO COURTESY OF WILEY X, INC.

ARMED WITH AR Once your outdoor patients experience the benefits of AR on their sun lenses, they'll wonder how they ever lived without it.

lengths are known as polarized light. When properly oriented to the plane polarized light, a good polarizing filter can eliminate this glare.

The reason why polarized lenses are such a good recommendation is because plane polarized glare washes out visual detail and reduces contrast. In fact, one of the common comments patients make when they first put on polarized lenses is how much bolder objects appear, how much deeper colors are, and how much better they see.

While most ECPs know that polarized lenses are great for people who enjoy activities such as lounging at the beach, skiing/snowboarding, skateboarding, golfing, or fishing, they really are a great recommendation for anyone who spends time outdoors. Don't worry about availability since polarized lenses are available in most lens materials in a wide array of lens styles and colors.

HARDCOATING

Another important lens feature all good quality sunwear should have is hardcoating. This thin protective

film placed onto a lens helps it ward off scuffs and scraps. The more active your patients are outdoors, the more reason they should have a good hardcoating on their sunwear lenses. Many scratch-resistant coatings are so tough that their manufacturer guarantees the lenses for the life of the Rx. Mountain bikers riding on a muddy path, baseball players running around a dusty field, gardeners working in dirt, beachcombers encountering gritty sea salt, and others will instantly see the benefit of protecting their lenses from scratches with a good hardcoating.

ANTI-FOGGING

Lens fogging can interfere with vision and can span from a minor annoyance to a major visual-blocking problem. A good pair of sunglasses should offer features that prevent lenses from fogging.

Fogging occurs when moisture adheres to a lens surface. This can develop when someone perspires, when he exhales during winter activities, when moisture is trapped in a non-ventilated enclosure, etc. As more sunwear models are produced for perform- ➤

SUNWEAR FEATURES

ance use, their face- and head-hugging closeness makes them more susceptible to fogging.

To avoid this problem, recommend lenses with an anti-fog coating and frames that boast a ventilation system in their design. Many premium AR treatments now have hydrophobic and oleophobic properties that can ward off fogging. Plenty of sunwear frames also have air holes near the temporal area or along the top rim to assist in ventilation and prevent fogging. Other ventilation systems actually have vent holes in the lenses. Some innovative sunwear models include mechanisms to allow wearers to select the venting needed for their particular situation. For example, this lets contact lens wearers reduce the amount of airflow in their eyewear that could dry the lenses or allow more air to circulate for some wearers who perspire heavily when engaged in rigorous activities.

IMPACT RESISTANCE

For the most part, sunwear is worn while your patient is engaged in an outside activity. That means the safety of your patient's eyes should be even more of a concern than it is with her clear eyewear. After all, many outdoor activities can be aggressive and pose potential eye injury threats.

Sunwear manufacturers offer a good number of choices that will serve most patients well outdoors. Polycarbonate and Trivex lenses are two excellent choices, especially for prescription sunwear. They both meet the rigorous ANSI Z87.1 impact-resistant standards and they are both lightweight and durable. NXT is a lens material used by many manufacturers in the plano sunwear market. Its impact resistance is impressive and lenses made from it are lightweight and comfortable.

Some sunwear manufactures offer proprietary impact-resistant lens materials. Examples include Oakley Inc.'s Plutonite®, Kaenon Polarized's SR-91®, and Wiley X Inc.'s Selenite™. These materials are great for activities such as golfing, hiking, watching sports, boating, and running.

It is up to the ECP to determine if potential harm exists during a patient's outdoor activities and what level of risk that activity poses. Keep in mind that many brands of sports sunwear will not provide the protection necessary for specific activities. Just because a recognizable sports logo appears on the sunwear, it does not make it safe for all activities. What indicates that sunwear is impact-resistant for specific activities is the ASTM marking found on approved eyeguards.

ASTM stands for American Society of Testing and



PHOTO COURTESY OF 7EYE.

ANTI-FOG SOLUTION Plenty of sunwear frames have air holes near the temporal area or along the top rim to assist in ventilation and prevent fogging.

ASTM DESIGNATIONS

F803-98 Racket sports, baseball, field hockey, basketball, women's lacrosse, and soccer

F513-95 Hockey

F659-92 Alpine skiing

F910-92 Youth baseball (umpire and player)

F1776 Paintball

Materials. Placement of this marking on approved eyewear indicates that the eyeguards remained intact and unbroken during tests involving a variety of balls flying at 90 mph. There are several ASTM markings, each indicating a specific eyeguard is approved for selected activities.

It is important to know that the term "eyeguard" is defined as the assembled lenses and frame. That means that the eyewear, as a whole, must meet the rigorous ASTM impact tests by retaining the lenses in the frame and not breaking.

How do you determine if a patient requires eyeguard-level protection? When asking your patients what type of activities they participate in, if they mention any of the sports or activities listed in the ASTM chart above, offer ASTM-approved eyeguards.

LIGHTWEIGHT, DURABLE, STRONG, AND ELASTIC FRAME

Active people appreciate any gear that is lightweight, so it's only natural that their sunwear should feature lightweight materials, too. There are actually sunglass models by popular sunwear manufacturers that weigh less than 1oz. This is achievable with frame materials such as copper-beryllium, flex-nickel, grilamid, titanium, triloid, and Kynnetium. TR-90 is an injection-molded material offering light weight that can be stylish as well. Lightness translates into comfort, and that's a critical feature for active outdoorsy types.

Just because a frame is lightweight does not mean that it has to be flimsy. Research and design engineers spend a lot of time experimenting with frame materials to create a variety of features. Durability is right at the top of their must-have features list. Find and recommend frames that can take the punishment patients will inflict as they participate in their outdoor activities. Carbonium, a composite plastic frame material mixed with carbon molecules, offers a lightweight, durable frame material for sunwear. Grilamid has won the hearts of frame manufacturers and sunglass wearers alike due to its ability to perform without wearing out. Stainless steel is non-corrosive so patients who perspire a lot or are around sea spray will not have to worry about their frame becoming damaged from it.

Features such as strength and elasticity are other elements that quality sunwear should have. After all, a frame material that is able to maintain its shape without breaking is an important benefit for active lifestyles. New metal materials such as Kynetium (an aluminum alloy which also includes magnesium, silicone, and titanium) are available for you to pick from the rack and discuss with your sunwear patients.

Fade resistance gives frames long-lasting color stability. This is an important feature since the buyer will be wearing her sunwear in direct sunlight. Fade resistance also means that the frame's color and finish should withstand attacks from perspiration.

COMFORTABLE FRAME FIT

Trust me, your patients will appreciate the fit of a well-designed and -manufactured sunwear frame immediately upon placing it on their heads. Without comfort—one of the most important sunwear features of all—many other benefits are lost. Hand your patient one of your favorite sunwear models, and while he enjoys the look of it, point out the benefits of its comfortable fit. The frame should fit snugly, without slipping or pinching, allowing the wearer to do what it is she enjoys doing while outdoors without worrying about discomfort.

For example, a comfort-enhancing feature on a sunwear frame might be specially designed nose pads that become more tacking and resist slipping when the person perspires. The obvious benefit is a frame that stays in place. Some sunwear models have buried rubber nose pads for secure anchoring on the face. Adjustable temple ends allow customized fitting for enhanced comfort and minimal slippage. Some manufacturers have even gone the extra mile and designed uniquely shaped temple tips that adapt to the shape of the patient's head, helping eyewear stay in place under extremely athletic conditions. Combine adjustable bridges with special grip temple systems to further ensure comfort and eliminate slippage.

PROTECTION

While a good deal of sunwear is purchased for casual use and fashionable good looks, an important aspect of performance sunwear is protection. No sunwear design does this better than a wraparound frame. Its face-contouring configuration hugs the orbital rims of the eyes and the patient's face. This helps protect the wearer from bugs and airborne debris while pro-



PHOTOS COURTESY OF YOUNGER OPTICS.



CLEAR THE WAY Polarized lens wearers immediately notice how much bolder objects appear, how much deeper colors are, and how much better they see.

viding a wide field-of-view. It also offers protection against sun, wind, and impact.

Adding cushions around the back of the eyewires is also a clever way to keep debris out. Some designs even have air- and wind-management systems that prevent fogging and decrease tear film evaporation.

When you begin to consider the features you should recommend to your patients for their sunwear,

you'll realize that there are many more than you might have imagined. That's one of the aspects that makes sunwear such a fun eyewear product to work with—there are so many great features! ■

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SUNWEAR FEATURES AND BENEFITS TO RECOMMEND

LENS FEATURES

UV ABSORPTION

BENEFITS

Protects the eye and skin around eye from harmful UV.

BROWN-COLORED LENS

Protects the eye from harmful blue light.

LENS COLORS

Help provide quality vision in specific outdoor activities. Lens color density Improves visual quality for varying light conditions. Photochromic technology Lenses adjust automatically to varying light conditions. Younger Optics' Drivewear® Activated by Transitions™ darken using visible light inside of a car.

INTERCHANGEABLE LENSES

Accommodate varying light conditions.

AR-TREATED LENSES

No back-surface reflections.

HYDROPHOBIC/OLEOPHOBIC/
ANTI-STATIC COATINGS

Reduce annoying lens surface particulates and improves visual performance.

POLARIZATION

Decreases harmful glare and improves quality of vision.

HARDCOAT

Reduces lens scratches.

ANTI-FOG TREATMENT

Improves vision.

IMPACT RESISTANCE

Decreases the risk of eye injuries.

FRAME FEATURES

LIGHTWEIGHT FRAME MATERIAL

Comfort.

DURABLE FRAME MATERIAL

Increases longevity of frame.

FADE-RESISTANT FRAME MATERIAL

Increases longevity and improves the frame's appearance

FLEXIBILITY

Comfortable and reduces the chance of breakage.

STRENGTH

Prevents breakage.

COMFORTABLE FIT

Remains in place and is comfortable.

SUN & SPORTS EYEWEAR CE SELF-ASSESSMENT TEST

Please fill out the Answer Sheet at the end of this test. Respondents with a passing score of 12 or more correct answers will receive one (1) hour of CE credit by the American Board of Opticianry. This test is valid through August 1, 2008.

1. According to the author, a patient outside on a sunny day mixed with large clouds would benefit most with which percentage of lens transmittance?

- A. 92%
- B. 87%
- C. 28%
- D. 12%

2. Which of the following is *not* a highly impact-resistant lens material?

- A. CR-39™
- B. Plutonite®
- C. Selenite™
- D. SR-91®

3. Which statement is *not* correct concerning Australia's "Slip, Slap, Slop, And Wrap" program?

- A. It was put into place due to high numbers of skin cancers.
- B. It was put into place due to high numbers of eye pathologies.
- C. Children should stay indoors during midday.
- D. Children should wear shirts, sunscreen, hats, and sunglasses when outdoors.

4. According to the text, which outdoor activity would benefit the most from polarized lenses?

- A. running
- B. tennis
- C. motorcycling
- D. hiking

5. Hydrophobic coatings on lenses _____.

- A. prevent perspiration
- B. allow rain droplets to easily slide off the lens
- C. allow lenses to be washed under running water
- D. prevent dust from sticking to the lens surface

6. Which of the following frame material is known to deter corrosion, benefiting those often seaside?

- A. stainless steel
- B. carbonium
- C. iron
- D. Plutonite

7. Which of the following does *not* inherently protect the eyes from UV radiation?

- A. 1.6 plastic
- B. photochromic lenses
- C. glass
- D. Trivex®

8. Which is *not* a benefit of polarized lenses?

- A. objects appear bolder
- B. colors appear deeper
- C. quality of vision is improved
- D. lenses change color in varying light conditions

9. Which lens color will absorb the blue and blue/violet range of visible light?

- A. brown
- B. gray
- C. green
- D. yellow

10. Which activity will *not* benefit from wearing a yellow-tinted lens?

- A. biking
- B. hiking
- C. water sports
- D. shooting

11. What color will Younger Optics' Drivewear® Activated by Transitions™ lenses turn while your patient is driving in bright light?

- A. dark reddish-brown
- B. dark gray
- C. copper
- D. green/yellow

12. Which lens feature will greatly benefit your patient who mows lawns for a living and likes to dig for gemstones as a hobby?

- A. polarization
- B. hardcoat
- C. blue tint
- D. 80% tint transmittance

13. Which of the following frame materials is injection-molded?

- A. TR-90
- B. titanium
- C. flex-nickel
- D. Kynetium

14. Which frame feature will assist in keeping bugs and debris from getting behind your patient's lenses?

- A. wrapped frames
- B. cushioned bridges
- C. spring hinges
- D. adjustable temple ends

15. Which sunwear package should be presented to your adult patient who plays softball on the weekends?

- A. Sunwear marked with Z87.1
- B. Sunwear marked with ASTM F803-98
- C. Sunwear marked with ASTM F513-95
- D. Sunwear with polarized lenses

ANSWER SHEET

Fill out and mail this portion to: Sun & Sports CE, c/o First Vision Media Group, Inc., 25 East Spring Valley Ave., Suite 290, Maywood, NJ 07607 or Fax to: 201-587-9464. Be sure to fill out form completely. This CE article is also available on the Web at totallyoptical.com.

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ANSWERS

Make sure to blacken the selected answer circle clearly and completely.

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