

INSIGHTS

Got It Made in the Shade?

Nothing makes a fashion statement during the summer months like a stylish pair of sunglasses. But there's a lot more to "shades" than appearances, according to the National Eye Institute. Their most important job is to protect your eyes from the sun's ultraviolet (UV) rays.

Why do eyes need protection?

Without protection from UV rays, eye damage can occur including:

- **Cataracts:** A progressive clouding of the eye's lens that can make vision blurry. About 20 percent of cataracts are caused by long-term UV exposure
- **Macular degeneration:** Damage to the retina that destroys central vision. Macular degeneration is the leading cause of vision loss in people age 50 and older in the United States
- **Pterygia:** Tissue growth that develops over the white part of the eye that can alter the shape of the eyeball, causing astigmatism (distorted eyesight)

What is UV light?

Ultraviolet light is an invisible spectrum of light emitted by the sun. Wearing sunglasses helps protect against UVA and UVB rays.

Who should wear sunglasses?

Virtually everyone should wear sunglasses. People who wear prescription glasses can get the protection they need with prescription



sunglasses or photochromic lenses. If you wear contact lenses—even those offering UV protection—sunglasses are still essential to shield the eye tissue that is not covered by the lenses. Non-prescription UV sunglasses are the best approach for contact lens wearers and for those who do not need prescription eye wear. When purchasing sunglasses, look for ones that block out 99 to 100 percent of both UVA and UVB radiation. Those labeled "UV 400" block all UVA and UVB rays. Also, consider wrap-around sunglasses. They are the best solution for preventing harmful UV rays from entering around the frame.

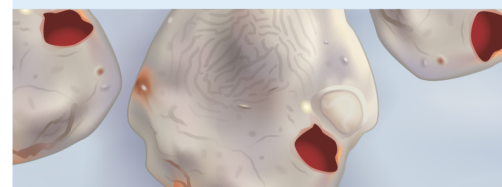
Ask your optometrist about...

- **Blue blocker lenses:** Help block out harmful blue light
- **Polarized or antireflective lenses:** Help reduce reflective glare
- **Mirror-coated lenses:** Help reduce amount of light entering the eye
- **Photochromic lenses:** Darken in sunlight and fade back when indoors



EYE CANDY

Born to Be "Wiids"



Imagine looking through the lens of a microscope and discovering that the one-celled organism you were studying was staring back.

Scientists recently peered into the eye-like structure of a single-celled marine plankton called a warnowiid and found it contained many of the components of a complex eye. In fact, its tiny peeper looks very much like the lens, cornea, iris and retina of multicellular eyes—also known as camera eyes—that are found in humans and other larger animals.

Researchers from the Canadian Institute for Advanced Research at the University of British Columbia gathered a sample of single-celled warnowiids in the Pacific Ocean just off the coasts of British Columbia and Japan. They analyzed how the eyes were built using an electron microscope that revealed a three-dimensional image.

Researchers believe that the eye-like structure helps warnowiids detect and hunt their prey.

EYE-Q

Q: What percentage of Americans suffer from digital eye strain?

(See answer on back.)



Are You Seeing Spots?

Have you ever seen tiny spots in your eyes drifting into your field of vision? They're called floaters and they can look like black or gray specks, strings or cobwebs. They drift about when you move your eyes and seem to dart away when you try to look at them directly.

But how do they get there? When we are young, a substance in the middle of our eyes called the vitreous has a gel-like consistency. But as we age, the vitreous begins to dissolve and liquefy to form a watery center. Some of the undissolved gel particles occasionally will float around in the more liquid center of the vitreous. These particles, which can appear in many shapes and sizes, are called "floaters."

This occurs more often with age because as the vitreous liquefies, it shrinks in size. As it pulls away from the back of the eye—a process called posterior vitreous detachment (PVD)—those undissolved microscopic particles in the vitreous may cast shadows on the retina, appearing as floaters.

While annoying, ordinary eye floaters are common and usually aren't cause for concern. Light flashes during this process mean that traction is being applied to the retina while the PVD takes place. Once the vitreous finally detaches and pressure on the retina is eased, the light flashes should gradually subside.

However, if you notice a sudden increase in eye floaters, contact your optometrist immediately—especially if you also see light flashes or lose your peripheral vision. These can be symptoms of a

condition called retinal detachment that requires prompt attention. In cases of a retinal tear or detachment, treatment must occur as soon as possible so that an eye surgeon can reattach the retina and restore function before vision is permanently lost.

Flashes also may occur after a blow to the head that is capable of shaking the vitreous gel inside the eye. When this occurs, the phenomenon—often shown in cartoons—is sometimes called "seeing stars."

In people who are nearsighted, the eye's elongated shape can increase the chances of developing a PVD. As a result, nearsighted people are more likely to have PVDs at a younger age.

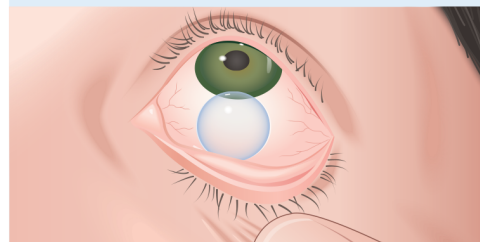
It's estimated that more than half of all people will have a PVD by age 80. Thankfully, most of these PVDs do not lead to a torn or detached retina. If you experience any symptoms related to PVDs, contact your optometrist to ensure your eye is healthy.

Set Adrift

As you age, microscopic fibers within the vitreous may clump together and can cast tiny shadows on your retina, which appear to you as "floaters."



Sticky Situation



Contact lens stuck?

If centered on your cornea, it's probably dried out. Rinse it and your eye for a few seconds with a steady stream of sterile saline solution. Close your eye and gently massage your upper lid until the contact lens moves. Still stuck? Repeat the rinsing step, blinking frequently afterwards. Once the lens frees, remove it.

Contact lens stuck off center?

Move your eye in the opposite direction. Stuck under your upper eyelid? Look down. Then gently massage your eyelid and blink to move the lens to the center of your eye for removal. If necessary, rinse with sterile saline to loosen.

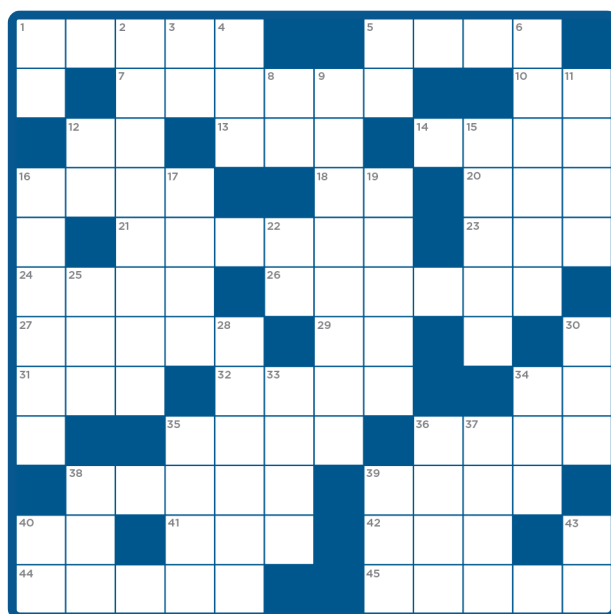
Gas-permeable contact stuck?

The removal technique is different. Avoid massaging your eyelid; the rigid lens may scrape the eye. If stuck on the white of the eye, use the pad of your fingertip to gently press your eye just outside the edge of the contact lens to break the suction that is keeping it stuck.

If these techniques don't work or you are experiencing pain, contact your optometrist immediately. That way you can avoid a really sticky situation!

The Eyes Have It

(See answers on back cover.)



ACROSS

1. Type of lettuce (plural).
5. Omega fatty acids that can be scrambled.
7. Refried beans could be called this.
10. Eat healthy, exercise and you'll get a 6-pack of this (abbrev).
12. To eat is human, ___ digest, divine.—Mark Twain.
13. And so forth.
14. Place with food court that serves salads.
16. Hard ___. Food for British sailors.
18. Add subscript "2" and it's water.
20. University in Dallas (abbrev).
21. Vegetable often used in cake.
23. ___ tapper.
24. Beet, carrot or turnip is one of these.
26. *The Book of ___*. (Broadway play.)
27. Room _____. (two words).
29. Opposite of South America (abbrev).
31. Type of tuna.
32. Indian tribe now living in Utah and Colorado (pl).
34. ___ apple a day...
35. ___ Rabbit, trickster from Southern literature.
36. Green leafy vegetable.
38. Vegetables in the onion family.
39. Bright red berry grown in China.
40. Opposite of Yes.
41. ___ *Miserables* (Broadway play).
42. One in Spanish (fem).
44. A kind of parsley.
45. Usually follows Anglo.

DOWN

1. Let it ___.
2. Vegetable that looks like little tree.
3. To ___ or not to be.
4. Opposite of he.
5. How some people feel about broccoli.
6. Fish that likes to swim upstream.
8. If ___ first you don't succeed...
9. A sailing ship that was used to catch fish and oysters.
11. Color of berry known for its antioxidants.
12. It's ___ ta, not good-bye!
15. Famous millionaire who sank with RMS Titanic.
16. Eat healthy to reduce this on your teeth.
17. *Kiss me, _____*.
19. Other in Spanish.
22. Place to stay in a hotel (abbrev).
25. Expression of awe or surprise.
28. Thanksgiving meat that's a great source of zinc.
30. ___ potato, two potato.
33. 1979 film based on 1891 novel.
34. Famous boxer who stung like a bee.
35. Type of pepper.
36. Hawaiian source of macadamia nuts.
37. Greek hero who fought in the Trojan War.
38. Reed or Gehrig.
39. Nickname for Fergus or Augustus.
40. Produces twice as many peaches as GA (abbrev).
43. Opposite of off.



Get Up and Goji!

Grown mostly in China, goji berries are recognized as one of the best eye-health superfoods on the planet. They're rich in zeaxanthin and beta carotene. Zeaxanthin absorbs harmful blue light and protects the delicate macula of the eye.

Beta-carotene converts to vitamin A, which helps improve vision by maintaining the rod and cone cells in the eye.

Besides these two antioxidants, goji berries are also rich in the B vitamin riboflavin and vitamin C. Just an ounce provides 20 percent of the RDA of vitamin C and 120 percent of the RDA of vitamin A. They're also high in fiber and rich in protein.

According to a study published in *Optometry and Vision Science*, consuming 15 goji berries every day can prevent and even reverse some cases of macular degeneration and vision loss.

Goji berries can be consumed in salads, breakfast cereal and even in tea. Keep in mind that if you have food allergies you need to consult with a healthcare provider before eating goji berries. And, of course, always buy organic varieties for superior quality.

Astigmatism: When Images Miss the Mark

What is astigmatism?

Imagine the retina in the back of your eye is a bulls-eye target. In a normal healthy eye with an evenly curved lens and cornea, light rays entering your pupils would land in the middle of that bulls-eye, resulting in good eyesight. But what would happen if the lens or cornea were imperfectly curved? In that scenario, light rays entering the pupils would miss the retinal bulls-eye, landing instead in front of or beyond it, resulting in a condition that's called astigmatism.

There are two kinds of astigmatism:

- **Corneal astigmatism:** When the clear surface, or cornea, of the eye has an irregular shape (the more common form of the condition)
- **Lenticular astigmatism:** When the lens, a transparent disk behind the iris of the eye, is distorted

The result of either type of astigmatism is that both near and far objects may appear blurry or distorted, much like a fun house mirror in which objects appear too tall, too wide or too thin. It is possible to have other conditions along with astigmatism such as near-sightedness (myopia) or farsightedness (hyperopia).

Who gets astigmatism?

Some people are born with astigmatism; others can develop it as an adult. While people with a greater degree of astigmatism may realize their vision needs correction, children who have astigmatism symptoms may not realize they have this condition, and are unlikely to complain about blurred or distorted vision. But uncorrected astigmatism can seriously impact a child's performance in school and sports.

What are the symptoms?

Signs and symptoms of astigmatism may often include:

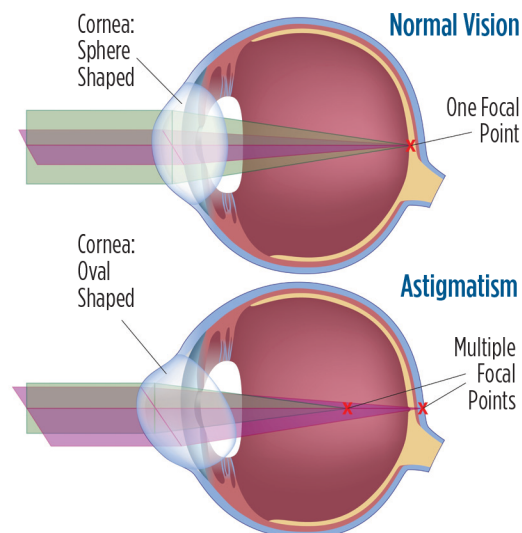
- Headaches
- Eyestrain
- Squinting
- Distorted or blurred vision at different distances
- Difficulty driving at night

How is astigmatism diagnosed?

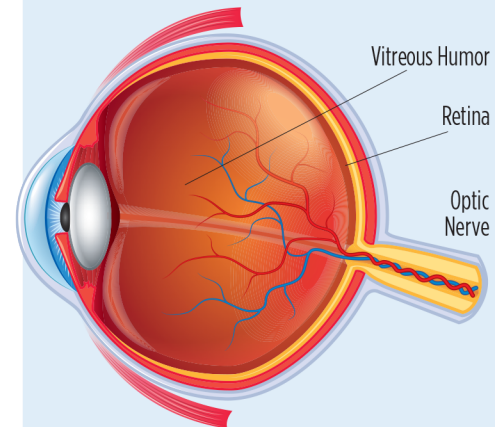
Astigmatism can be diagnosed with a comprehensive eye exam. Let your optometrist know about changes in your vision. It can help in detecting any common vision problems.

How is astigmatism corrected?

Astigmatism can be corrected with glasses, contact lenses or surgery. Your optometrist can write you an eyeglass prescription to correct astigmatism. Another approach is correcting the condition with contact lenses. Contact lenses work by becoming the first refractive surface for light rays entering the eye, causing a more precise refraction or focus. In many cases, contact lenses provide clearer vision, a wider field of vision and greater comfort.



What Is the Vitreous Humor?



The vitreous humor is a gel-like substance that fills the eye—occupying an area from the space behind the lens to the retina at the back of the eye. Because light rays need to pass through the eye to the retina, then to the optic nerve, the vitreous humor must be clear. That way the image data that reach the optic nerve can be clearly interpreted by the brain.

Most of the vitreous humor consists of water. It also contains a small amount of collagen, salt and sugar. An unmoving substance, the vitreous is not served by any blood vessels and is not actively regenerated or replenished.

If a substance enters the vitreous humor, it will remain suspended in the gel until it can be surgically removed. These substances, which can include blood or clumps of cells, are collectively referred to as floaters. Floaters are quite common, especially as people age and the vitreous humor thins.

Technology Through the Ages

Age appears to determine patterns of digital device use and its accompanying eye strain, according to a recent VisionWatch survey by The Vision Council.



Children

Technology is a part of children's everyday lives, but they often aren't taught how to hold devices to prevent squinting or how to sit the proper distance from a device to avoid eye strain.

- **65%** spend 2 or more hours daily on digital devices
- **More than three-fourths** of parents are concerned about the impact of digital devices on children's developing eyes

Adults in their 20s

Millennials switch back and forth between different technologies to binge-watch a favorite show, work at a laptop and scroll through social media.

- **73%** report symptoms of digital eye strain
- Nearly **9 out of 10** people use 2 or more digital devices simultaneously
- They opt for getting news via smartphones, desktop computers, laptops and tablets
- Nearly **90%** check their devices in the hour before going to sleep

Adults in their 30s

These cubicle dwellers use computers or laptops at work. As their vision changes with age, they will seek reading glasses and computer glasses to help address technology-associated vision issues.

- **93%** are at risk for eye strain from spending 2 or more hours daily on a digital device
- **68%** use smartphones to get directions
- **67%** spend 5 or more hours each day on digital devices
- Nearly **2 in 5** use a tablet to find a recipe, and **1 in 10** use tablets for online shopping
- **More than 1 out of 3** play games on their smartphones

Adults in their 40s

This group may face challenges trying to focus their eyesight at varying distances and moving between devices.

- **66%** experience 1 or more symptoms of digital eye strain
- **65%** spend more than 5 hours daily on digital devices
- **59%** use desktop or laptop computers for online shopping, more than any other age group
- More than **1 in 5** use computers to keep track of professional sports

Adults in their 50s

This group was the original early adopters of technology. Most rely on computers and laptops as their core digital devices.

- **More than 30%** of adults have used digital devices for more than 15 years
- **63.9%** report symptoms of digital eye strain
- **86%** spend 2 or more hours daily on digital devices
- **55%** spend more than 5 hours daily on digital devices

Adults in their 60s and older

This group is the fastest growing demographic on Facebook, and because of their commitment to healthy aging, has been quick to keep tabs on health data captured through devices such as exercise or blood pressure monitors.

- **More than 1/2** experience symptoms of digital eye strain
- **37%** spend 5 or more hours daily on digital devices
- **86%** spend 2 or more hours daily on digital devices
- They are more likely to use a desktop or laptop computer for directions, recipes, research, social media and games



What Is a Corneal Topographer Test?

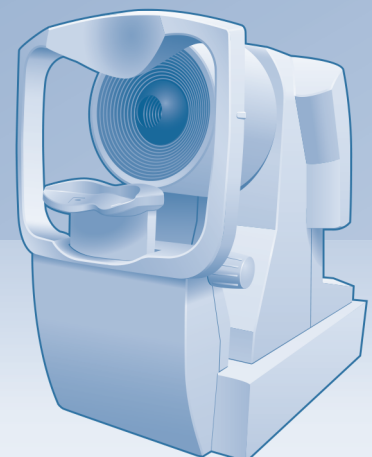
Corneal Topography provides a three-dimensional map of the eye's clear surface, or cornea. Just as the mapmakers of old created images of the continents for navigation, this noninvasive test creates an accurate image of the curved surface of the cornea so the eye-care practitioner can explore the state of the patient's eye health. The test also can assist in LASIK surgery and the fitting of contact lenses.

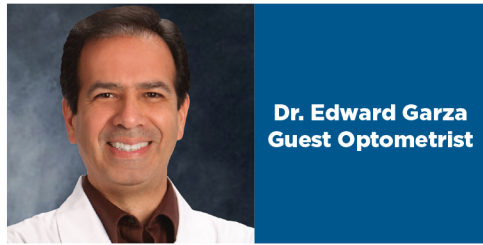
For the test, the patient is seated facing a bowl containing an illuminated pattern, most commonly a series of concentric circles. The pattern is focused on the surface of the patient's cornea and is reflected back to a digital camera. A computer provides an analysis, typically determining the position and height of several thousand points across the cornea.

The procedure is carried out in seconds and is completely painless.

Ahead of the Curve

A corneal topographer provides a map of the curve of the eye's surface.





Dr. Edward Garza
Guest Optometrist

Q: My sister has problems with sun glare, but I can see perfectly well in the sun. Are a pair of sunglasses really necessary for me?

A: Glare can affect us in different ways. First let's talk about what glare is. Light waves can travel in different directions. Vertical light helps the human eye to see. Horizontal light, however, creates glare. Glare is concentrated light reflecting off a horizontal shiny surface, such as a car windshield, asphalt roads, water, snow or sand. It reduces visibility and can make it uncomfortable, painful and even dangerous to drive or participate in sports. In order to reduce this unwanted reflection, we need to incorporate polarized lenses.

Sunglasses can be viewed as something we use for comfort and fashion, but they are important from a medical standpoint as well. The sun emits different wavelengths of ultraviolet (UV) rays, but UVA and UVB are the most harmful. Most sunglasses will provide adequate protection, but check the label for 100-percent UV protection. Glare is reduced, but not eliminated. By filtering all components of light, vision is not as clear as it could be. Polarized lenses allow in vertical light, which is preferred for clear vision, while eliminating skewed horizontal light.

Sunlight has been shown to accelerate cataracts (clouding of the eye's lenses), macular degeneration (damage to the retina that can result in blindness), pterygia (thickening of the surface of the inner corner of the eye that may obstruct vision) and lid cancers. Sunglasses should be worn throughout the day, but especially from around 10 am to 3 pm.

Q: Is it okay to swim in the ocean with contact lenses?

A: Contact lenses should always be removed before swimming in any body of water whether a pool, lake, river or ocean. All sources have microorganisms and they can attach to the lens, eye or both. The greatest risk comes when those who reuse their contacts routinely sleep with them. I always insist on daily disposable contacts for patients who swim any amount of time. If a patient does wear contacts while swimming, I instruct them to not wear contacts the next day and use lubricating drops.

Avoid a Glaring Mistake

Optometrists recommend sunglasses with polarized lenses to help filter out horizontal light.



Sunburned Eyes?



When people go swimming at lakes or beaches, they bring along sunscreen to make sure their skin doesn't get sunburned. But what about their eyes?

Long hours in the sun may expose unprotected eyes to harmful UVA and UVB rays and can actually cause sunburned eyes. If you've spent several hours in the sun and your eyes are watering, itchy, sensitive to light, or dry and gritty, it's likely you have sunburned eyes.

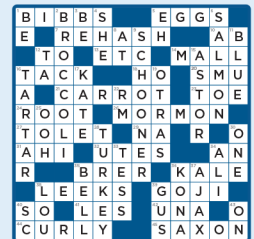
Sunburned eyes aren't just irritating. According to the American Academy of Ophthalmology, repeated exposure to ultraviolet (UV) radiation can contribute to cataracts and macular degeneration.

It's easy to prevent sunburned eyes. A wide-brimmed hat will help shade your eyes. In addition, every member of the family should wear sunglasses outdoors, even in cold winter months. Ask your eye doctor for sunglasses with 100-percent UVA and UVB protection and blue-light filtering. Think about frame size too—larger frames help prevent harmful rays from sneaking in at the sides or top of your glasses.

Answer to Eye-Q (from page 1)

A: 65% of Americans report experiencing symptoms of digital eye strain.

Answers to Crossword (from page 3)



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