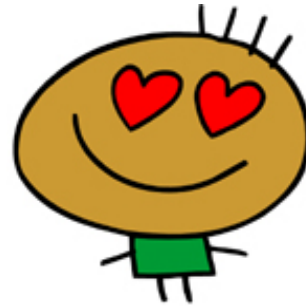


The Eyes Have It

By Tamara Mitchell
Edited by Sally Longyear



Eye strain and eye fatigue tend to creep up on us when we aren't looking...well actually, when we ARE looking, especially when we stare for hours at objects within two feet, such as computer monitors, microscopes, reading material or craftwork. Over the past 40,000 years, humans have primarily used their eyes for distant vision.¹ In the last 100 years, our viewing tasks have gradually become predominantly near vision work.¹ We tend to ignore our eyes until they start bothering us, or we experience headaches that don't go away.

The good news is that our eyes don't have to hurt! There are several things we can do to avoid problems and keep our eyes healthy:

- Rest, look away from work, focus on distance or out window
- Close eyes
- Take a break, go for a walk
- Use eye drops
- Put on glasses
- Change activity
- Sleep
- Improve lighting
- Blink
- Wash eyes

In this article, we'll expand a bit on the list above as well as introduce some other ideas, such as supplements, that can help you improve the health of your eyes.

Get your eyes checked and wear your glasses.

If your eyes feel dry, tired, gritty or sore after a few hours of work, it's important to get your eyes checked.² Being far-sighted or near-sighted, having astigmatism, or wearing bifocals, trifocals, or progressive lenses can make computer use a problem. Depending on your condition, focusing at close range may cause your eyes to work harder, resulting in eye strain and fatigue.³ A thorough exam will determine if your eyes are functioning properly, especially at close distances. It is important to provide the examiner information about all objects you view (e.g., computer monitor, journals or books, a microscope). An annual exam is strongly recommended, even for individuals with 20/20 vision. As we get older, our eyes change. Without an exam, the subtle changes might go unnoticed until it is too late.

Rather than waiting until your eyes are tired, you should consider wearing your computer or reading glasses to avoid eye fatigue whenever you perform near vision work. Computer glasses can be coated to avoid fatigue caused by flickering light sources such as computer monitors and fluorescent lighting, or a very pale pink tint can be incorporated which offsets the scattering of light around the office.^{1,3} Computer glasses are intended for viewing objects at an arm's distance, while reading glasses focus closer at 14-18".^{1,3} If you choose to wear bifocals, trifocals, or progressive lenses instead of computer glasses, be sure to lower the monitor to accommodate the focus at the bottom of the lenses.

Adjust and care for your monitor.

The good news for computer users is that there is no evidence that computer monitors themselves are harmful to the eyes.⁴ However, if the monitor is too close or too far away, it will cause your eyes to work harder.

Your monitor should be close enough for you to see the screen without squinting or holding your head forward. A common place to start is to position your monitor about an arm's length away, but do not leave it there if you cannot see it while your head is aligned with your hips.

The part of the display viewed most frequently should be slightly below eye level.³ If your monitor is too high, you will have to open your eyes too wide, causing them to dry out.

If you find that the flicker of the monitor is causing fatigue, you can reduce the screen brightness or even purchase a monitor with a higher refresh rate.² The screen should not be overly bright compared to the surrounding light. It is best to set the screen contrast high and the brightness low.

Finally, remember to clean your display frequently. Monitors can build up dirt quickly due to static charge which makes it difficult to see what is on the screen.

Control lighting and glare.

Bright light that causes glare on the computer screen, or insufficient illumination of reference materials, will cause eye strain.⁴ Overall illumination in the room should be diffuse.³ Research has found that bright ambient lighting not only increases visual discomfort and eye strain, but also overall body fatigue, especially in the neck, shoulders and back.⁵ Bright lighting causes people to tense their muscles or change their posture to a more tense position.⁵

Avoid excess light on the screen by rearranging your office, dimming overhead lights or closing blinds. Reading material can be illuminated by a task lamp. We suggest sources for task lighting on our task lighting products web page. It is important that task lighting is adjustable so that documents can be illuminated, without creating glare on the computer screen. Task lighting that is too bright causes high contrast between the reference material and the display, which will cause eye fatigue.²

Some of us are so used to dealing with glare on the computer screen that we are no longer aware that your eyes are working too hard. When you struggle to see, your eyes fatigue more rapidly.

Do a quick test to see if glare is an issue for you. If your office gets natural light, you will need to test for glare several times throughout the day since the light inside changes with the sun. Try the following four steps while looking at your computer screen. Which actions help your eyes to relax?

1. Shield your eyes with your hand or a piece of cardboard to block excess overhead light.
2. Shield your eyes on each side, one at a time (as if you were putting blinders on).
3. Using a large piece of cardboard, shield the top of the computer monitor (as if you were putting a visor on it), and then each of the sides.
4. Turn off the computer monitor and notice if you see any objects brightly reflected on the monitor.

Once you diagnose a glare problem, there are many quick fixes to try:

1. If you have glare from too much overhead light (and all the office lighting turns on at the same time):
 - a. Remove some of the bulbs from the light overhead and switch to task lighting.
 - b. Try repositioning your desk so that light is not bouncing directly into your eyes or on the screen.
 - c. Wear a visor or hat with a brim (you may feel silly, but at least you won't have a headache).
 - d. Switch to full spectrum lighting. Fluorescent full spectrum tubes are available.
2. If you have too much glare on the computer monitor:
 - a. Reposition your monitor. It is best to set up your computer workstation perpendicular to the window. A desk for reading and writing can be in front of the window to utilize natural light.
 - b. Construct a cardboard shield for the monitor by taping a file folder to the side.
 - c. Reduce the amount of light from windows with blinds or a sheer curtain.
 - d. Buy a monitor hood to shield the display from sources of glare.⁶ Note: this can be annoying if you don't like looking through a tunnel to see your screen.
 - e. Use a glare screen only as a last resort. Since a glare screen does not solve the problem, it should be considered only if the source of glare cannot be controlled. In some cases, glare screens reflect glare almost as badly as the monitor itself and they make the display less bright.¹



3. If you have bright objects reflected on your monitor:
 - a. Remove the objects.
 - b. Cover the objects with dark fabric or paper.
 - c. Move your monitor.

Blink and drink.

Blinking renews the fluids in your eyes and keeps them from drying out.^{3,7} Forgetting to blink while you are working is very common. Ordinarily, we blink about 12 times a minute, but people working at a computer tend to blink only 5 times a minute!³ Other activities are also associated with less blinking including reading, thinking, or concentrating on a particular task.¹

Squinting also reduces how often you blink and can lead to dry, irritated eyes, as shown in a new study at Ohio State University.⁷ We squint to focus our eyes for a better look. But just a slight amount of squinting reduced blink rates by half, from 15 blinks a minute to 7.5 blinks a minute.⁷ The more that participants in the study squinted, the less they blinked. The less they blinked, the more their eyes ached or burned and became dry.

If your eyes dry out, use artificial tear drops or gel and remember to blink!^{3,7,8} It is recommended that you purchase saline in individual use dispensers without preservatives, and avoid products that whiten the eyes.⁸ Many people are allergic to preservatives. Also, eye drops in large bottles without preservatives tend to grow bacteria, increasing the risk for eye infections.⁸ Products that whiten the eyes do not have adequate lubricating qualities and often make the problem worse.⁸

Drink plenty of water throughout the day.⁹ Constipation and dehydration are harmful to the eyes.⁹ Limit caffeinated beverages that dehydrate the body, such as coffee and colas.⁹

Rubbing your eyes is a common response to dry, irritated eyes. Rubbing your eyes tends to increase the irritation and can lead to a vicious cycle of increased irritation and more rubbing.¹⁰ In addition, hands carry lots of bacteria that can lead to eye infection. A lot of eye rubbing can actually damage the cornea (the outer lens of the eye), so people should avoid rubbing the eyes when they are tired.¹¹

Take a break.

Based on our questionnaire, most people know that taking a break, focusing on something distant, or closing their eyes relieve and avoid eye strain. These breaks are *essential* to the health of your eyes.^{3,4,9} We highly recommend that you download a break reminder such as WorkRave (www.workrave.com) which is free, and set it to remind you to rest not only your body, but also your eyes. Optometrists recommend the 20-20-20 rule: every 20 minutes take a 20 second break and focus your eyes on something 20 feet away.³

Splash your eyes and face with slightly warm water 10-15 times to refresh them and to prevent eye fatigue.⁹ You can also place a cloth soaked in rose water over your eyes for a few minutes for a cooling effect.⁹

Sleep.

Lack of sleep is one of the biggest enemies of the eyes.⁹ Getting adequate rest is important for your entire body, but especially the eyes. Try to follow the suggestions of ayurvedic routine and get to bed before 10:00 pm.⁹

Do some “Eye Yoga”.

There are several exercises that can help maintain the health of your eyes. It is important to remember that even just taking time to breathe can relax the eye muscles, as well as increase the supply of oxygen in the blood.¹ We tend to hold our breath when we are stressed or when we are concentrating.¹

*Palming.*⁹

1. Rub your palms together for 8-10 seconds to create mild heat from friction.
2. Close your eyes and gently place your palms over your eyes without applying any pressure. Rest your palms there for one minute while breathing in and out slowly to release stress.
3. Repeat 2-3 times.



*Yogic Exercises.*⁹

1. Sit comfortably on the floor with legs crossed, keeping your spine, neck and head in a straight line. Look directly ahead of you at eye-level and breathe normally.
2. Move your eyes up to the ceiling and look focus for 2 seconds. Look downward for 2 seconds. Look right as far as you can for 2 seconds. Look left as far as you can for 2 seconds. Then look forward again.
3. Close your eyes for 6-8 seconds.
4. Repeat 2-4 times.

*Sunning.*¹²

This exercise increases circulation to the eyes, exercises the pupils as they dilate and constrict, and enhances your eyes' adaptability to darkness and light.

1. Stand with your eyes closed facing either the sun or a very bright light (e.g., a 150 watt incandescent light).
2. Sway your body, shifting your weight from one foot to the other.
3. Notice the differences between partial shade and brightness. Breathe and relax.

*Nose Feathering.*¹²

This exercise focuses the mind and gives the eyes a rest through gentle guided movement.

1. Visualize an invisible feather extending from the end of your nose that can shorten and lengthen.
2. With your mind, gently trace the outlines of different size objects that are both near and far, paying attention to the edge the feather is touching.

Try supplements.

Supplements and herbal dietary companions can help keep your eyes healthy.

1. *Lutein and zeaxanthin.* There is significant observational and controlled research indicating that lutein and zeaxanthin, members of the carotenoid family of natural plant pigments, are important in maintaining general eye health. They can also help prevent cataracts and macular degeneration.¹³ Lutein is an antioxidant that fights damaging free-radicals. It also protects the eye from sun damage.¹³ Recommended daily dosage is 5-30 mg, although therapeutic dosages have not been determined.^{13,14} Rich dietary sources are collard greens, kale, spinach, and broccoli.^{12, 14} It is believed that most people do not consume enough lutein or zeaxanthin to lower their risk of macular degeneration or cataracts.¹⁴

2. *Ginkgo.* Controlled studies have confirmed benefits of taking ginkgo to improve visual acuity of patients with macular degeneration and the visual field of glaucoma patients.¹⁵ Dosages of 60 mg, 120 mg, and 240 mg have been studied, with the higher dosages showing greater visual improvements.¹⁵ It may be extrapolated that ginkgo could help maintain general eye health.¹² 60 mg daily is recommended, although interactions with blood-thinning agents and supplements, and other medications (including calcium channel-blockers), are suspected. Please check with your doctor before taking ginkgo if you are on antipsychotic, blood thinning, or calcium channel blocking medications.¹⁵

3. *Bilberry.* Anecdotal reports and some limited uncontrolled studies have found bilberry extract to improve night vision, however controlled and double-blind studies are lacking. Results from the studies are not consistent, so it is doubtful that bilberry is helpful in improving night vision. One small controlled double-blind study found that bilberry significantly improved the condition of patients with damage to the retina due to diabetes or hypertension (diabetic retinopathy). But since the study was very small, further research is required to confirm the results.¹⁶

4. *Alpha-Lipoic Acid (ALA).* ALA is a powerful antioxidant that works in both water and fat, can penetrate nerve cells to protect them, and is present in all body cells.¹⁷ It appears to take over when other antioxidants are in low supply and can even regenerate other antioxidants that have been used up.¹⁷ Ordinarily, the healthy body creates enough ALA. Preliminary research indicates that therapeutic doses of ALA may be helpful in prevention of cataracts and glaucoma.¹⁷ A daily dose of 20-50 mg is recommended as a general antioxidant, although this amount has not been shown to have any health benefit.¹⁷

Most importantly -- remember to blink, breathe, and look into the distance to relax and rejuvenate your eyes!

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