

# PROGRESSIVE EYECARE CENTRE

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## COMPUTER VISION SYNDROME

It is very common for computer screens (monitors) to cause symptoms of vision-related stress that are not a problem for other visual tasks. This is partly due to the way in which images are formed on the screen, which causes frequent refocusing, resulting in eyestrain and fatigue. This can also cause computer users to stare more and blink less often, leading to dry eye symptoms. Computer Vision Syndrome, or CVS, is the term used for computer related eye stress, which is now being widely recognized as a significant problem for workplace ergonomics, causing documented losses in productivity. The symptoms can include:

- blurred, distorted or double vision, often intermittent (in-and-out of focus)
- headaches, neck pain and other bodily discomfort
- tired, achy eyes
- frequent tearing
- burning or gritty feeling in the eyes
- fatigue
- difficulty concentrating

There are several things that can be done to limit these symptoms:

**(1) Proper prescription.** According to research, even slight changes in a glasses or contact lens prescription can make a significant improvement in the ability to hold steady focus on a computer screen. The prescription may need to take into account the exact distance at which the screen is viewed (see #3).

**(2) Proper lens style.** This is particularly important for people with multifocal prescriptions. A standard bifocal, trifocal or progressive lens places the distance prescription at eye level, which does not work for a computer screen which is also at eye level. It is often necessary to design a lens with the proper computer-distance prescription placed at eye level, which then does not work for distance vision. It is usually the case that multifocal wearers need a different pair of glasses for long-term computer use – this is often their most important issue for computer comfort. This also relates to suggestion #3.

**(3) Proper screen position.** The closer an object is to the eyes, the more effort is needed to focus on it. Also, it takes less effort to focus on a near object that is below eye level than on one that is at or above eye level. Furthermore, turning the eyes slightly downward helps the lower eyelids to keep tears against the eyes to prevent dryness. For these reasons, research shows that the most comfortable screen position for most people is 20 to 26 inches from the eyes, and about 20 degrees below eye level. This height

recommendation means placing the top of a standard size monitor at about 3 inches below eye level, so that most of the screen requires a slight downward gaze. This can sometimes help with using a standard multifocal lens style for computer use (see #2). The screen should also be directly in front of the viewer, so that neither the head nor the eyes have to be turned (see #5 and #6).

**(4) Proper screen appearance.** The better the contrast, the easier it is to read. The print should be much darker than the background – black print on a white background is best. It is also important to eliminate glare and reflection on the screen. If lights cannot be prevented from shining directly on the screen, then an anti-glare screen, that fits over the monitor, may be necessary. Reflections on glasses should also be reduced with an anti-reflective lens coating.

In addition, the screen should be approximately the same brightness as the background that can be seen around the screen (walls and other objects). This helps to reduce changes in the pupil size, which can also cause eye fatigue.

**(5) Reduce eye movements and refocusing.** The greater the amount of eye movements and changes in focal distance, the faster the eye muscles will tire. When computer work also involves frequently looking at other objects, such as entering information from printed material, it is helpful to place the material right next to the screen, at the same distance, height and angle. Adjustable stands for this purpose are readily available.

**(6) Reduce other stress.** If any other parts of the body are uncomfortable, this can be distracting to the subconscious mind, making it more difficult to tolerate visual stress. Using the proper chair style with good back support, and maintaining good posture, especially in regard to keyboard position (for elbow and wrist comfort) and head position (straight and upright for neck comfort), can make a big difference in limiting eye strain and fatigue as well as head and body aches.

**(7) Take frequent breaks.** Even with all of these ergonomic problems solved, it is still expected that after an hour of computer use (often even sooner), anyone will get some degree of these symptoms, and will need to give the eyes a rest. During the break, it is important to relax the near focus by looking at least 20 feet away (looking out a window works great). Do this for a few minutes at least once an hour, or better yet, follow the “20-20-20” rule: every 20 minutes, take a 20 second break, while looking at least 20 feet away. The time used up by relaxing will probably be more than compensated by increased efficiency and accuracy.

**(8) Treat dry eyes.** Whenever a visual task requires concentration, it is common to not blink normally. If the rate of blinking is too slow, the tears will evaporate before each next blink, resulting in an uneven tear film and/or dry spots on the eyes. This can cause irritation and distorted vision. These four tips can help prevent dryness:

- (a) As stated before, a downward gaze with the head upright can help to keep the sensitive centers of the eyes into the pool of tears at the edges of the lower eyelids.
- (b) Frequent, relaxed blinking is vital. This may take some practice until it becomes automatic. The lids should close gently as if falling asleep, because a forceful blink will not form a normal tear film. Try to blink at least every 5 seconds.
- (c) Avoid dry air as much as possible. Keep breezes from air conditioners, heaters, fans and windows away from the face. Use a humidifier if necessary. Also avoid any kind of air pollution, such as smoke, dust or fumes.
- (d) Consult with your eye doctor about dry eye treatments, such as artificial tears. Specific advice is necessary – *most* over-the-counter eye drops contain preservatives and/or drugs which can make dry eye symptoms *worse* (despite what the labels may say). Many oral medications can also increase dryness.

Of course, many computer users will not be able to follow all of these recommendations. However, keep in mind that any small change, over a long period of time, can make a big difference.