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# Your Eyes Come First

You know about carpal-tunnel syndrome: If you don't use palm rests and wrist rests and maybe one of the new, angled keyboards, you'll develop painful, possibly debilitating problems with your wrists and fingers. And you know about back problems: Unless you get a good chair, sit upright instead of slumping, and take frequent breaks to stand up and walk around, you'll develop excruciating, persistent lower-back pain.

But good as those suggestions are, they overlook the most widespread health complaint among PC users.

A Lou Harris poll three years ago reported "computer-related eyestrain" as the number-one office-related health complaint. And the National Institute of Occupational Health and Safety says that of the 66 million people in the U.S. who work at PCs more than 3 hours a day, a whopping 88 percent suffer from eyestrain.

In addition to the familiar red, sore, and dry eyes, the litany of vision problems we develop with extended use of computers is a long one: generalized "eyestrain," blurred vision, tearing, headaches, color fringing, and more. Yet few computer users—and fewer employers—do much about those problems. For PC users, that's unfortunate and probably dangerous. For employers, it's counterproductive, idiotic, and an invitation to lawsuits.

Reducing glare, lowering background lighting, raising monitors to eye level, and encouraging PC users to look away from the screen every few minutes and to blink more often are important first steps. But they're not enough: We also need to address the individual vision problems of PC-using office workers.

Which usually means getting "computer glasses."

## PC SPECS

For more than a decade I've used special eyeglasses optimized for the working distance from my eyes to the monitor, based on my desk setup, posture, and so on. These computer glasses have made a noticeable difference.

But until recently, not enough of a difference. Because until recently optometrists didn't know how to prescribe glasses correctly for the glowing phosphors of computers and the virtual image they present to the eye.

When the eye focuses on sharp, black-on-white type on a conventional eye-testing chart, it tends to hold focus on that plane. So testing your vision with the ubiquitous Snellen card—used in virtually every optometrist's office—is fine for determining the correct prescription for reading glasses or sewing glasses. But it doesn't work very well for glasses for computer users.

The villain is a physiological phenomenon called the *lag of accommodation*. Simply put, when the eye attempts to focus on the inevitably softer image on a computer monitor's cathode-ray tube, or on a notebook's LCD screen, it is unable to hold focus on that virtual image plane.

Instead, the eye's focus almost immediately starts drifting outward toward a point called the *resting point of accommodation* (RPA). You subconsciously force the eye's focus back onto the monitor image, but the eye quickly begins drifting its focus back out to that RPA once again.

The difference between the point at which you want the eye to focus—the plane of the computer screen—and that RPA point is your lag of accommodation. And it is that constant refocusing, not found in any other environment or human action, that leads to the many manifestations of eyestrain.

There has been no good way to determine an individual's specific RPA—the distance varies a good deal from one person to the next—nor to devise a prescription to correct for each person's lag of accommodation. As a result, "computer glasses," no matter how carefully prescribed, no matter the competence of the person conducting the eye exam, have been rough

*We need to address the vision problems of PC-using office workers.*

Illustration by Philippe Lardy

approximations, inherently flawed because they were based on that unrealistic, black-ink-on-white-paper Snellen-card test.

But for the past two months I've been wearing a new pair of computer glasses that have gone a long way to overcome the lag-of-accommodation problem. The magic isn't in the glasses themselves, which are ordinary single-vision glasses ground to a conventional prescription, but in the way that the prescription was determined.

Dr. Cosmo Salibello has been working on this problem for more than a decade. Convinced that an active, "Gaussian stimulus" test card was the only valid way to simulate the eye's reaction to a computer display, he and colleagues at a little Portland, Oregon company, PRIO, developed a device that lets optometrists accurately determine an individual's RPA and build correction for that distance into prescriptions.

The PRIO Vision Tester is a backlit box, about 5 by 7 by 1 inch, that attaches to the doctor's side of the eye-examination system. It displays green and amber text against a black background, and green text against a white background. The process is quick: You read the text over and over for a couple of minutes, to start your eyes' focus-swapping routine, and then the doctor measures your ocular movement.

## BEFORE AND AFTER

My new computer glasses were produced from the results of a PRIO exam, and in direct comparisons with another pair based on an ostensibly correct prescription derived from a Snellen-chart test, I see a real difference.

But the most important difference isn't detected in a quick test between PRIO-based correction glasses and conventional close-work correction lenses. It comes over time: Even after long sessions at the computer, I no longer have the weary, red-eyed, blurry vision I once blamed on the computer.

The PRIO technique and equipment are new, and it can be hard to find an optometrist in your area using the device. You (and your optometrist and your employer) can contact PRIO at 800-621-1098 or *priojt@teleport.com* for more information.

I rarely offer such unqualified endorsements. But I have little choice here: My vision and yours are too important to put at risk. And PRIO can make a big difference. □