

DOCTOR, ERGONOMIC THYSELF

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Abstract

The examiner component of the optometric primary care evaluation constitutes an ergonomically stressful situation. The same is true to the provider of vision therapy. Both authors have experienced significant somatic pain and discomfort as a result. They bring this problem to the reader's attention and offer some general and specific recommendations for prevention and remediation.

Key Words

ergonomics, optometric examination, repetitive stress, vision therapy

INTRODUCTION

Optometry has a long history regarding vision in the workplace. Although we could not ascertain the exact year of its inception, Occupational Vision has been a part of the profession for at least 50 years. It is still important enough for the American Optometric Association (AOA) to house a committee that is at least partially devoted to Occupational Vision. There is an Occupational Vision Manual available from the AOA.¹ The subject matter is primarily devoted to considerations of adequate lighting and eye safety measures in the workplace.

An extension of Occupational Vision presented itself over the past several decades with the increasing use of computers in the workplace, school and for recreation. The role of vision was obvious and research led to the coining of the term Computer Vision Syndrome (CVS). The AOA issued a statement that defines this entity, and it has become quite popular.² Indeed, google.com offers more than 269,000 links to CVS. It is no exaggeration to state that optometry has been the leader in researching and providing guidelines for visual and ergonomic interventions for CVS.³⁻⁶

Yet, in spite of the significant interest and effort optometry has demonstrated in the occupational safety and ergonomic concerns of the public, the profession has not shown the same concerns for its practitioners. This article is a first step toward acknowledging the existence of ergo-

nommic stresses and repetitive motion injuries in the practice of optometry.

For example, during the workday does your dominant hand go to sleep? Has one shoulder become painful on movement? Have you ever thrown out the sacroiliac (SI) joint in your lower back? We have anecdotally found these and other ailments to be common conditions in practicing optometrists (ODs). We propose that a major cause of these conditions is the repetitive motion necessary to perform ocular- and visually-related clinical procedures. An ergonomic expert observed one author (RH) in a typical vision examination. He concluded that the required clinical procedures were perhaps the worst he'd seen in terms of repetitive motions. He stated, "Most of the awkward postures are caused by equipment with fixed positions and prescribed ranges of movement. Patient positioning also creates a forward bend for the optometrist, which is inherent in the way procedures are performed."⁷

The ailments are rarely acknowledged or discussed in optometry school, at conferences or continuing education programs although they can start very early in an optometrist's career. We've spoken to ODs in their first years of practice who are already experiencing symptoms. We've observed that many eventually require critical and/or preventive care, usually from a physical therapist, chiropractor or osteopath, in order to maintain their normal work schedules. If ignored, the injuries can lead to permanent damage and/or

the rehabilitation can mean extended periods of time away from practice, or an earlier-than-anticipated retirement.

There are several goals to this article. First, we have identified a problem that we strongly feel needs to be acknowledged. Further, we believe this problem should be addressed in the interest of all ODs, but particularly in terms of preventive measures for optometry students. Finally, we seek to present information, gleaned from our experiences that will enable current and prospective OD's to take preventive measures to eliminate the ill effects of repetitive motion and poor posture in their clinical activities.

While we are not experts on the topic, we have both experienced somatic problems that are the direct result of poor "optometric practitioner ergonomics" and will share some of the insights we've gained.

Sitting vs. standing

What are the advantages to the examiner sitting or standing while performing eye exams? One author (RH) does her examinations seated, while the other (JS), does hers standing and feels that it is less stressful. RH was encouraged to learn to do a seated exam by her mentor, who knew she was entering optometry later in life than is usual, and encouraged her to choose a seated exam to be able to work into her 60's and beyond. The mentor is now close to 80, and still practices, although mostly vision therapy.

Our conversations with professionals who work with body mechanics, support JS's choice of the standing exam. They say that the leaning forward required in the sitting position is more detrimental to the lower back and hips. In addition, during testing at the phoropter, the optometrist's arms must be raised and extended from his body more when seated than when standing. This awkward position can lead to shoulder, arm and back problems over time.

However, these experts have some caveats for using the standing position: the examiner must be very careful to maintain good posture so that the lower back is not arched, and must strive to maintain balance equally on both feet. Good padding under the carpet and shoes that are comfortable and supportive are important to cushion the effect of being on one's feet for prolonged periods.

General things to do

DO break up your workweek and/or workday as much as possible. Arrange your workweek so that at least one day is devoted to activities that are free of direct patient care. This day can be devoted to administrative work, meeting with other professionals, or simply can be a day off. Also, performing different tasks to break up the workday can accomplish the same purpose. In this manner, specifying times to return or make phone calls or to dictate or enter patient notes on the computer can significantly lessen the amount of continuous and prolonged repetitive motions.

DO (for women) wear supportive, flat or low-heeled, well-fitted shoes. Our profession requires much movement, walking, bending and standing. Our feet are our anchors to the earth. Proper footwear is a must. We know of one optometrist who finally opted for quality athletic shoes; this was the only style that provided her support and comfort. Men should avoid loafers and other styles that provide minimum support.

DO pay attention to your office floor surfaces. Good padding under the carpet is helpful, especially if you choose the standing examination position. If you choose the sitting option and consequently roll back and forth in your chair in a proscribed area, a substantial chair mat is in order.

DO make sure your stool adjusts for your height to keep you from arching your back while keeping your feet flat on the floor.

DO consider the task of history recording. This task, especially for complex cases such as traumatic brain injury clients, can be tedious and time consuming. Some practitioners are moving to electronic records, either typed directly into the computer, or via voice recognition software. However, our perception is that the majority of optometrists still use copious hand-written notes. In this situation, sit at a table across from the patient. Avoid the common scenario of balancing a clipboard on your knees. This method requires twisting and raising and lowering your neck and/or back as you alternately move

from making patient eye contact to writing your notes.

DO invest in automated instrument tables. These tables offer good flexibility to obtain the most comfortable and ergonomically correct positions when using the particular instrument.

Do consider repetitive motion and ergonomic preventive measures for your staff. For example apply the same advice you give to patients about vision and computer work to your secretaries. Further, consider those jobs where there is a lot of twisting and turning. A case in point is the vision therapist who is bending over the patient in order to place cards in the stereoscope. Also, consider the typist who can be a candidate for carpal tunnel syndrome. These measures show your concern for staff, can avoid work time lost, and can save potential costs of a Workman's Compensation claim.

DO think in terms of prevention. Thus, perform regular strengthening exercises of abdominals and the upper body. Do stretches during the workday. For example, to stretch the lower back, sit in a chair, tuck the pelvis in, then lean over and grasp the ankles and hold for about 30 seconds. Repeat the procedure about 10 times.

Things to do and not do when testing

DON'T sit "side-saddle" on the chair or stool.

DO straddle the patient as discreetly as possible.

DON'T arch your back. This is particularly common with shorter optometrists when stretching to reach the oculars of the slit lamp or those who perform their exams standing.

DO keep the pelvis tucked and neutral. This helps to tighten the stomach and soften pressure on the knees.

DON'T lean over the patient sideways from the waist during direct ophthalmoscopy. Rather, have the patient sit forward in the chair so you can approach the eye directly, in a straight line.

DO keep elbows tight to the waist and reach from the elbows as much as pos-

sible. This is easier to do in the standing position with the exam chair kept low.

DON'T crick your neck when using instruments that have oculars, such as slit lamp and keratometer. Rather, keep your head and neck in a straight line. Make sure that both you and the patient are in this position.

DON'T slouch with shoulders rounded forward. This seems to be a natural position for many of our examination procedures. However, when the shoulders are in an elevated and outward position, the nerves and blood supply in the surrounding areas can be pinched and compromised.

DO keep shoulders relaxed with shoulder blades depressed and retracted.

DO pull the phoropter away and rest periodically during an extended examination. RH does this after the distance refraction, giving herself and the patient a break. Taking breaks allows both you and the patient to change body position and decrease stress on the musculo-skeletal and vascular systems.

DON'T reach back and up to change slides if you have a manual projector.

DO consider investing in an automated projector. This avoids the twisting and turning required by the floor or wall mounted models.

DO reconsider your current viewing methods when performing binocular indirect ophthalmoscopy (BIO). Does your current method of the upright or reclining patient position best fit your physical and patient chair characteristics? It may be beneficial to consider varying your method according to the height of the patient and your degree of fatigue during that time of day.

Things to do during vision therapy (VT) for the therapist and the patient

DO use stools to accommodate different height patients and staff. A key for both patients and staff is to have stools available so that feet can be flat on the floor and backs are straight as much as possible.

DO organize your VT room to minimize bending over and reaching for stereoscopes and other "in instrument" techniques.

DO intersperse computer-based, instrument-based, pencil and paper and gross motor tasks and make sure they are as ergonomically properly placed as possible.

DO allow for the movement of height-sensitive equipment, e.g., Marsden Ball, to match the patient.

DO visit other offices and get ideas on good ways to organize and arrange your VT area.

SUMMARY

Optometric clinical procedures are, by their nature, demanding on one's body mechanics. Further, many procedures require repetitive motions. Our personal experiences have been that when one is unaware of the dangers of these ergonomically incorrect factors, the results can be discomfort, pain, lost time and the need to seek professional help. We have offered some considerations and actions to avoid or minimize these consequences.

The health care profession that presents ergonomic challenges similar to those of optometry is dentistry. It is apparent that dentistry has recognized the dangers to its practitioners and has already taken some measures. For example, the Institute of Dental Ergonomics claims that 65 to 75% of dentists and hygienists suffer the pain and discomfort of musculo-skeletal disorders. It sponsors a workshop in which participants learn to minimize postural and repetitive stress that can occur in the daily practice of dentistry.⁸ Further, we found that there is a book on dental ergonomics, published by the American Public Health Association.⁹ It is possible that dentistry has pioneered a path that optometry can take.

This article constitutes our preliminary thoughts; it does not do justice to this important topic. We plan a future article and solicit readers' comments, suggestions and ideas. Please contact the corresponding author.

References

1. Good GW. Occupational vision manual. St. Louis: Am Optom Assn, 1998.
2. The relationship of computer vision syndrome to musculoskeletal disorders. <<http://aoa.org/eweb/DynamicPage.aspx?site=AOAstage&WebCode=CompVisionM>. Accessed May 24,2004.
3. Buzton SP, Sheedy JE, Nilson E. The efficacy of computer glasses in reduction of computer symptoms. *Optom* 2002;73(4):221-30.

4. Sheedy J. What's in a name: "computer vision syndrome?" *Optom* 2002;73(7):399-402.
5. Anshel J. Accommodation for computer users... and more. *Optom* 2002;73(7):405-6.
6. Kolker D, Hutchinson R, Nielsen E. Comparison of tests for accommodation users. *Optom* 2002;73(4):212-20.
7. Chassen C. Ergonomic Report for RH, 2000.
8. http://depenet.com/Articles/Article_Display.cfm?ARTICLE_ID=206941&p=54. Accessed 7/07/04.
9. Murphy D. Ergonomics and the dental care worker. Washington, DC: Am Pub Health Assn, 1998.

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