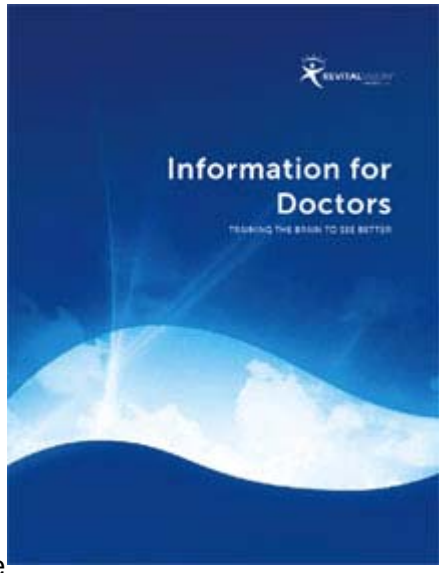
OPHTHALMOLOGY NEWS

Physical therapy to improve patients' vision

by Richard L. Lindstrom, M.D.

While the topic is controversial, reports in the literature as well as patient responses seem to indicate that patients can be trained to improve their vision



For cataract surgery, physicians and patients work together to decide which IOL fits the patients' lifestyles the best, as to whether they have a greater need for distance, intermediate, and/or near vision, as well as financial concerns.

I have had a lot of patients in which I implanted a Crystalens (Bausch & Lomb, Rochester, N.Y.) or another multifocal IOL and the patients were not satisfied with the visual results. One common complaint that I hear from patients is that they are not satisfied with their near vision. In my multifocal IOL patients, sometimes they are not happy with their distance vision.

So what do we do to rescue these patients? We've treated their ocular surface disease, we broke their capsule, we checked the macular stroma, so what is there left to do? We know that over time, some of these patients improve on their own because they nuero-adapt, but is there a way to speed that process?

Using RevitalVision (Lawrence, Kan.), we found that patients improved their distance vision by 1.3 lines and their near vision by one line.

How it works

There have been about 20 years of research in the concept originating out of Israel looking at the fact that the central nervous system does have neuroplasticity. The ability to see is about 90% hardware, which is the eye, and about 10% software, which is the brain. People can be trained to enhance their ability to see and read.

RevitalVision, which does have regulatory approval and is available in the United States, uses a series of Gabor patches that have to be individually designed and customized for each patient. Gabor patches are the most effective visual stimulus in visual neuroscience.

The software measures the contrast threshold of a Gabor target with the presence of flankers, which are two other Gabor patches on either side of the central "target" patch. The patient is exposed to two short displays in succession and the patient identifies which display contains three patches.

The patches are individualized to meet the needs of the patient such as spatial frequencies, spatial arrangement of the Gabor patches, contrast level, orientation (local and global), tasks order, context, and exposure duration.

Basically, over time, your brain learns how to enhance the image to

the point where it can see better, and then when you go off into the real world and try to read a book, you can actually read it better.

Implement in your practice, see the results

In our practice we have an in-house optometrist, so I will report the patients to the optometrist who will then do the pre-op exam and show the patients how to use the program. It is helpful if you can have someone who is engaged with the patients. Then the patients take the program home and do the work, and the company can monitor if they are doing the work or not. The company will send you a note if they are not. For their part, the patients will have to complete about 10 to 14 sessions of about 20 minutes each.
Donald T.H. Tan, F.R.C.Ophth., director, Singapore National Eye Centre, and Allan Fong, M.R.C.S.Ed., M.R.C.Ophth., Singapore, reported in the April 2008 issue of the Journal of Cataract & Refractive Surgery that all 20 eyes in their case series had improvement in uncorrected visual acuity (UCVA) and contrast sensitivity. In fact, patients' distance UCVA improved by an average of 2.1 lines.
I also find in patients for whom the patches were customized both improved contrast sensitivity as well as improved near and distance vision.
Because I use the Crystalens predominantly, my patients did not experience the same benefit for distance vision. However, that may be due to the fact they were already seeing about 20/15 on average after cataract surgery, so there was not as much room for improvement. But these patients did improve 1.8 lines of near vision. So whereas I was getting J2, J3 outcomes with surgery alone, with the RevitalVision program, I am getting those patients down to J1.
Some surgeons are also using this on monofocal lens patients and improving their distance and near vision, as well.
Drs. Tan and Fong also reported in the journal that at 12 months post-op, the visual gains were retained and that there were no adverse effects as this is a noninvasive program.

Other applications beyond cataract surgery

It is certainly an exciting program. Cataract surgery is where we started, but there are other patients who can benefit, as you can imagine.
For example, patients with age-related macular degeneration (AMD) could benefit. Many of these patients face the reality of having to give up their driver's licenses or get issued a restricted driver's license, and they want help. With this program, they can legitimately improve their vision from 20/50 to 20/30, and as long as they can pass the driving test, they can keep their driver's licenses.
You can also actually improve an athlete's performance—there is work being done with baseball players. It is also being used to treat amblyopia. Patients who are 20/20 in one eye and 20/50 in the other after LASIK can have the weaker eye trained to see as well as the better eye. I'm pretty excited about this, and the patients like it.

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Dr. Lindstrom is adjunct professor emeritus, Department of Ophthalmology, University of Minnesota, and founder, Minnesota Eye Consultants, both in Minneapolis. He has financial interests with Bausch & Lomb (Rochester, N.Y.), RevitalVision (Lawrence, Kan.), and several IOL manufacturers, among other companies.

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