

# Get Ready for On-Line Refraction: The Fourth O

- Barry Santini, 20/20 Magazine, February 2012, page 74

## Dyops: A New Dynamic Optotype

In 2008, recruiter Allan Hytowitz was frustrated. Sitting in front of his computer for over eight hours a day playing matchmaker and trying to improve the lives of hopeful job candidates, and helping companies succeed by hiring that skilled talent, his vision was riddled daily with blur and headaches and a frequent inability to comprehend what he was seeing. At times he wondered if he should, or could, continue in his chosen and previously very successful career. As he desperately tried to find the cause of his visual difficulties, all of the medical practitioners he consulted assured him there was nothing medically or physically wrong with him or his eyes. Yet he couldn't work and had trouble seeing.

Wearing the progressive glasses his eye doctors had repeatedly recommended and prescribed, he assumed those lenses were "the best thing since sliced bread," something his trusted doctors had assured him. However, he found in over 15 years of wearing progressive glasses, that he was constantly seeking an optometrist or optician who could make progressives that would let him see clearly and reduce his headaches. Sparked by his frustration with areas of reduced intermediate utility—a limitation dictated by the adjacent peripheral blur areas—he began to question his doctor's recommendations of progressive lenses. Allan came to realize that none of those eyecare professionals could effectively quantify the actual intermediate area of visual utility to his satisfaction. So began his quest to discover why conventional eye testing, aka refraction, was so poor at revealing the limitations of those lenses.

By literally pulling himself up by his boot straps, over the next few years, Allan self-taught himself the basics of refraction and acuity testing. What he uncovered was that vision testing was still mired to using a chart of graded-sized letters, and that eyecare professionals were reluctant to engage in a dialogue about its

deficiencies. By challenging some of the assumptions made by Dr. Snellen over 150 years ago—assumptions made when the telegraph was the world's most efficient means of communication—he was able to create an entirely new way of testing visual acuity, one based upon the idea of using a moving, rather than static optotype. He calls his creation a "dynamic optotype," or "Dyop" for short.

The idea is breathtakingly simple: By using rotating rings with alternating black and white segments on a neutral background, a Dyop harnesses the motion-processing sensitivity of the human eye, and results in a visual acuity test that is exquisite in its subjective sensitivity. Unlike the other optotypes, there is no gray area of indecision about whether one can see or recognize a letter—you either detect the rotational motion of the Dyop or you don't. That precise detection ability confidently indicates your acuity and the endpoint of your refraction. Dyops are not only more precise than Landolt rings, they are more culturally neutral since Landolt rings are still influenced by character recognition. With the employment of color, Dyops have been determined to be a useful diagnostic tool for the evaluation of color vision deficiencies and various forms of dyslexia.

As a computer-based vision screening tool, Dyops allows a person to quickly self-diagnose the following: acuity, peripheral vision, color vision and motion sensitivity. Dyops even screens for 20/20 acuity in infants as young as 5 months old. It may just become the type of convenient, self-administered vision screening test that DMVs are looking for.

The unique qualities of Dyops have been recognized by being granted full patent protection in the United States as well as the rest of the world. For more information, see [www.dyops.org](http://www.dyops.org).

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