Dyop® Vision Associates LLC

Helping the world see clearly, one person at a time.

www.Dyop.org

www.DyopVision.com www.chart2020/dyop

A **Dyop®** (short for **dynamic optotype**) is a rotating segmented image whose uniform motion, viewing distance, diameter, and color/contrast creates a strobic gap/segment visual stimulus area.

Acuity (visual clarity or how clearly a person sees) is usually measured by comparing a person's vision at 20 feet or 6 meters (known as 20/20 or 6/6 acuity). The clarity of what we see is determined by the size of the object and the distance from that object. Objects that are close fill more of our field of vision, and objects that are further away appear smaller.

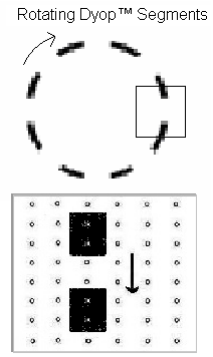
Optotypes are standardized letters, numbers, or symbols used for testing vision. To determine acuity, different sized optotypes are displayed and the smallest size optotype which can be reliably identified becomes the measure of change (refraction) to achieve optimum (or 20/20) acuity.

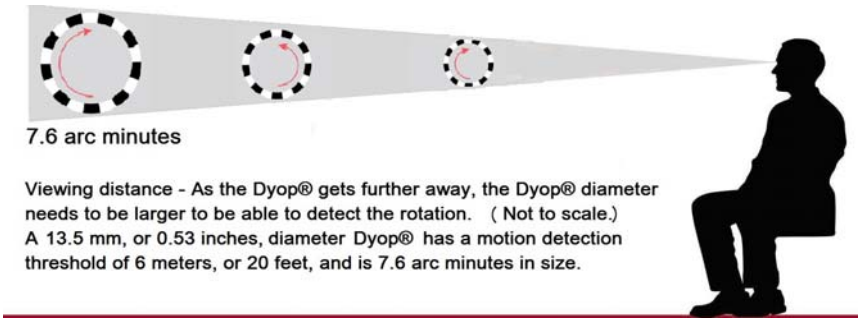
Our eyes developed as survival sensors for detecting motion and distance so that we can eat rather than be eaten, and **NOT** just for detecting differences between static letters such as 'E' and 'C'. The rotating **Dyop®** strobic gap/segment visual stimulus creates an acuity endpoint which is directly proportional to the **Dyop®** angular arc width (diameter) and the **viewing distance.** The visual stimulus of the rotating **Dyop®** utilizes the biological pixel refresh rate of photoreceptors to indicate visual acuity and refractions.

A **Dyop®** is potentially faster to use, minimizes memorization, is more accurate, and is more consistent than classic (Snellen/Sloan/Landolt) letter-based tests. The **Dyop®** acuity endpoint can be determined regardless of an individual's age, language, or culture, and does not require literacy, let alone the ability to read English). Using a **Dyop®** for measuring visual acuity increases the accuracy of refractions, lets people more easily know when their vision is other than optimum, and potentially saves doctors' and patients' time and money in determining vision needs.

Dyop® tests are intended as a global replacement for Snellen, Sloan, and Landolt visual testing.

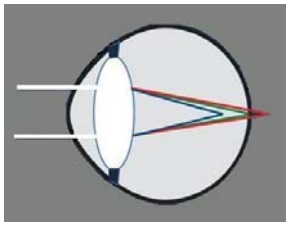
Snellen Test

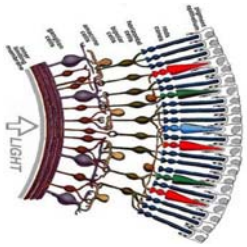




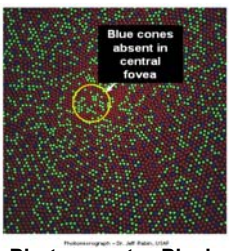
Similar to the pixelized stimulus response of a TV, computer display, or digital camera**,** our eyes interpret what we see as a contiguous image even though our photoreceptors are seeing thousands of very tiny pixel stimuli. Only when we get close enough to the image do we become aware of those individual pixels. Those pixels are similar to the Dyop® gap/segment stimulus areas. When the Dyop® gap/segment stimulus areas get smaller, or are seen at a sufficiently farther distance, our eyes no longer detect the motion of the gap/segment stimulus areas, and merge them into the illusion of a continuous image. The strobic Dyop® gap/segment stimulus of the photoreceptors creates an acuity endpoint (detection response) by the retina as a result of the photoreceptor refresh rate.

Acuity is regulated by the **cone photoreceptors** in the back of the retina that are sensitive to red (L), green (M), and blue (S) wavelengths of light. The neural layers of the retina function as a biological circuit board to filter those photoreceptor responses and increase the eye's sensitivity for detecting motion. The stimulus of around 100 photoreceptors creates a combined neural response that is sent to the brain via one optic nerve to regulate the lens. The visual stimulus of those photoreceptors provides a **chromatic triangulation** to regulate the focal length and the acuity of the lens.

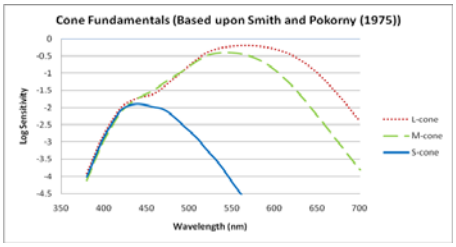

Eye Structure



Retina Layers



Photoreceptor Pixels



Wavelengths of light

The Dyop® (Dynamic Optotype™) tests and concept are covered under U.S. Patent 8,083,353 and International Patent WO2011022428.

Go to www.Dyop.org or www.DyopVision.com for further information 2017-02-23

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