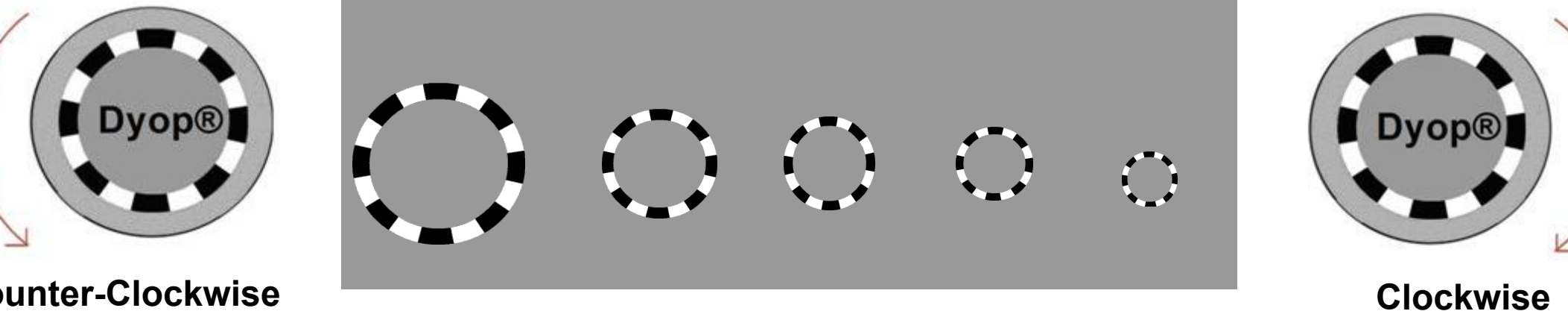


Introducing the Dyop®

The “Revolutionary” Method for Measuring Visual Clarity (Acuity)

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



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is dynamic, rather than static, and vision is an autonomic and dynamic process inherent in all machines which help us survive by enabling us to automatically **detect motion, distance, and** and food and eat rather than being eaten. By being autonomic most of us don't have to think about what we need to see be properly in focus.

the term used to describe **the clarity of what you see**. A **refraction** is the process of **using** **variables** of **sphere, cylinder, and axis** which go into creating eyeglasses and contact lenses and

vision. Typical vision tests use **static letters or symbols** as the standard targets for measuring vision. **Measurement systems** is that they typically measure **only two dimensions** using the **height** of the visual target to that target. Instead, the world we see (the “**real world**”) is a **fifth dimensional process** consisting of **distance, and time**.

The **Dynamic Optotype** (abbreviated “**di-op**” and short for **dynamic optotype**) is a **calibrated** segmented spinning ring visual target. **Observers (and you) test how clear your vision is.** A **Dyop** provides a strobic stimulus to the **photoreceptors** of the **retinal** of your eye called the **fovea**. (See the **illustrations and details below**).

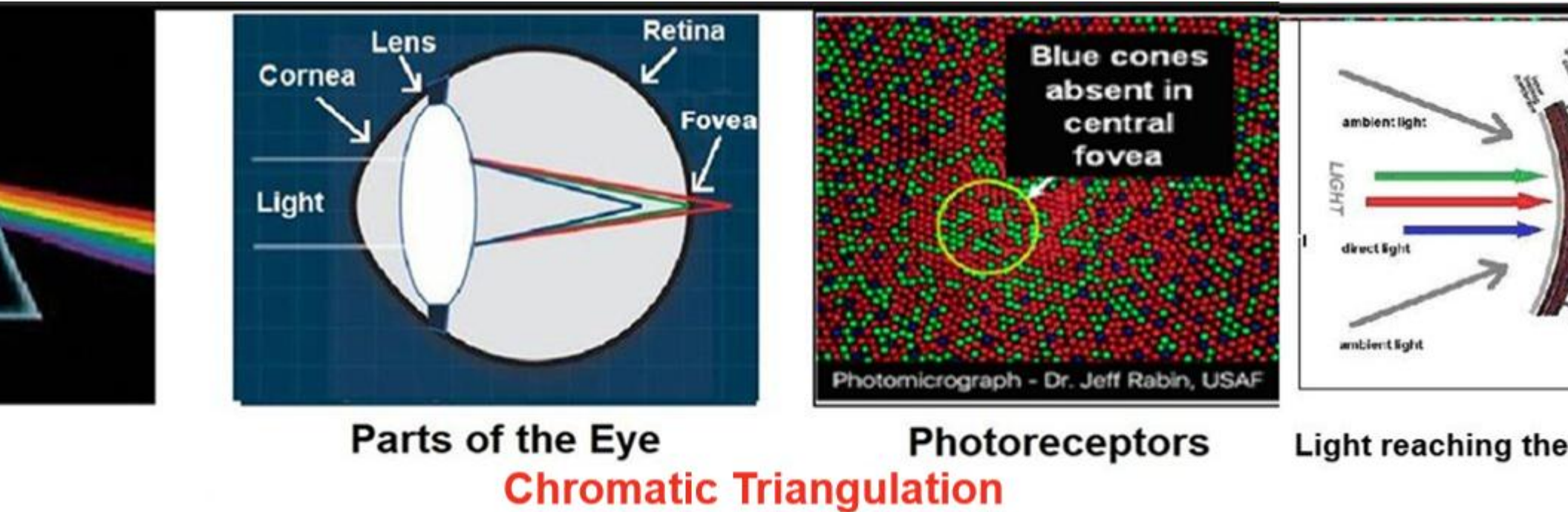
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What Regulates Acuity

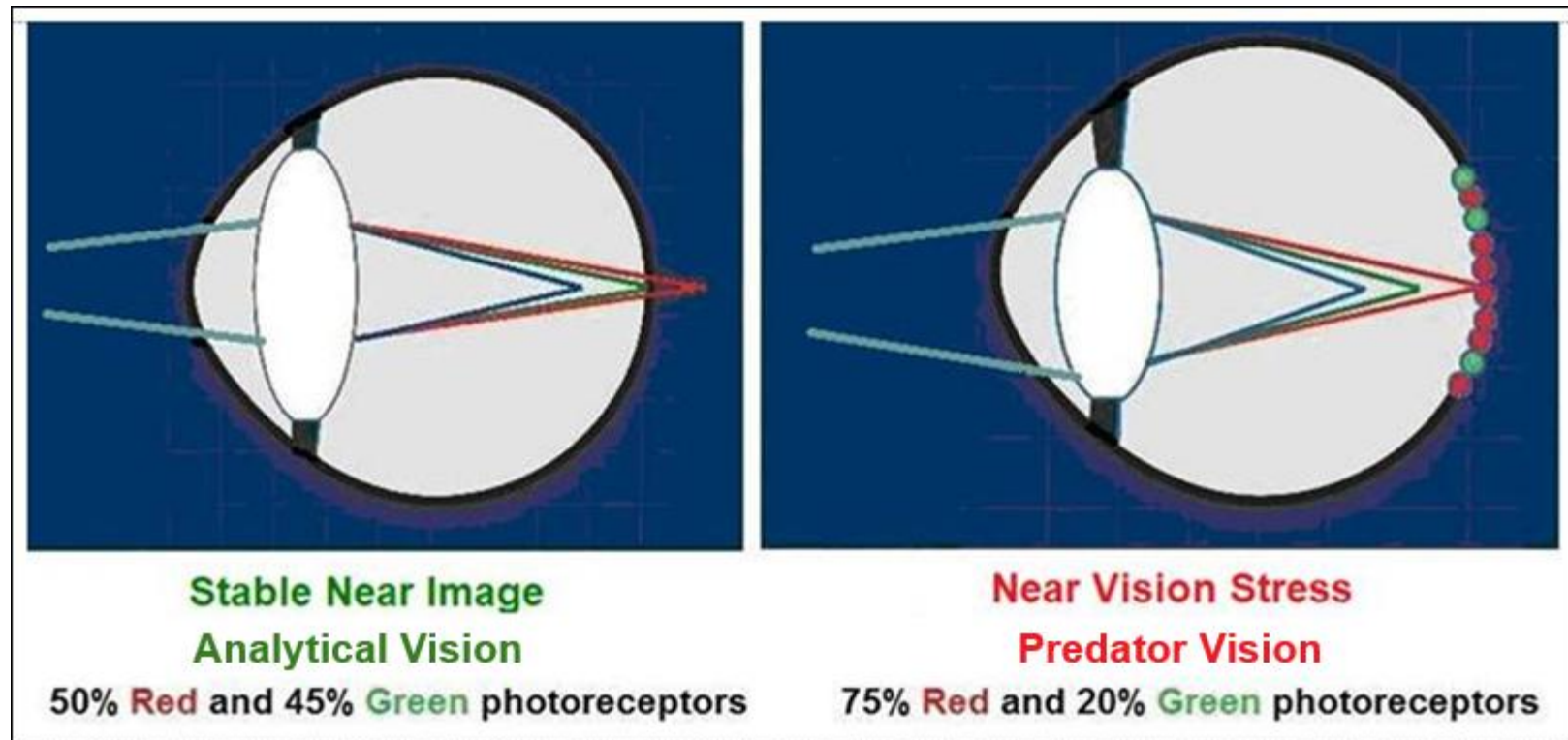
For vision to be **effective and efficient**, it needs to be **autonomic** (so that we are **unaware of that process**). **How is this regulated by the brain.** As light goes through the **cornea and lens**, it is bent so that **Blue** is focused in **FRONT** of the **retina**, and **Red** is focused **BEHIND** the **retina**. (See the diagram below.) **Acuity is regulated by the response to the wavelengths and intensity of those colors as they are perceived by the color sensitive photoreceptors in our eyes.** Clusters of 20 of those color sensitive photoreceptors send their signals forward to the layer of **ganglion cells**. That **neuroganglia** layer of cells then sends a signal from those **20 photoreceptors** to the **lens** to focus that image into focus, and a combined signal from **100 fovea photoreceptors** to the **brain** to record the image.

Combining the response of the color-sensitive photoreceptors to light and color is like the pixel images on a **computer screen, tablet, or Smartphone**. You think you are seeing lines, shapes, letters, and/or words. **What is really happening is a stream of light moving rapidly across the surface of your computer screen, tablet, or Smartphone in a sequence of Red, Green, and Blue.** The process of acuity regulation and accommodation by the color receptive cone-shaped photoreceptors is a complex process.

Chromatic Triangulation



Chromatic Triangulation is based on the concept of bending (refracting) light that Isaac Newton discovered in 1666 through a **prism**.

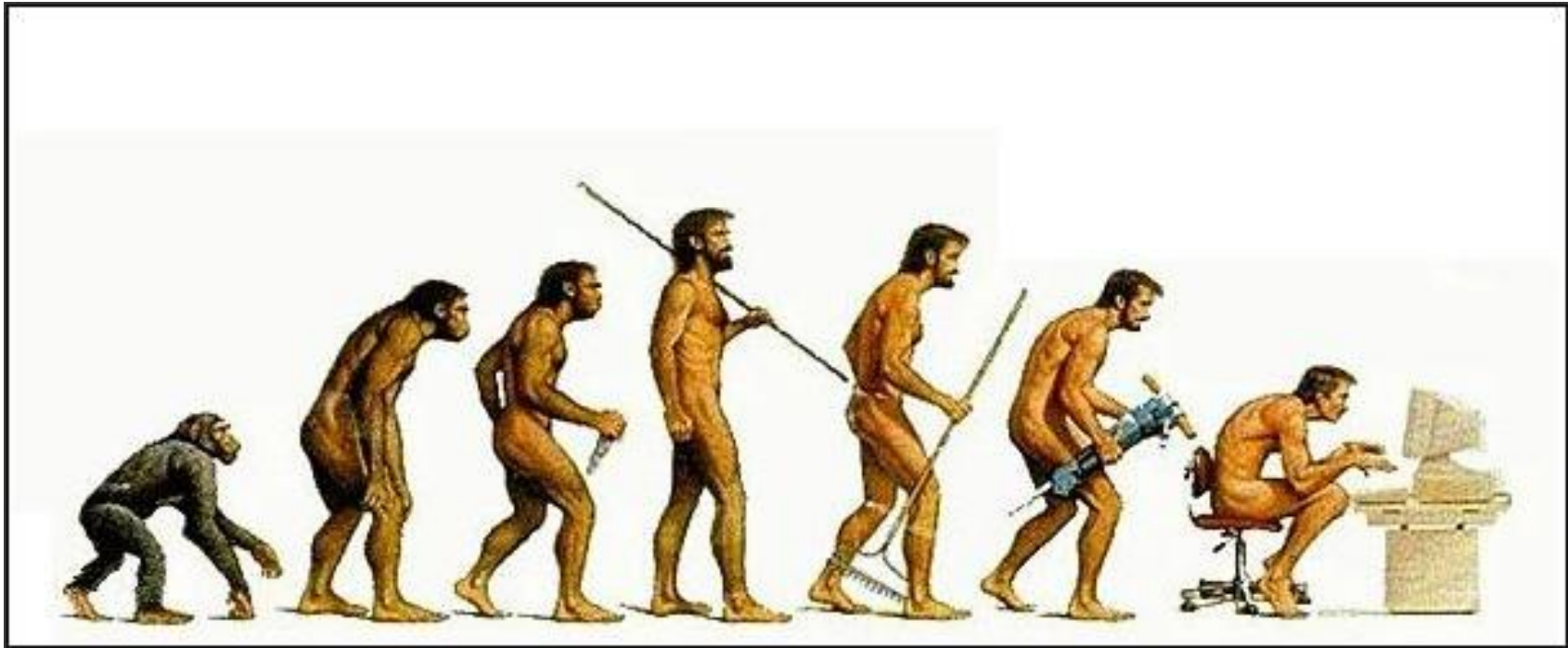


https://www.dyop.net/documents/Dyslexia_and_Color_Perception-SandraStark.pdf
https://www.dyop.net/documents/ASOP-06-0651-Dyop_Color_Perception.pdf

ment to demonstrate that acuity is regulated by the Chromatic Triangulation of Red, Green, and Blue light. The purpose of this experiment, is to close one eye and look around the room where you are now. You will notice that without the need for binocular vision, you can determine the relative distance to nearby objects without the need for binocular vision.

One of the various side effects of NEAR Vision Stress (Predator Vision) and an Unstable Near Image is that it is associated with a lower percentage of Green-sensitive photoreceptors (only 20%) in the rear fovea area. This makes it difficult to keep the lens in proper focus for near images. The OPPOSITE of a Stable NEAR Image is a Stable DISTANCE Image (Predator Vision) which has the evolutionary advantage of being better suited for long-range vision.

re (and biology) evolved from drawings on the walls of caves, to pictographs as represent
l then to combining letters as representatives of words and symbols, the benefits of a St
se it allowed greater creativity and flexibility in dealing with concepts and enhanced the us
efined as the use of information as a substitute for time, energy, and matter.)



the benefits of being using words and pictographs increased the survival advantages for sp
the problem of some individuals had with an Unstable NEAR Image became identified as dysle

Types of Visual Dyslexia

After a year of being the most vocal and visible of the anti-nuclear forces, the American Nuclear Energy Society (ANES) has been elected to the National Academy of Sciences. The society, which has been active in promoting nuclear energy since 1954, was elected to the academy by a vote of 100 to 10. The academy, which is the highest honor in the United States for scientists, was elected to the academy by a vote of 100 to 10. The academy, which is the highest honor in the United States for scientists, was elected to the academy by a vote of 100 to 10.

Blurry Effect

We all see things the same way.
We see things in groups or periods.
This point is more dominant than the
blackboard. The point is blackness and
whiteness. Black ground can
be white, yellow, green or blue. It can
be anything. White blackboard
looks like life.

[illegible]

We all see things the same way.
We see ~~nothing~~ in groups or phrases.
The point is ~~more~~ dominant than the

Halo Effect

PROMISES
PROMISES
PROMISES
PROMISES
PROMISES
PROMISES
PROMISES
PROMISES

Shaky Effect

in Reinhardt and O'Connor (1998), manipulability is a perceived quality of a computer interface in which a subject judges that he or she can interact with the interface in a way that is consistent with his or her goals. In the present study, we used a modified version of the Reinhardt and O'Connor (1998) scale to assess perceived manipulability. A subject rated a computer interface as having high perceived manipulability if he or she agreed with the following statements: "I can interact with this interface in a way that is consistent with my goals," "I can interact with this interface in a way that is consistent with my needs," and "I can interact with this interface in a way that is consistent with my desires." Significant differences were found for the experimental group, with *ANOVA* for time needed to locate words on a printed page, time needed to locate words in a graphical menu, time needed to locate words in a graphical menu, time needed to locate words in a graphical menu, as well as other perceived tasks. Additionally, even of the 23 experimental tasks, manipulability, even of the control group was found to be a significant factor.

In conclusion, Williams (2007) was unable to find differences in perceived manipulability between experimental and control groups. However, in the present study, we found significant differences in perceived manipulability between experimental and control groups. This suggests that perceived manipulability is a useful construct in the study of human-computer interaction.

Swirl Effect

<p> 1. <i>Chlorophyll a</i> (Chl <i>a</i>) is the primary photosynthetic pigment in most plants and algae. It is a green pigment that absorbs light energy in the blue-violet and red-orange regions of the visible spectrum. Chl <i>a</i> is a central component of the photosynthetic reaction center, where it plays a crucial role in converting light energy into chemical energy through the process of photosynthesis. </p> <p> 2. <i>Chlorophyll b</i> (Chl <i>b</i>) is an accessory pigment found in green plants and algae. It absorbs light energy in the blue and orange-yellow regions of the visible spectrum. Chl <i>b</i> acts as an antenna pigment, transferring the absorbed energy to Chl <i>a</i> for use in the photosynthetic reaction center. </p> <p> 3. <i>Carotenoids</i> are a group of pigments that include carotenes and xanthophylls. They absorb light energy in the blue and green regions of the visible spectrum. Carotenoids serve as accessory pigments, transferring energy to Chl <i>a</i> and Chl <i>b</i>. They also play a protective role by dissipating excess light energy and scavenging reactive oxygen species to prevent damage to the photosynthetic apparatus. </p> <p> 4. <i>Phycocyanin</i> is a blue pigment found in cyanobacteria and some algae. It absorbs light energy in the orange and red regions of the visible spectrum. Phycocyanin acts as an antenna pigment, transferring energy to the primary donor of electrons in the photosynthetic reaction center. </p> <p> 5. <i>Peridinin</i> is a red pigment found in certain dinoflagellates. It absorbs light energy in the blue and green regions of the visible spectrum. Peridinin acts as an antenna pigment, transferring energy to the primary donor of electrons in the photosynthetic reaction center. </p> <p> 6. <i>Alloxanthin</i> is a yellow pigment found in some algae. It absorbs light energy in the blue and green regions of the visible spectrum. Alloxanthin acts as an antenna pigment, transferring energy to the primary donor of electrons in the photosynthetic reaction center. </p> <p> 7. <i>Phaeophytin</i> is a brown pigment found in some algae. It is a derivative of Chl <i>a</i> and absorbs light energy in the blue and green regions of the visible spectrum. Phaeophytin acts as an antenna pigment, transferring energy to the primary donor of electrons in the photosynthetic reaction center. </p> <p> 8. <i>Phaeoerythrin</i> is a red pigment found in some algae. It is a derivative of Chl <i>a</i> and absorbs light energy in the blue and green regions of the visible spectrum. Phaeoerythrin acts as an antenna pigment, transferring energy to the primary donor of electrons in the photosynthetic reaction center. </p> <p> 9. <i>Phaeo-<i>a</i></i> is a brown pigment found in some algae. It is a derivative of Chl <i>a</i> and absorbs light energy in the blue and green regions of the visible spectrum. 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Rivers Effect

[The page contains faint, illegible markings or bleed-through from another document.]

Seasaw Effect

[illegible]

Washout Effect

and the fact that the company has a long history of innovation and leadership in the industry. The company's commitment to excellence is reflected in its products and services, which are designed to meet the needs of its customers. The company's success is a result of its dedication to quality and its commitment to its customers. The company's products and services are designed to be reliable and durable, and its customer service is second to none. The company's commitment to excellence is reflected in its products and services, which are designed to meet the needs of its customers. The company's success is a result of its dedication to quality and its commitment to its customers. The company's products and services are designed to be reliable and durable, and its customer service is second to none.

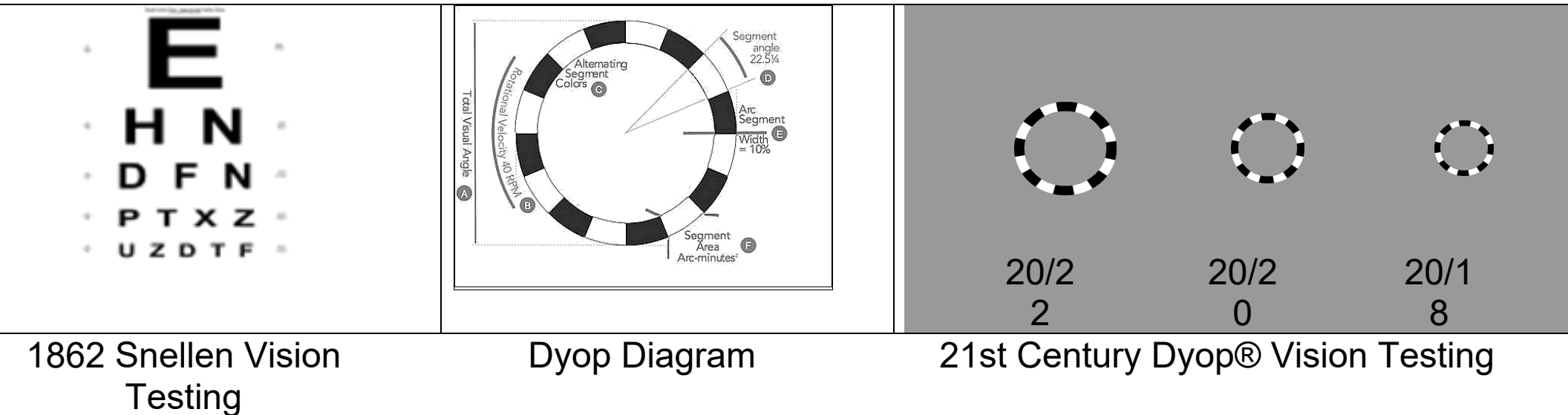
Overlapping Writing

s of an **Unstable Near Image** are migraines and epilepsy. An **Unstable Near Image** is also a co-occurring condition (e.g., Post Traumatic Stress Disorder), making recovery and dealing with PTSD more difficult.

How Acuity is Measured

f visual clarity (acuity) are the **SIZE (area) OF THE IMAGE** being observed, the **VIEWING DISTANCE**, and the **ABILITY** of the visual system to **PROCESS THAT IMAGE** as clearly as possible (Resolution Acuity). As the image size becomes smaller, the (equally sized) gaps and segments become so small that it becomes impossible to detect the spin direction of the Dyop ring rotation.

The endpoint is the smallest **Dyop** diameter where the direction of rotation of the spinning ring is just detectable. This provides as a precise, physiological indicator of visual clarity and vision correction. A Dyop test can be used to determine the need for patient literacy, measure vision in infants as young as 14 months of age, and let us know the color enabling potential diagnostics for symptoms of dyslexia and glaucoma.



Tests (such as Snellen letters) are inherently imprecise and inconsistent. They mistake the p

ual resolution and have an arbitrarily determined and overly large stimulus area (1.0 arc min) for vision rather than the empirically determined smaller Dyop stimulus gap area (0.54 arc min). Static vision tests such as Snellen deplete the dynamic response of the color receptive photoreceptors, the uniform precision of Dyop testing. The result is that static vision tests tend to add excess minus (lenses) to acuity and refractions, lead to angular elongation of the eye and increased myopia, and **may be a factor in the Global Epidemic of Myopia.**

[https://www.dyop.com.net/documents/Snellen vs Dyop Refractions-Sanni.pdf](#)

[https://www.dyop.com.net/documents/ASOP-2022-01_Sanni-update.pdf](#)

[https://www.dyop.com.net/documents/JCOVS-21-Gordon refraction comparison.pdf](#)

[https://www.dyop.com.net/documents/Guy Barnett-Itzhaki The Dynamic Optotype.pdf](#)

Verify that your lenses are too strong with too much minus power (IF you wear glasses), hold a card half inch away from your face and see if the words you are reading become larger and more legible. If words get more legible, that Snellen-induced excess minus power of your glasses is typically a lot. If it isn't much, it does reduce your cognition, and possibly your IQ by 10 points.

Dyop testing vision is better than the use of static letters (aka, the 1862 Snellen's "Big E" test) or static optotypes. **of the spinning strobic stimulus of a Dyop is based on how your eyes work.** As the Dyop diameter decreases, the gaps and segments get **proportionately smaller**. When the spinning Dyop gaps get sufficiently small, the stimulus becomes smaller than the **minimum AREA to stimulate** the color-receptive photoreceptors in the retina. There are clusters of about 20 color-receptive photoreceptors. When the Dyop gaps become too small, the stimulus is smaller than the area of photoreceptors, the **spinning of the Dyop ring is not detected** because the stimulus of the gaps is too small. **Dyop NOT detected as spinning is a "sub-acuity" diameter.** As the Dyop diameter is increased, it reaches a minimum of 20 fovea photoreceptors, that minimum Dyop diameter where spinning IS detected. That minimum size threshold for detecting the gaps as spinning is also called the **Minimum Detectable Diameter (MDD)**. **A major flaw in current letter-based acuity testing, and acuity "standards" using letter**

dimensional problem dealing only with the letter height and the viewing distance and mistake of **Resolution**” rather than the “**Minimum AREA of Resolution.**”

ing Resolution Acuity with a Dyop for acuity and refractions is that **a Dyop is up to six times more** and Snellen static letter-based tests (which use culturally dependent static Recognition **to eight times more consistent**, and **is up to three times more efficient**. A Dyop also can **subjects’ literacy skills** or culture, easily enables testing of **children or infants**, and enables for potential diagnostic and/or therapeutic use. And because **a Dyop can measure acuity** zation that, for most humans, color is an essential part of being able to see and regulate acuity

sts (e.g., Snellen) are based on how well you recognize culturally dependent letters or ity, are influenced by where you're from, or how much you've practiced (or memorized), and d white. Using Resolution Acuity with a Dyop makes vision testing simpler, faster, more p

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Recent Dyop Discoveries

discoveries have compared inaccurate refractions, and the effects of cataracts, to the reduction associated with dyslexia.

Induced Dyslexia: https://www.dyop.net/documents/Induced_Dyslexia.pdf

d refraction research also explain why the current Global Epidemic of Myopia may likely be a computerized Snellen test for refractions with its white computer-generated background, func

out the response of the fovea photoreceptors:

[https://www.dyop.net/documents/How Snellen is Making People Blinder.pdf](https://www.dyop.net/documents/How_Snellen_is_Making_People_Blinder.pdf)

Acuity Self-Tests

ment to demonstrate that **acuity is NOT regulated by the brain**, but rather is regulated by **Red, Green, and Blue** color sensitive photoreceptors in the fovea of the retina, is to close one eye and look at the words you are now. You will notice that with only one eye open you can **still determine the words without the need for binocular vision** documenting that acuity is NOT regulated by the brain.

Next, **a simple test to also verify that your lenses are too strong** (with too much minus power) is to remove your glasses about a half inch away from your face and see if the words you are reading become more legible. If you notice that the words get more legible, that Snellen-induced excess minus power is **0.25 to 0.50 diopters**. While it isn't much, it reduces your cognition and possibly your IQ by 10%.

To experience the hyper-stimulus visual effect by briefly staring at a white light bulb and then closing your eyes, you should notice a white stimulus ring for an additional ten seconds from the depleted photoreceptors. This is the **computer-generated hyper-stimulus of the WHITE background for Snellen** and other static visual stimuli. This is a major factor to the **visual damage** (with an excess **-0.50 diopters of sphere**) done by using Snellen charts as a major factor in the Global Epidemic of Myopia of the past forty years with the advent of computer-generated static visual stimuli.

Dyop Screening Tests

Online Dyop Visual Acuity Tests

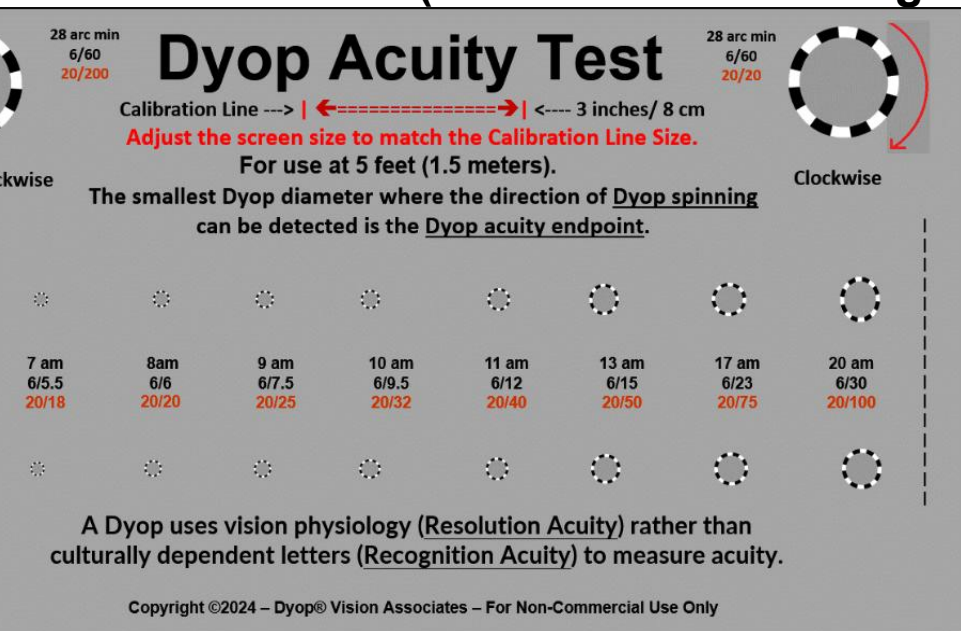
Select the link below to access the visual clarity (acuity) test for the correct viewing distance.

View the spinning rings at a five-foot or ten-foot distance.

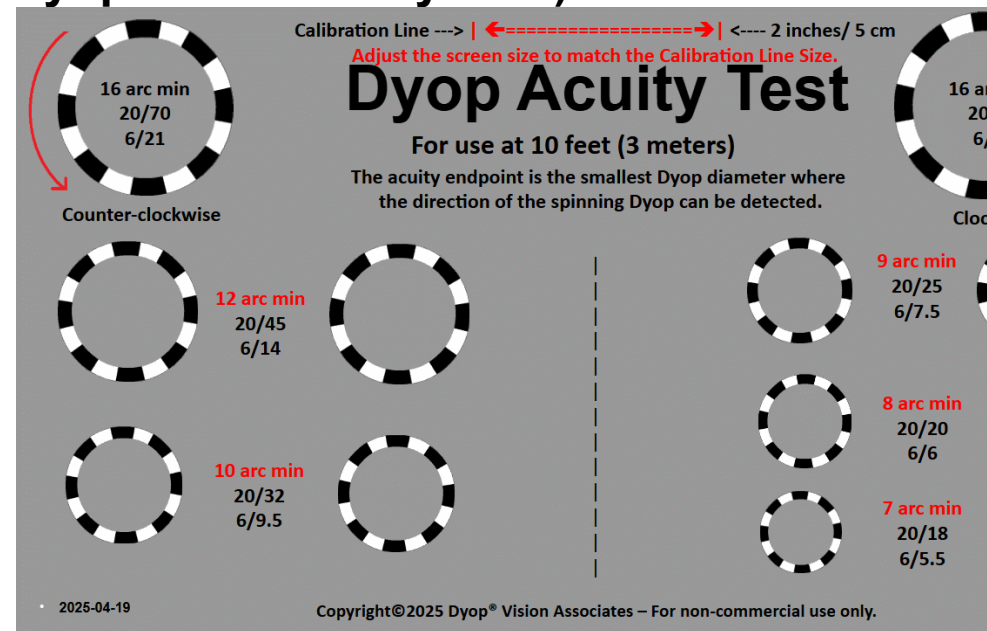
Note the smallest pair of Dyop rings you can detect as spinning.

The center row of numbers between the smallest pair of rings you can detect as spinning ring is the measure of your acuity.

(Below are static images of the Dyop online Acuity test.)



Dyop Acuity Screening Test for use at 5 feet



Dyop Acuity Screening Test for use at 10 feet

Online Dyop Color Stress Screening Test

Select the link below for the color screening (visual stress) test for the correct viewing distance

View the spinning rings at a five-foot or ten-foot distance.

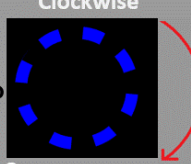
The smallest colored Dyop ring (Blue/Black or Green/White) you can detect as spinning indicates your visual acuity profile. Preferentially seeing the Blue/Black rather than the Green/White indicates a probability of symptoms of dyslexia, migraines or epilepsy.

The number of numbers between the smallest rings you can detect as spinning is the measure of your visual acuity. (Below are static images of the Dyop online Color Stress Screening test.)

Dyop Color Stress Test

At 5 feet (1.5 meters) => Calibration Gap => 2 inches / 5 cm
Calibration Gap ==> |<=====|<==== Calibration Gap
The smallest Dyop diameter where the direction of spinning CAN be detected is the Acuity Endpoint.
What is the smallest Blue/Black or Green/White Dyop detected as spinning?
Is the smallest Green or Blue Dyop spinning?
Seeing the Blue/Black Dyop spinning rather than the Green/White indicates potential symptoms of dyslexia or migraines.

Clockwise



20 arc min
20/100
6/30

8 arc min	9 arc min	10 arc min	11 arc min	13 arc min	14 arc min
20/20 6/6	20/25 6/7.5	20/32 6/9.5	20/40 6/12	20/50 6/15	20/60 6/18

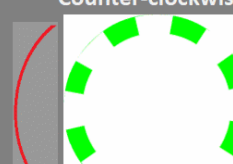
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Blue/Green Visual Screening Test – 5 feet

Dyop Color Stress Test

At 10 feet (3 meters) viewing Calibration Gap = 2 inches / 5 cm
Calibration Gap ==> |<=====|<==== Calibration Gap
What is the smallest Blue/Black or Green/White Dyop detected as spinning? The smallest Dyop diameter where spinning CAN be detected is the Acuity Endpoint.
Seeing the Blue/Black Dyop spinning rather than the Green/White indicates potential symptoms of dyslexia or migraines.

Counter-clockwise



15 arc min
20/65 = 6/20

7 arc min	8 arc min	9 arc min	10 arc min
20/18 6/5.5	20/20 6/6	20/25 6/7.5	20/32 6/9.5

2025-04-19

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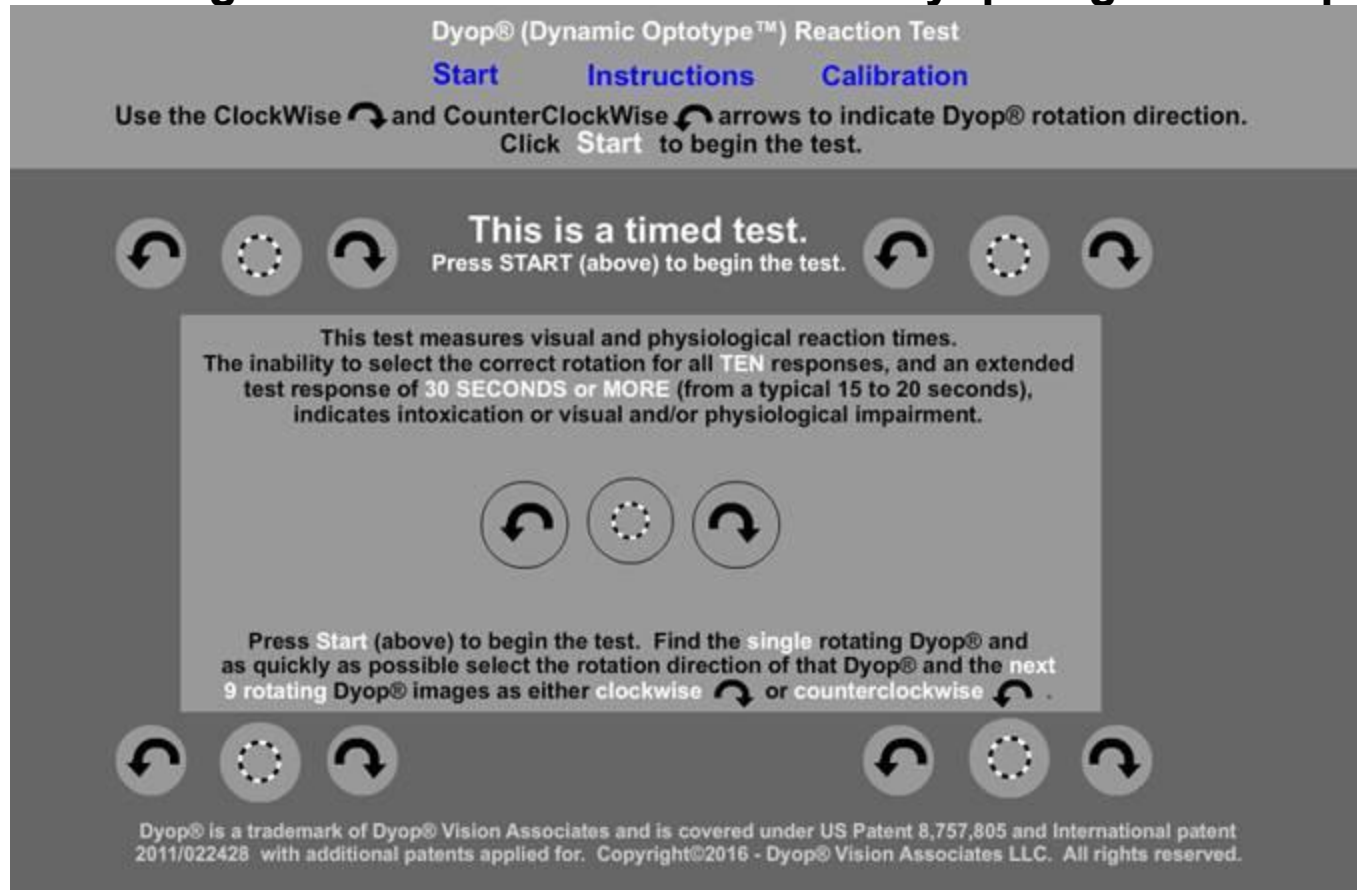
Dyop Blue/Green Visual Screening Test – 10 feet

Dyop Cognition-Impairment Test

This test may also be used to evaluate the visual and mental impairment associated with conditions such as alcohol intoxication, PTSD, concussion injuries, and other possible mental difficulties such as Alzheimer's disease.

https://www.dyop.net/documents/Dyop_Cognition_Test.html

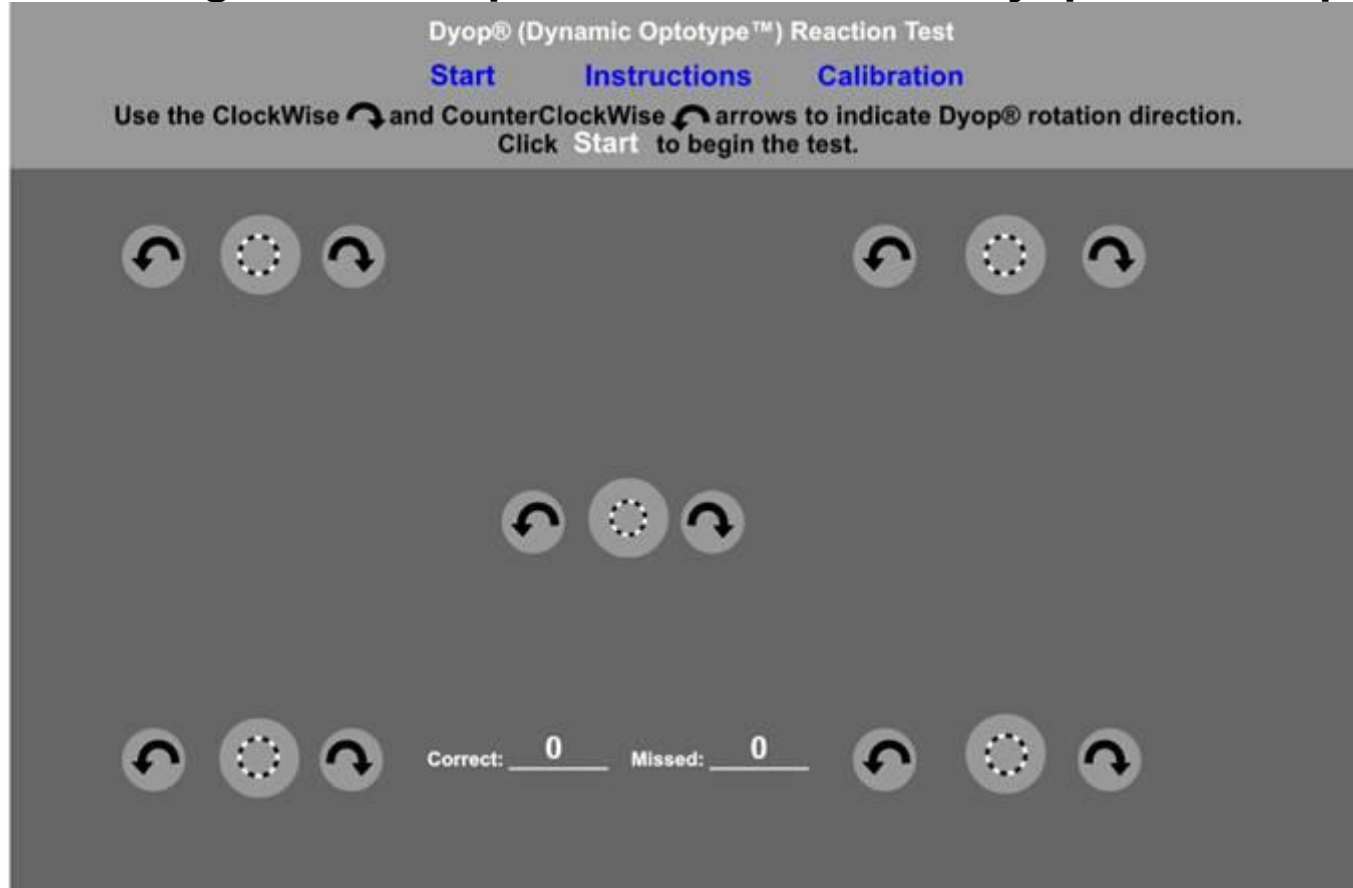
Use the link above to open the Dyop Cognition-Impairment test.
Note that **THIS** is a Timed Test. Click the word “Start” at the top of the test to begin.
Additional details are at: <https://www.dyop.net/impairment.htm>
(Below is a static image of the initial screen for the Dyop Cognition-Impairment Test.)



That when the test starts, there will be FIVE Dyops on the screen but only ONE of them is spinning. Use a computer mouse or touch screen to click the arrow adjacent to the SINGLE spinning Dyop to indicate its spin direction.

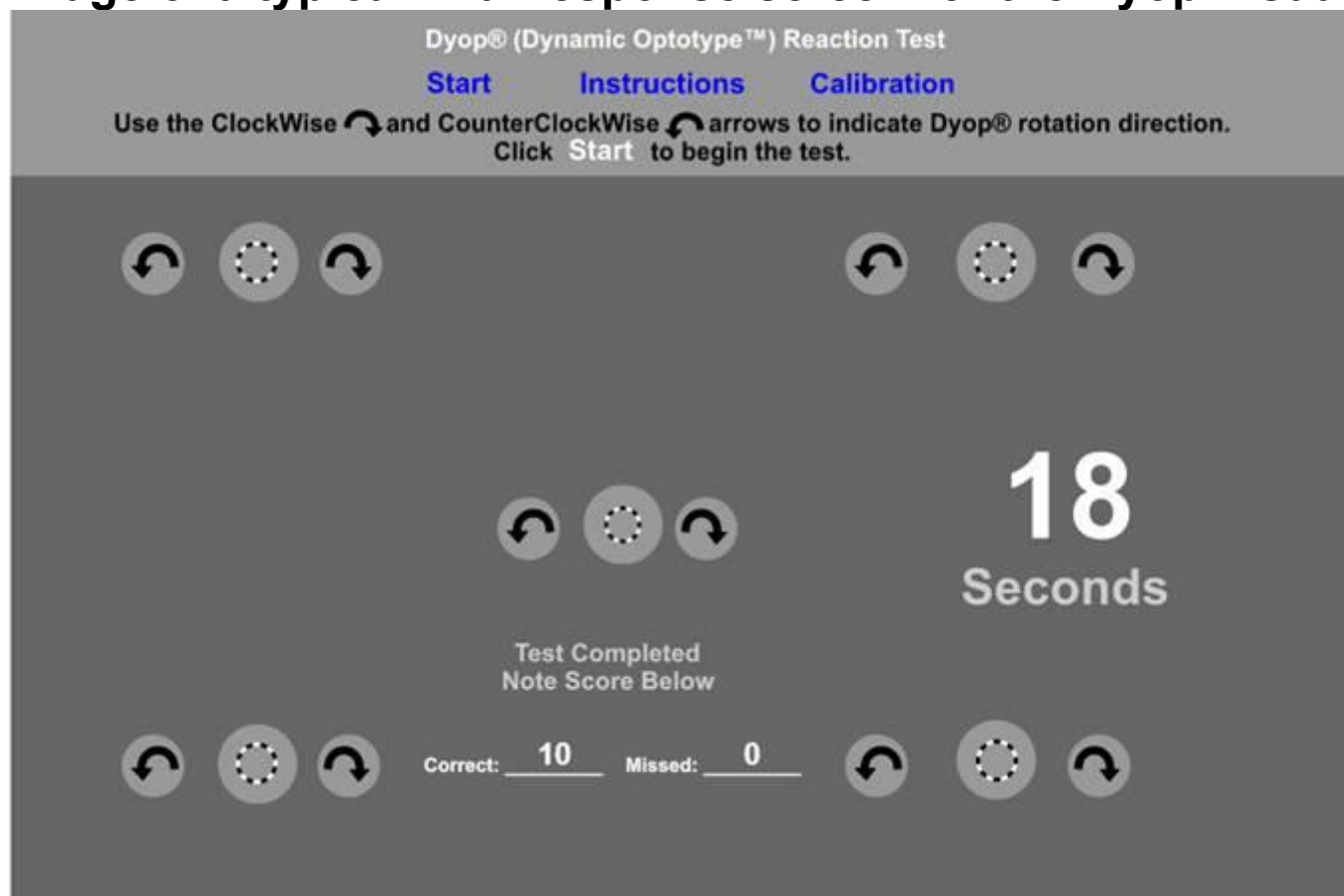
That Dyop will stop spinning, but ONE of the other FOUR Dyops will then start spinning.

**Click the arrow adjacent to that next spinning Dyop to indicate its spin direction.
(Below is a static image of the response screen for the Dyop Visual-Impairment Test.)**



When you have found and detected all TEN of the spinning Dyop test response trials, the screen will display the number of Correct Selections and the elapsed Test Time.
A test completion time of 14 to 16 seconds with 10 correct responses indicates mental alertness.
A completion time of 21 to 26 seconds with less than 10 correct responses indicates minor mental impairment.
A completion time of 28 to 32 seconds with less than 8 correct responses indicates increased mental impairment.
A completion time of 35 to 40 seconds with less than 6 correct responses indicates significant mental impairment.

Below is a static image of a typical final response screen for the Dyop Visual-Impairment Test.)



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The Dyop® (Dynamic Optotype™) tests and concept are covered under U.S. Patent US 8,083,353 and International Published Patent WO 2011/022428.

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