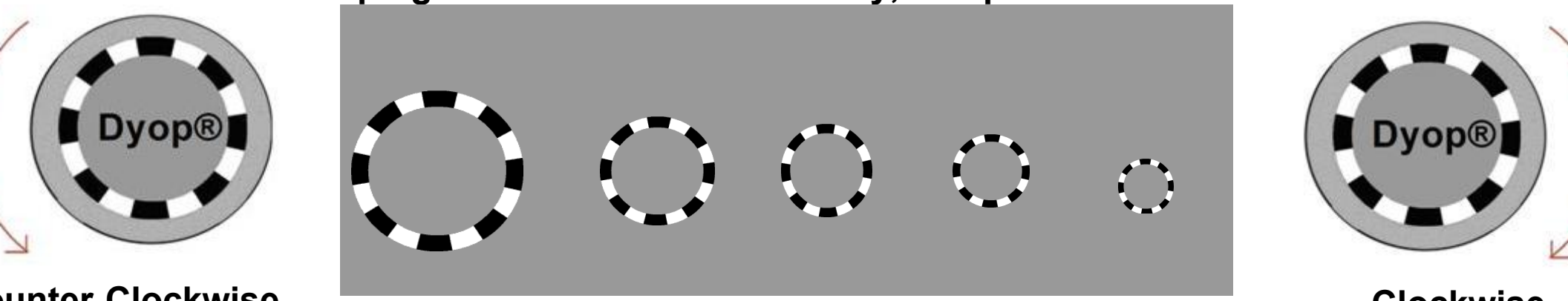
Introducing the Dyop®

The "Revolutionary" Method for Measuring Visual Clarity (Acuity)

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



ounter-Clockwise **Clockwise**

e is dynamic, rather than static, and vision is an autonomic and dynamic process inherent in al 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 ab s we need to see be properly in focus.

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

vision. Typical vision tests use **static letters or symbols** as the standard targets for measuring v
surement systems is that they typically measure **only two dimensions** using the **height** of the vis
to that target. Instead, the world we see (the "**real world**") is a **fifth dimensional process** co
tance, and time.

nced "**di-op**" and short for **dy**namic **op**totype) is a **calibrated** segmented spinning ring visual targ
tors (and you) test how clear your vision is. A **Dyop** provides a strobic stimulus to the **phot**
of the retinal of your eye called the **fovea.** (See the **illustrations and details below**).

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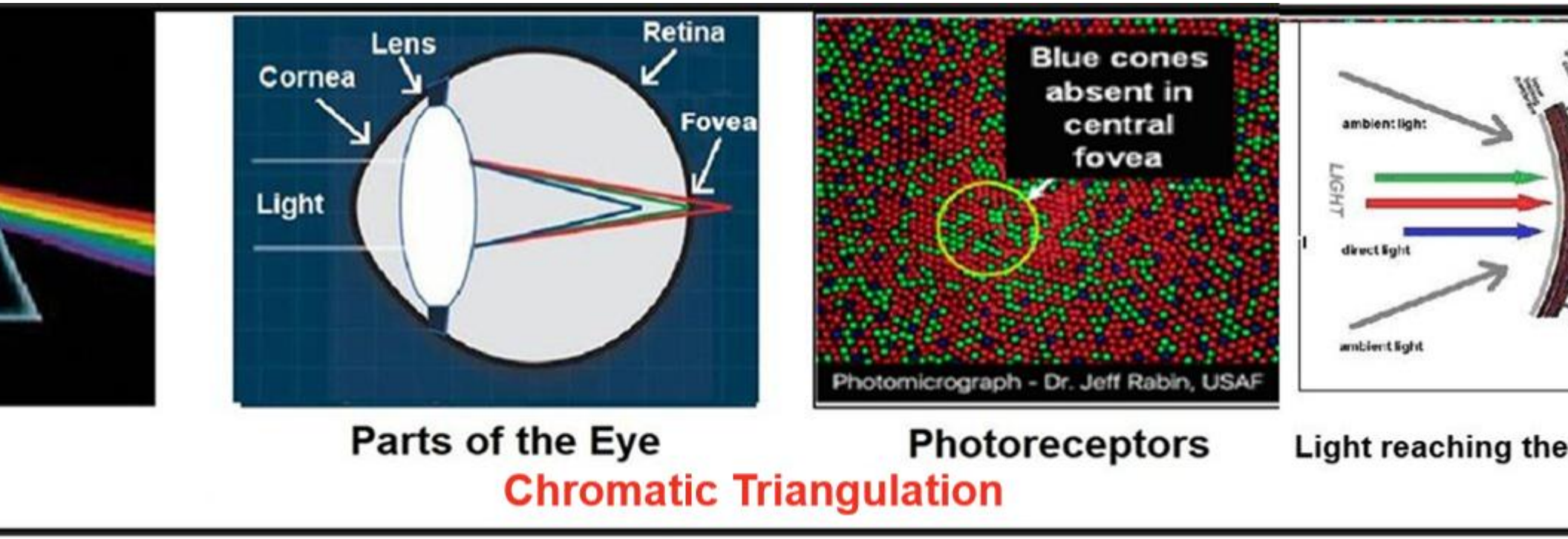
What Regulates Acuity

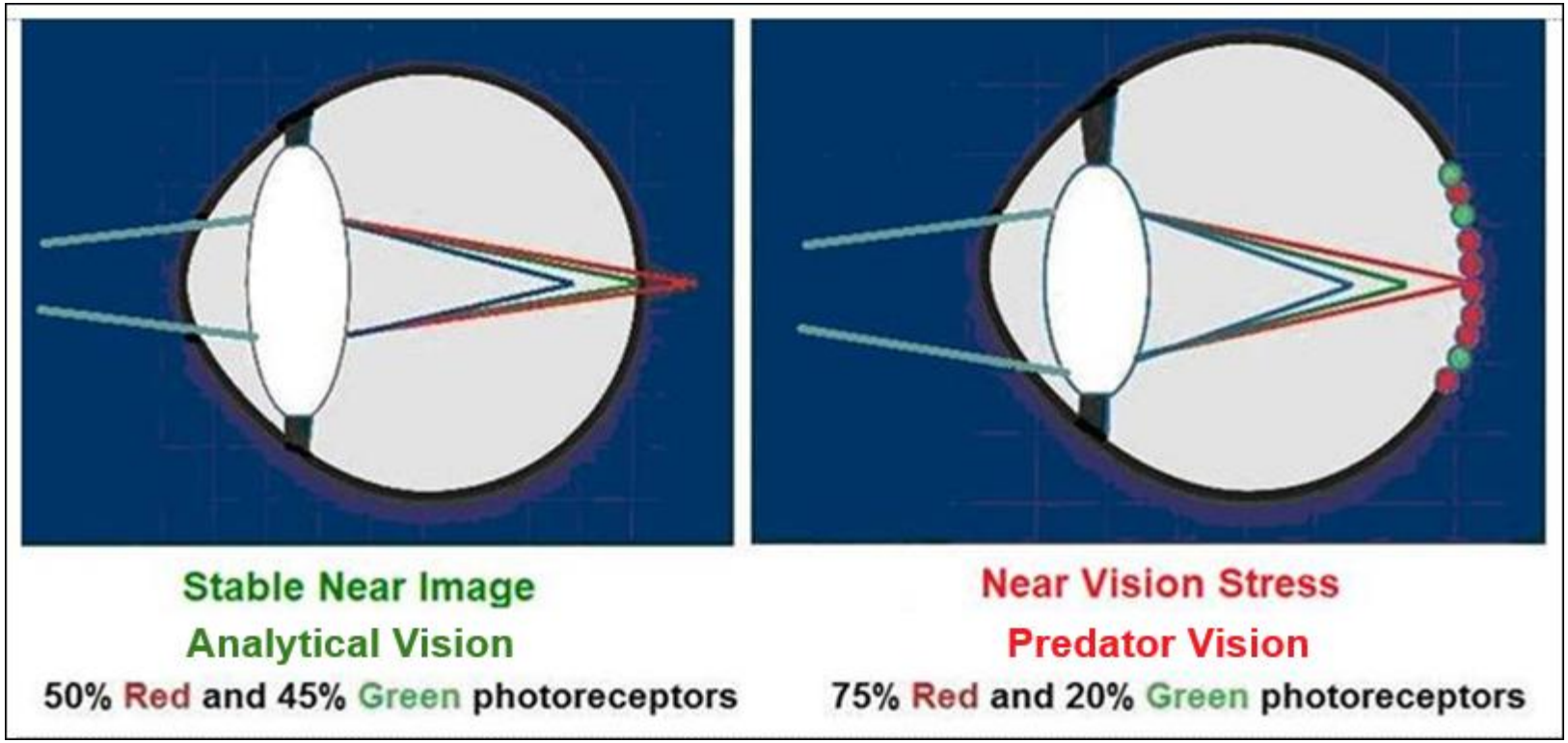
effective and efficient, it needs to be autonomic (so that we are unaware of that process). Ho
the brain. As light goes through the **cornea and lens,** it is bent so that **Blue** is focused in **FRON**
ON the retina, and **Red** is focused **BEHIND the retina. (See the diagram below.) Acuity is r**
ths and intensity of those colors as they are perceived by the color sensitive photoreceptors
eyes. Clusters of 20 of those color sensitive photoreceptors send their signals forward to the layer
na. That neuroganglia layer of cells then sends a signal from those **20 photoreceptors** to the len
g that image into focus, and a combined signal from **100 fovea photoreceptors** to the brain to recor

mbining the response of the color-sensitive photoreceptors to light and color is like the pixel images
or, tablet, or Smartphone. You think you are seeing lines, shapes, letters, and/or words**. Wha**
of light moving rapidly across the surface of your computer screen, tablet, or Smartphone i
nd Blue. The process of acuity regulation and accommodation by the color receptive cone-shape

c Triangulation.



angulation is based on the concept of bending (refracting) light that Isaac Newton discovered in 16
ough a **prism**.

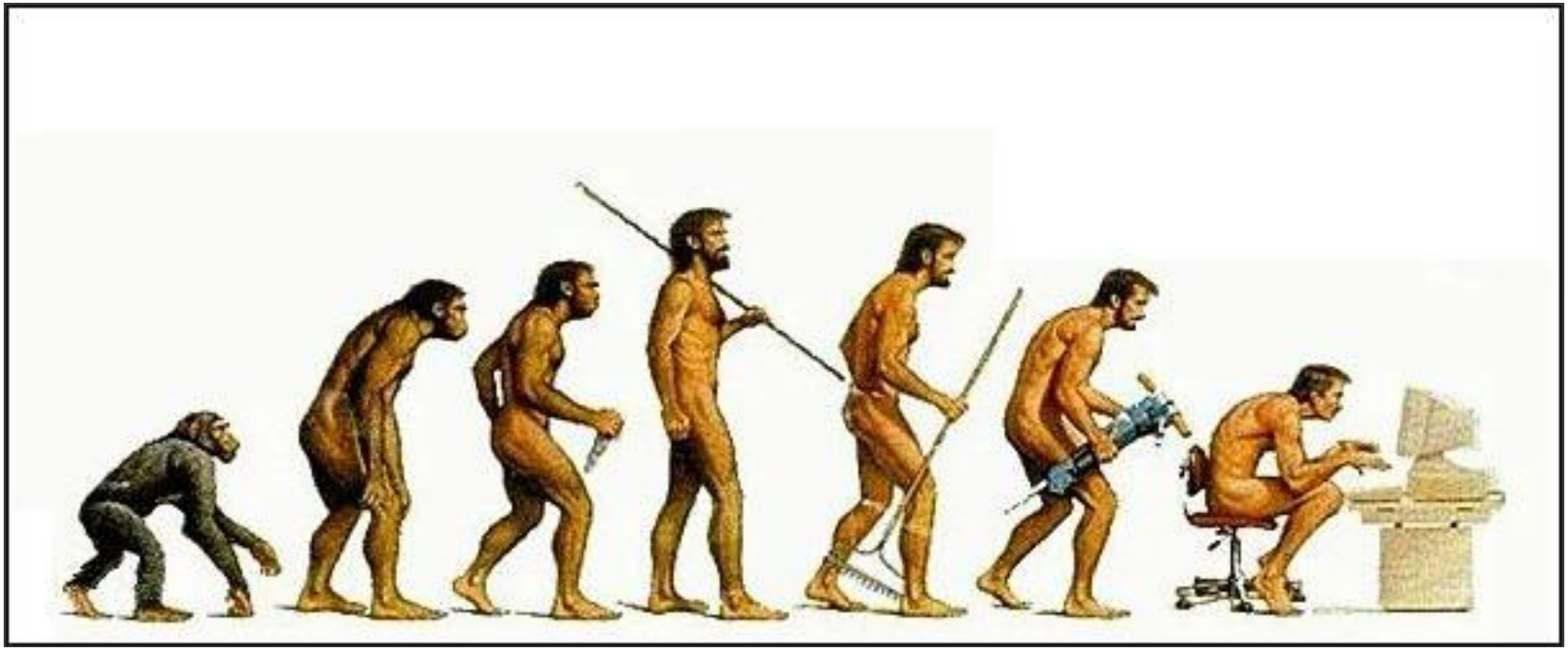


https://www.dyop.net/documents/Dyslexia_and_Color_Perception-SandraStark.pdf
https://www.dyop.net/documents/ASOP-06-0651-Dyop_Color_Perception.pdf

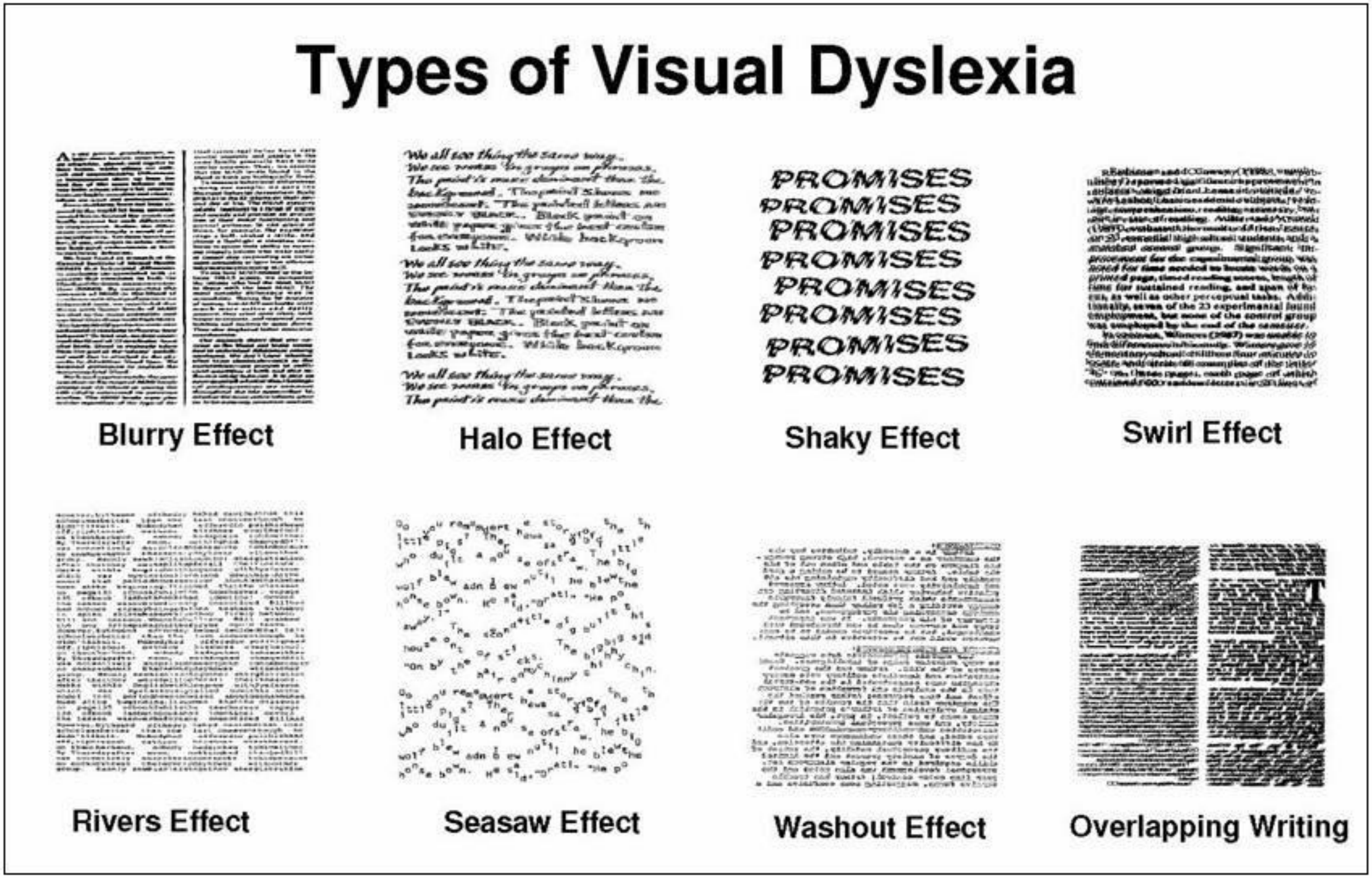
nent to demonstrate that acuity is regulated by the Chromatic Triangulation of Red, Green, a , is to close one eye and look around the room where you are now. You will notice that wit l determine the relative distance to nearby objects without the need for binocular vision.

rous side effects of NEAR Vision Stress (Predator Vision) and an Unstable Near Image is tha d with a lower percentage of Green-sensitive photoreceptors (only 20%) in the rear fovea a lifficult to keep the lens in proper focus for near images. The OPPOSITE of a Stable NEAR I ble DISTANCE Image (Predator Vision) which has the evolutionary advantage of being be ame.

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
he problem of some individuals had with an Unstable NEAR Image became identified as dysle



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

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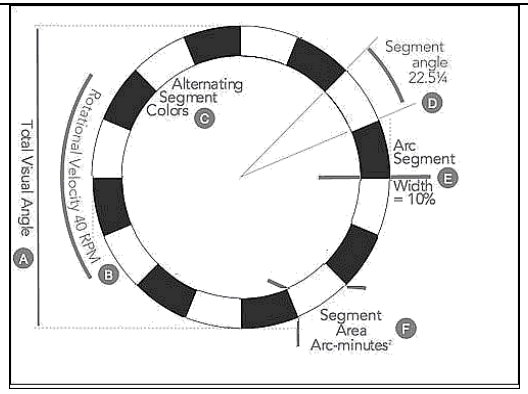
How Acuity is Measured

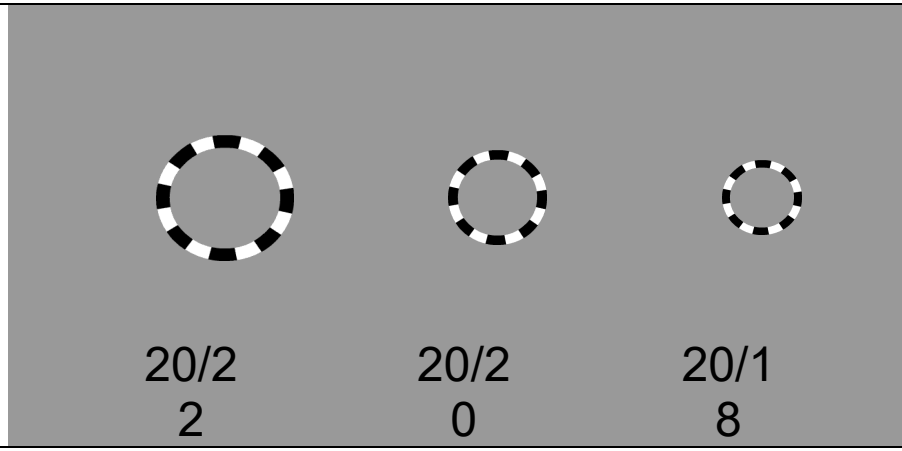
f visual clarity (acuity) are the SIZE (area) OF THE IMAGE being observed, the VIEWING D
bility of the visual system to PROCESS THAT IMAGE as clearly as possible (Resolution Acu
ts smaller, the (equally sized) gaps and segments become so small that it becomes impos
ect the spin direction of the Dyop ring rotation.

endpoint is the smallest **Dyop** diameter **where the direction of rotation of the spinning**
ves as a precise, physiological indicator of visual clarity and vision correction. A Dyop t
need for patient literacy**, measure vision in** infants as young as 14 months of age**, and let**
color **enabling potential diagnostics for symptoms of dyslexia and glaucoma.**

1862 Snellen Vision Testing



Dyop Diagram



21st Century Dyop® Vision Testing

ts (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
or vision rather than the empirically determined smaller Dyop stimulus gap area (0.54 arc m
tic vision tests such as Snellen deplete the dynamic response of the color receptive photo
he uniform precision of Dyop testing. The result is that static vision tests tend to add exce
ers) to acuity and refractions, lead to angular elongation of the eye and increased myopia,
nay be a factor in the Global Epidemic of Myopia.
p.net/documents/Snellen_vs_Dyop_Refractions-Sanni.pdf
p.net/documents/ASOP-2022-01_Sanni-update.pdf
p.net/documents/JCOVS-21-Gordon_refraction_comparison.pdf
p.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),
half inch away from your face and see if the words you are reading become larger and mo
ords get more legible, that Snellen-induced excess minus power of your glasses is typically a
t isn't much, it does reduce your cognition, and possibly your IQ by 10 points.

testing vision is better than the use of static letters (aka, the 1862 **Snellen's "Big E" test**) or **static**
of the spinning strobic stimulus of a Dyop is based on how your eyes work. As the Dyop dian
os and segments get **proportionately smaller**. When the spinning **Dyop gaps get sufficiently s**
becomes smaller than the **minimum AREA to stimulate** the color-receptive photoreceptors in the re
are clusters of about 20 color-receptive photoreceptors. When the **Dyop gaps become too sm**
r of photoreceptors, the **spinning of the Dyop ring is not detected** because the stimulus of the ga
Dyop NOT detected as spinning is a "sub-acuity" diameter. As the **Dyop diameter is increa**
te a minimum of 20 fovea photoreceptors, that minimum **Dyop diameter where spinning IS**
. That minimum size **threshold for detecting the gaps as spinning is also called the Mi**
R). **A major flaw in current letter-based acuity testing, and acuity "standards" using letter**

imensional problem dealing only with the letter height and the viewing distance and mistak
of Resolution" rather than the "Minimum AREA of Resolution."

ng Resolution Acuity with a Dyop for acuity and refractions is that a Dyop is up to six times m
d Snellen static letter-based tests (which use culturally dependent static Recognition A
to eight times more consistent, and is up to three times more efficient. A Dyop also can
e subjects' literacy skills or culture, easily enables testing of children or infants, and enables
or 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 acui

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

liscoveries have compared inaccurate refractions, and the effects of cataracts, to the reductio
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

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Acuity Self-Tests

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

ses, a simple test to also verify that your lenses are too strong (with too much minus po
ush your glasses about a half inch away from your face and see if the words you are readin
. If you notice that the words get more legible, that Snellen-induced excess minus power o
25 to 0.50 diopters. While it isn't much, it reduces your cognition and possibly your IQ by 10

e hyper-stimulus visual effect by briefly staring at a white light bulb and then closing your
should notice a white stimulus ring for an additional ten seconds from the depleted photorec
puter-generated hyper-stimulus of the WHITE background for Snellen and other static
butor to the visual damage (with an excess -0.50 diopters of sphere) done by using Snellen
major factor in the Global Epidemic of Myopia of the past forty years with the advent of con

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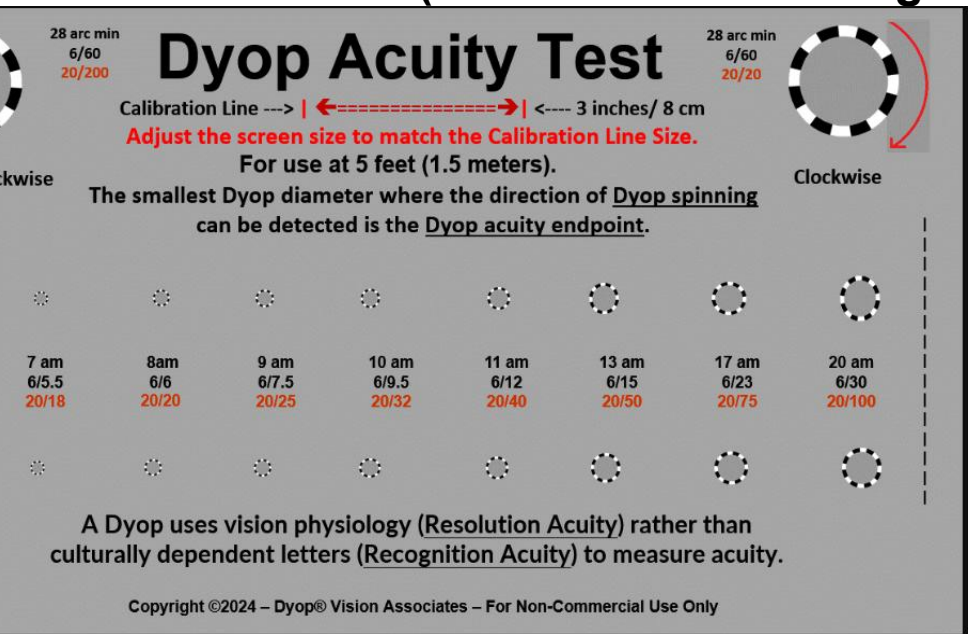
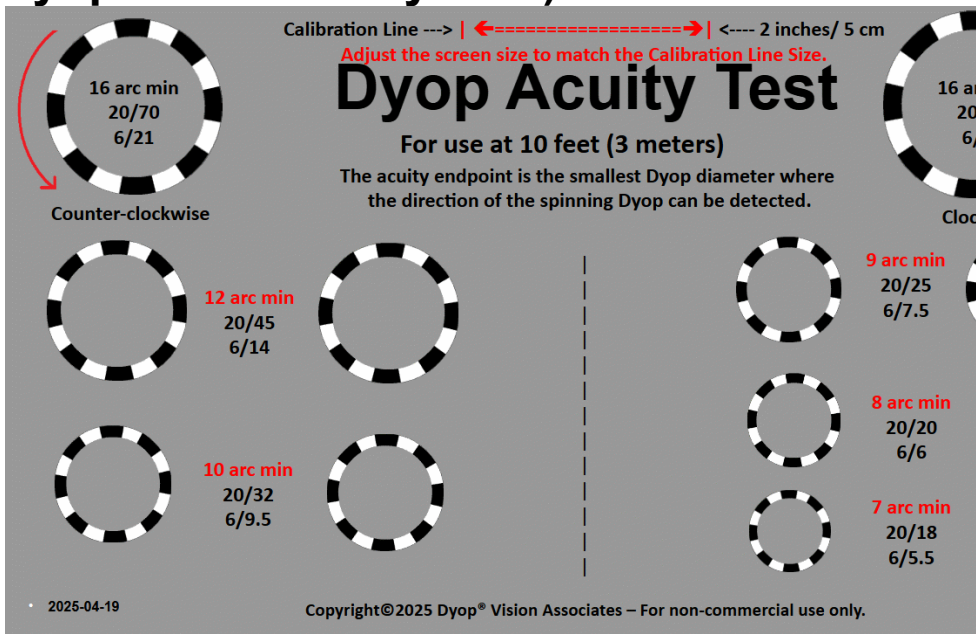
Dyop Screening Tests

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.)





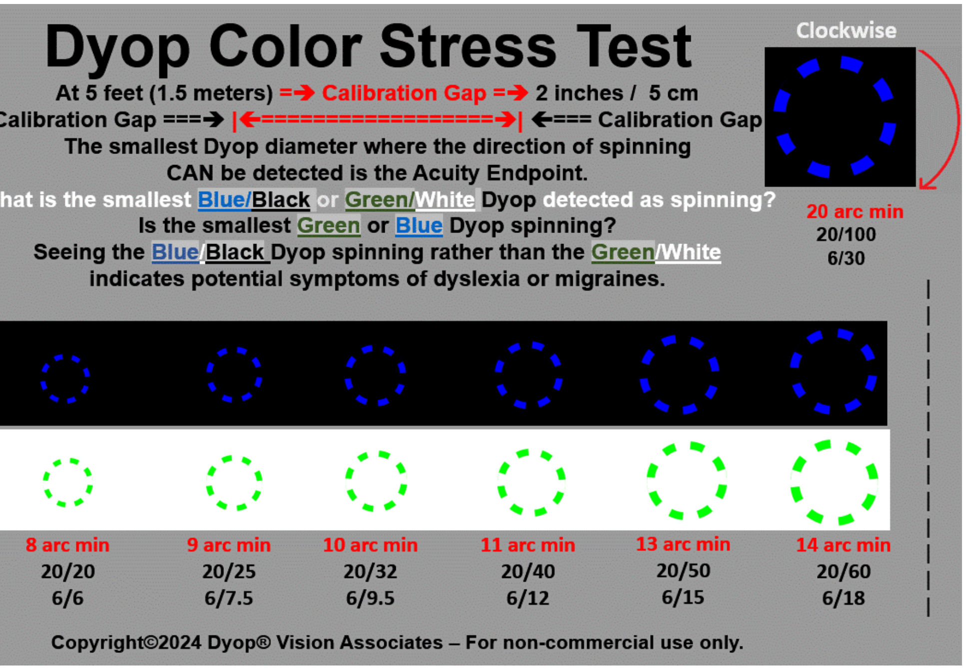
op Acuity Screening Test for use at 5 feet

Dyop Acuity Screening Test for use at 10

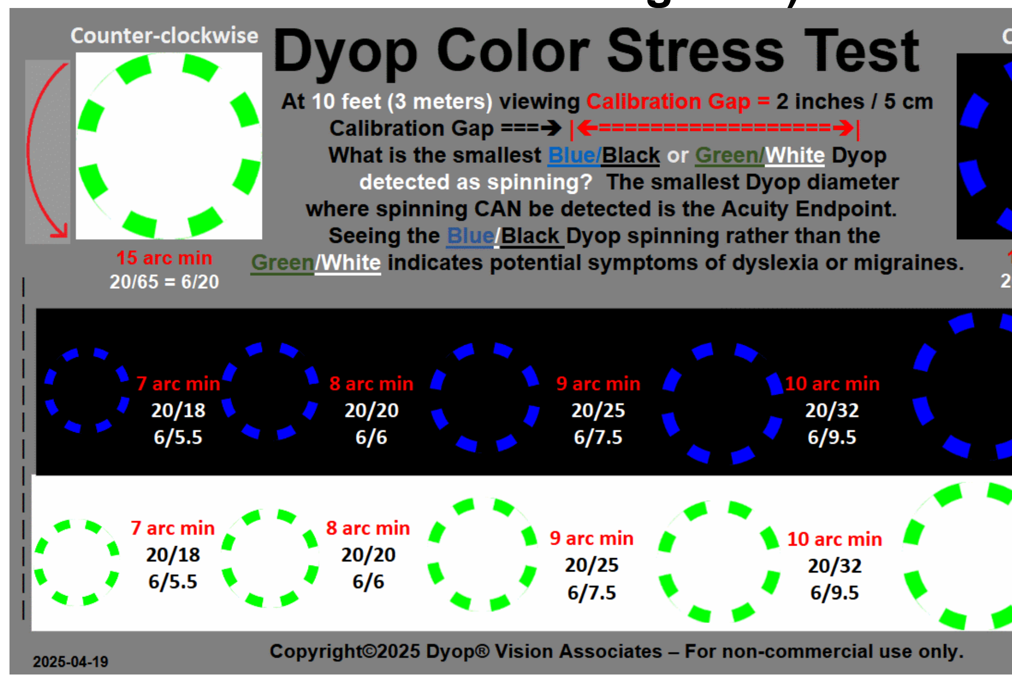
Online Dyop Color Stress Screening Test

elect the link below for the color screening (visual stress) test for the correct viewing distanc

View the spinning rings at a five-foot or ten-foot distance.
mallest colored Dyop ring (Blue/Black or Green/White) you can detect as spinning indicates y
uity profile. Preferentially seeing the Blue/Black rather than the Green/White indicates a prob
of symptoms of dyslexia, migraines or epilepsy.
ow of numbers between the smallest rings you can detect as spinning is the measure of your
(Below are static images of the Dyop online Color Stress Screening test.)



Blue/Green Visual Screening Test – 5 feet



Dyop Blue/Green Visual Screening Test – 1

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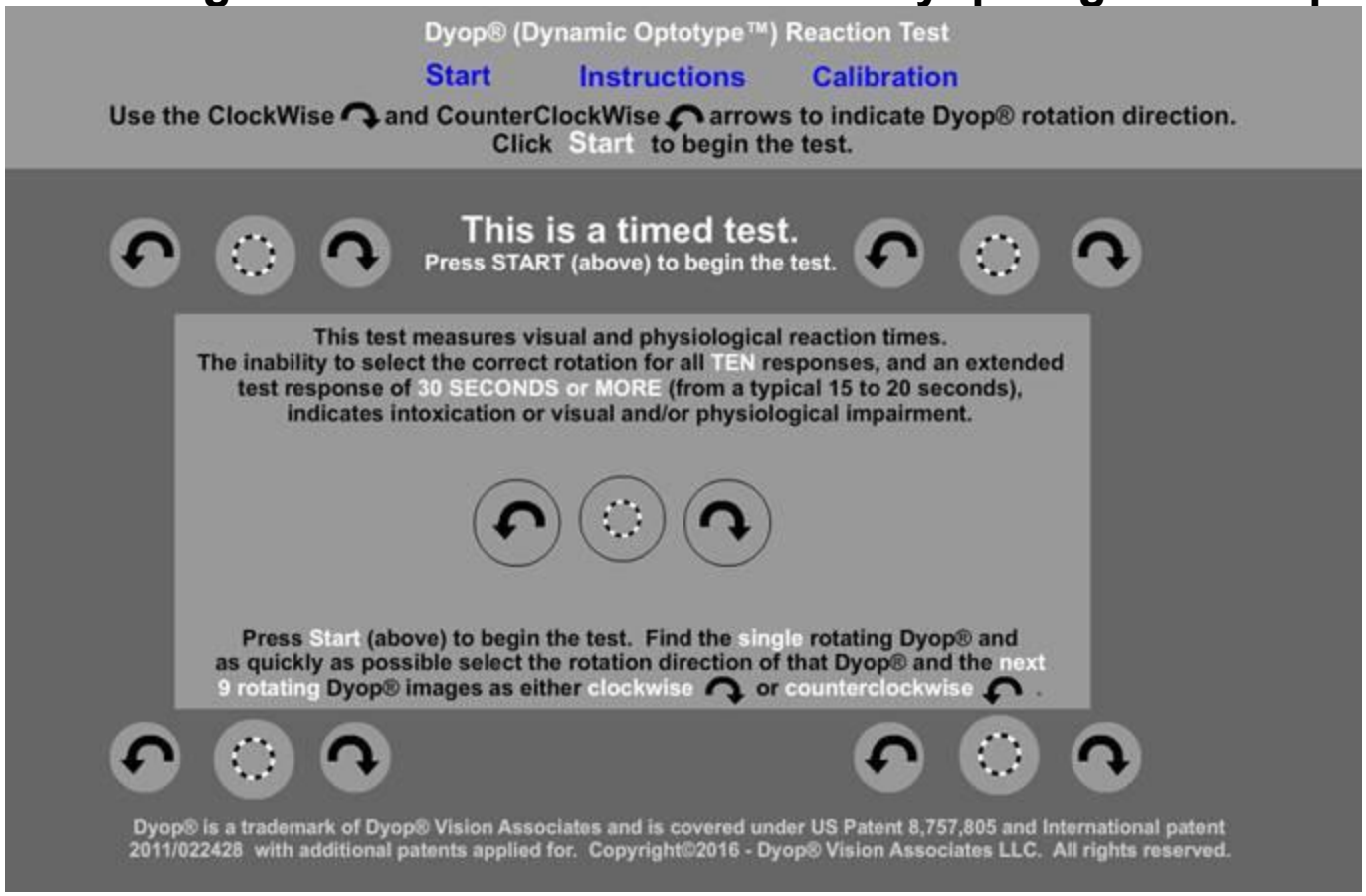
Dyop Cognition-Impairment Test

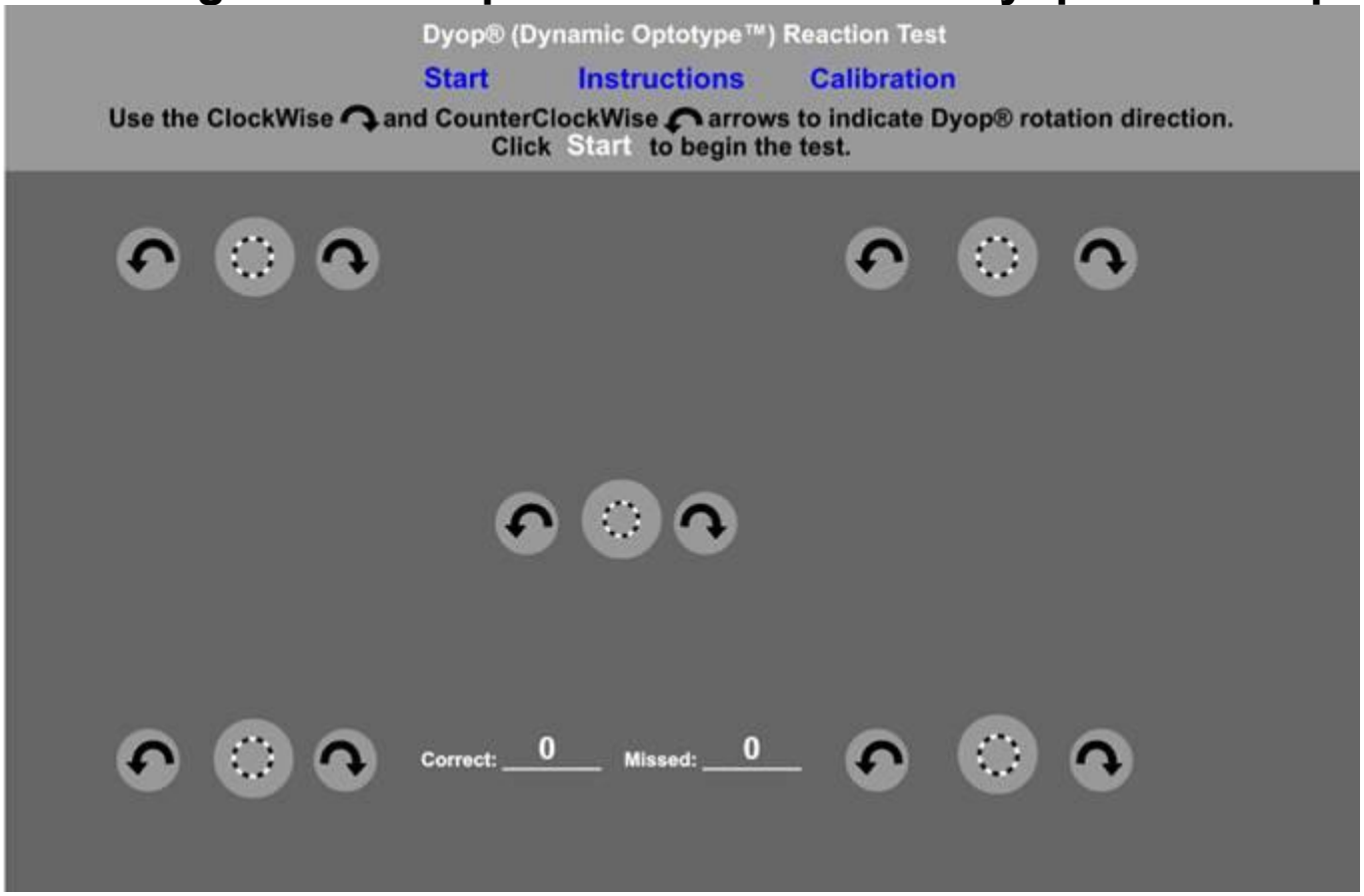
may also be used to evaluate the visual and mental impairment associated with conditions su
intoxication, PTSD, concussion injuries, and other possible mental difficulties such as Alzhe
https://www.dyop.net/documents/Dyop_Cognition_Test.html

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.)



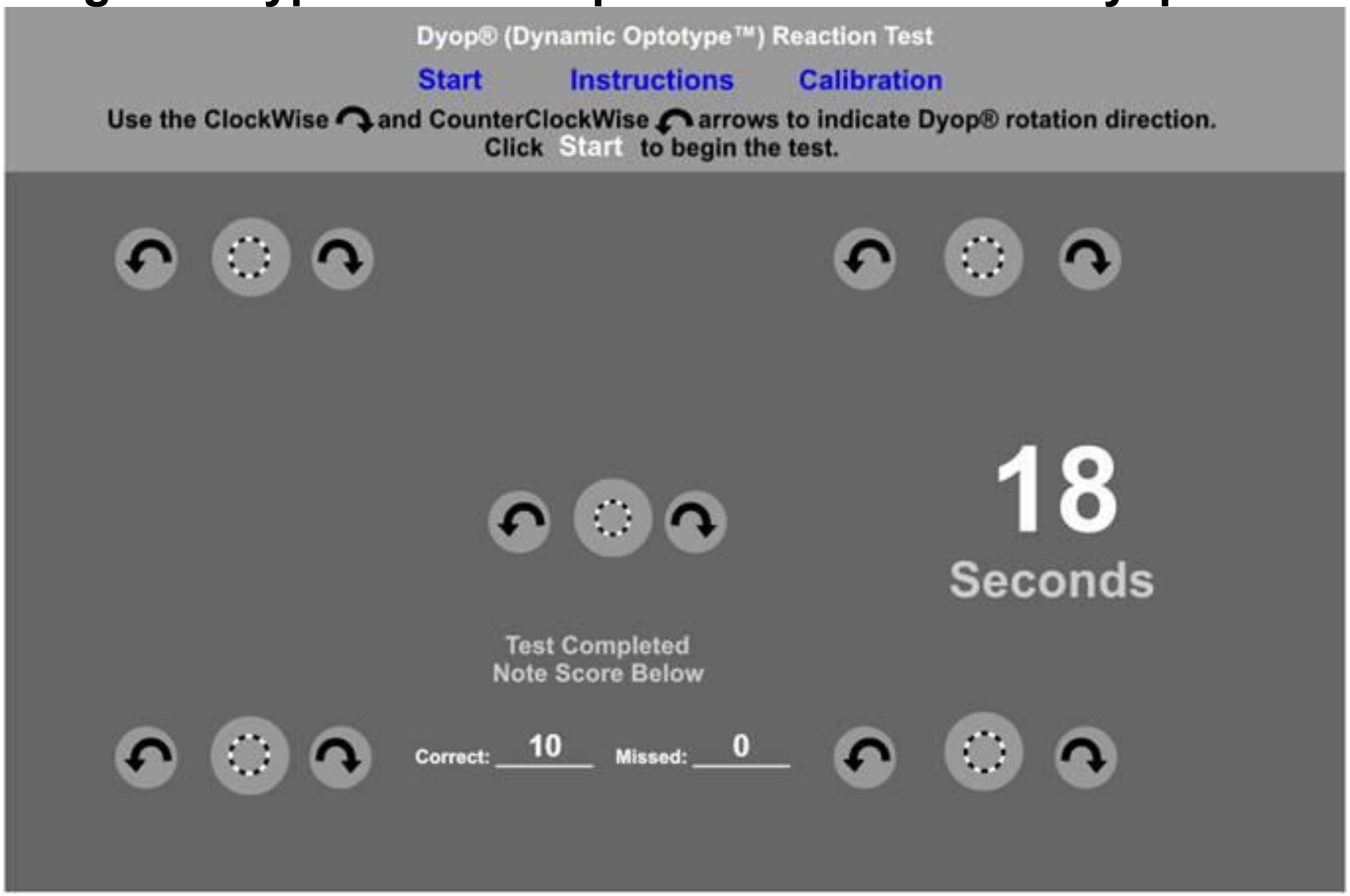
hat when the test starts, there will be FIVE Dyops on the screen but only ONE of them is spinn
a computer mouse or touch screen to click the arrow adjacent to the SINGLE spinning Dyop
indicate its spin direction.
That Dyop will stop spinning, but ONE of the other FOUR Dyops will then start spinning.

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.)



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

elow 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**.

for further information contact: Allan Hytowitz at Allan@Dyop.org
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