

# EYE TRACKING 101



The benefits of eye tracking in a healthcare setting.

Eye tracking has become an increasingly popular tool in clinical practice and research for understanding vision function and brain health.

An education piece by RightEye

# Q&A

Eye-tracking technology is an objective, quantifiable way to replace manual testing and help expand and enrich patient care.

## **Q. What is eye-tracking technology?**

**A.** Eye-tracking technology, which is both objective and quantifiable, captures precise eye movements (30-250 times a second). The data produced is quantitative—meaning, when compared to established standards, it can reveal a host of conditions such as binocular vision issues, reading dysfunction, and concussions or other traumatic brain injuries. It can assess and improve the experiences of athletes. And it can track recovery and identify progression.

## **Q. Why does eye movement behavior matter?**

**A.** Involuntary eye movements can be indicators of visual performance and health concerns. By measuring and analyzing these otherwise imperceptible patterns, you can identify and offer treatment to correct a host of medical issues as well as increase visual performance. Remember: vision is not the same as eyesight. A person with 20/20 eyesight may still exhibit weak eye-movement behaviors.

## **Q. What does an eye-tracking solution measure?**

**A.** Eye tracking measures eye movements. Specifically, the right eye-tracking solution will measure areas of eye movement, including:

- Circular, horizontal and vertical smooth pursuits
- Horizontal and vertical volitional saccades
- Reaction times including simple, choice and discriminate
- Fixation stability
- Eye teaming
- Dynamic acuity

## **Q. What are the benefits of using an eye-tracking solution?**

**A.** Eye-tracking solutions provide unbiased, quantifiable data that can be compared to established standards. Reports are objective and highly visual, enabling you to explain results to patients in a manner that is easy to understand and trust. Some solutions allow for instant replay of information and movement, which enables you to track where a patient's gaze is going in real-time. In addition, most commercialized eye-tracking solutions are portable, allowing them to be used in many different settings.

# An eye-tracking option for everyone

## Considerations

when purchasing an eye-tracking solution

- ✓ **Simple:** Any technician in the office should be able to run eye-tracking tests and interpret reports. This saves valuable provider time that allows you to get to diagnosis and treatment faster.
- ✓ **Quick:** Setup (including calibration) and testing should be quick to run, with near-instant results. This reduces up-front testing time and allows you to work more efficiently and focus on treatment.
- ✓ **Portable:** Look for features like a lighter weight, compact size, long battery life and Wi-Fi connectivity. These enable you to test patients around the office, in the field and anywhere else assessment is needed.
- ✓ **Multi-Purpose:** Some solutions allow you to test for multiple unrelated dysfunctions with the same device. This all-in-one capability reduces the need for your office to invest in excess technology and training.
- ✓ **Visual:** Results should be reported in an illustrated, pictorial manner that distills and analyzes the raw eye-tracking data. This will enable easier patient conversations and a better understanding of complex vision issues.
- ✓ **Non-Invasive:** Standalone eye-tracking devices eliminate the need for patients to physically interact with the system, an issue which can be problematic depending on your patient population. Children with sensory issues, for example, may not be willing to wear a headset for an extended period of time or at all.

## Types

of eye-tracking devices:

### WEARABLE:

Portable devices worn on the face – such as headsets or glasses – that have eye-tracking hardware integrated into them. For those with sensory issues or injuries, these can create challenges for comfort and accuracy.

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### SCREEN-BASED:

Non-invasive professional-grade eye-tracking built into a mobile unit or added to a standard computer monitor. Some are desktop-based and may not be portable.

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### WEBCAM:

Consumer-grade computers or tablets that have built-in webcams can also be used for some basic eye-tracking purposes. These off-the-shelf systems are convenient but have lower accuracy

# Enhance existing services and generate new revenue.

Eye-tracking solutions enable you to improve patient care and expand your portfolio of services. With some systems, eye-tracking tests can be conducted by any member of your office staff and take less than five minutes to administer.



## **Functional Vision Screening**

Acuity is just one of the vision skills necessary to ensure good balance, coordination and focus for a safe and productive lifestyle. It is recommended that doctors evaluate dynamic eye focusing, eye teaming and eye movement as part of a comprehensive exam. Eye tracking helps objectively assess these vision skills along with many others.



## **Brain Health Assessment**

90% of all concussions include visual dysfunction, but most doctors rely on subjective observation to assess these issues. Eye tracking allows you to objectively measure and report on these dysfunctions in a way that is repeatable, quantifiable and evidence-based.



## **Reading Assessment**

One in four children has a vision problem that affects learning – a vision problem that is often misinterpreted as disinterest, sleepiness, dyslexia or ADHD. Eye-tracking tests enable you to easily uncover vision problems that are frequently misidentified as learning disabilities.



## **Sports Vision Assessment**

Almost 80% of perceptual input is visual. But even 20/20 eyesight does not mean athletes are performing at their peak. Just because they can see clearly doesn't mean they can ascertain where an object is in space, how fast it's traveling or if it's changing direction. Eye tracking can help identify opportunities to strengthen performance-related aspects of vision.



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