EyeKinetix®

Objective Pupillography

KONAN MEDICAL

Visual Function Diagnostics

AN OBJECTIVE MODERN ALTERNATIVE

to the Swinging Flashlight Method

EyeKinetix®

EyeKinetix is an *objective,* automated pupillograph used to assess and document Relative Afferent Pupillary Defects (RAPD).

Pupil testing is a required part of a comprehensive eye examination. Historically performed as a subjective observation, it is considered by many clinicians as difficult to perform well.

EyeKinetix is an *objective* alternative to the century-old swinging flashlight method (SFM) originally invented by Dr. Marcus Gunn. The SFM is notoriously difficult for humans to do well, is non-standardized, and is rarely quantified using *neutral density filters*. Importantly, subtle RAPDs have been shown to be clinically significant[1].

How Does it Work?

EyeKinetix utilizes an LED array to present monocular stimuli to constrict the pupils which are monitored with a proprietary pupil tracking algorithm.

The pupillary reflexes are recorded bilaterally under infrared light with high-definition video cameras measuring the amplitude, timing, and velocity of the direct and consensual pupil reflexes.

Asymmetry is quantified and presented as the RAPDx® score, which is an analog of the swinging flashlight method if quantified using neutral density filters[2].

EyeKinetix is designed to also be used for limited mobility patients.

> *The RAPDx score provides a highly sensitive & specific assessment of the RAPD compared to the swinging flashlight. It's easily used by ancillary personnel as part of the screening of patients & is a powerful tool for clinicians needing to identify, confirm and quantify relative afferent pupillary defects.*

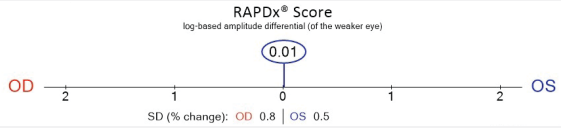
Nicholas J. Volpe, MD
Chairman, George S. and Edwina Tarry Professor in Ophthalmology
Northwestern University, Feinberg School of Medicine

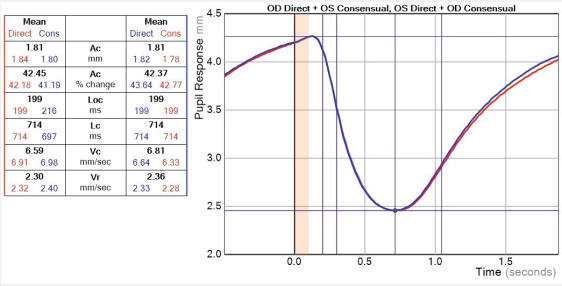
What Causes an RAPD?

The RAPD response is a measure of asymmetry which may occur with optic nerve, retinal or cerebral vascular disease, and amblyopia, specifically when there is a difference in the disease process between the two eyes.

See What You've Been Missing®

No RAPD - Symmetric Response

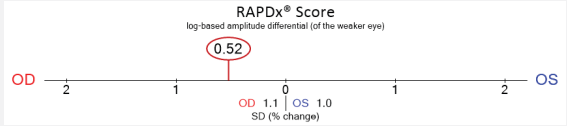


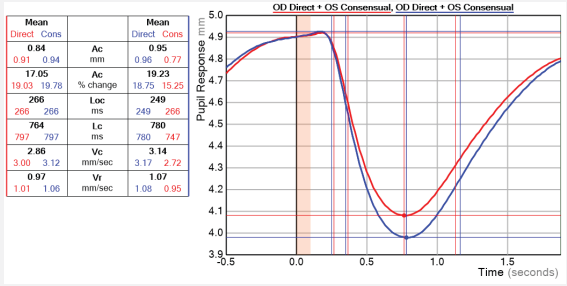


The RAPDx Score is a differential assessment of the mean of the right eye stimulated constrictions versus the mean of the left eye stimulated constrictions.

In the example on the right, the RAPDx score indicates that the right eye sees less light and the averaged score is recorded as 0.52 (constriction amplitude differential).

RAPD - Asymmetric Response





Examples of Disorders that May Cause an RAPD

- Glaucoma
- Brain & intraocular tumors
- Optic neuritis
- Multiple sclerosis
- Alzheimer's
- Parkinson's

6 Objective Measures Provided by the RAPDx Test

- Resting pupil diameter
- Latency, onset of constriction
- Velocity of constriction
- Amplitude of constriction
- Latency, maximum constriction
- Velocity of recovery

Key Benefits

- *Objectively* assess pupils routinely and easily
- Delegate this important but difficult task to your technicians with *confidence*
- Identify very *subtle*, but possibly clinically *significant* RAPDs
- *Objectively* document the findings
- Reduce the *risk* of missing a potentially life or vision threatening disorder

Pupil Exam is Recommended By:

AAO Preferred Practice Patterns®

- Comprehensive Adult Medical Eye Evaluation
- Primary Open-Angle Glaucoma Suspect
- Primary Open-Angle Glaucoma

AOA Clinical Practice Guidelines

- Comprehensive Pediatric Eye and Vision Examination
- Comprehensive Adult Eye and Vision Examination
- Care of the Patient with Open Angle Glaucoma

Specifications

Fundamental Method	Objective, automated, infrared pupillography
Testing Options	RAPDx® test for RAPD Assessment PS Test: Photopic / Scotopic pupil measurements + IPD ColorDx® CCT HD® (90 Day Free Trial)
Form Factor	Small desktop device or may be unmounted to use as hand-held for patients requiring accessibility and/or mobility assistance
Stimulator System	Array of white, red, and blue high brightness, high dynamic range LEDs
Imaging System	Binocular synchronized resolution NIR sensitive machine-vision cameras
Frame Rate	Up to 120Hz depending on test options
Resolution	Up to 1280x960 pixels per eye
Eye tracking & Image Analysis	Real-time proprietary machine-vision algorithm detects pupil size, center, and location
Outlier & Blink Rejection	Automatic blink rejection and outlier analysis. Manual override available.
Database & Storage	Patient Name, ID, DOB searchable database. Pupil recordings saved for playback.
Reporting	Dell AIO PC with custom, high-precision color profiled 22" anti-glare monitor, Windows 10 Pro, keyboard and mouse
Help & Support	Beautifully illustrated on-screen help and remote access for training and technical support
Regulatory	Class I, 510(k) exempt
Accessories	
Computer	Precision color and luminance calibrated Windows 10 Pro 12.2" touch-screen convertible tablet PC with Intel Core i5-8250U, 8GB RAM, 256GB Solid-State Storage

Interested in learning more?

(949) 576-2200

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1. Tatham AJ, Meira-Freitas D, Weinreb RN, Marvasti AH, Zangwill LM, Medeiros FA. Estimation of retinal ganglion cell loss in glaucomatous eyes with a relative afferent pupillary defect. Investigative ophthalmology & visual science. 2014 Jan 1;55(1):513-22.
2. Cohen, Liza M., et al. "A Novel Computerized Portable Pupillometer Detects and Quantifies Relative Afferent Pupillary Defects." Current Eye Research, vol. 40, no. 11, 2015, pp. 1120–1127., doi:10.3109/02713683.2014.980007.