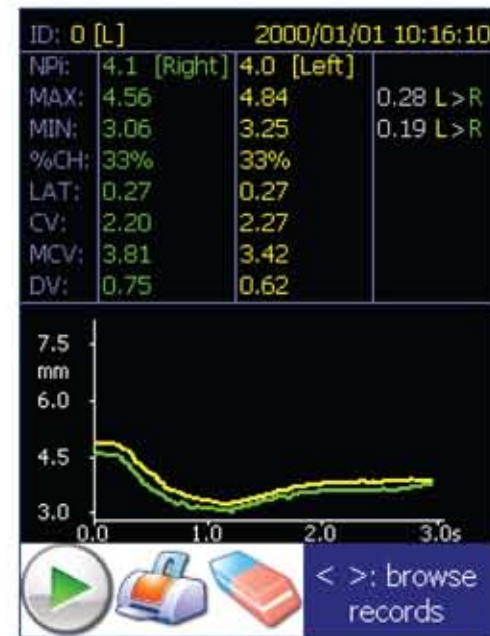


Interpreting the Information from the Pupillometer

The Neurological Pupil index™

Parameter on Measurement Results Screen	Unit of Measure	Definition/Calculation
NPi™ (Neurological Pupil index™)	Scalar value 0-5	Algorithm that takes all variables below as inputs and compares to a normative model to give a composite score of pupillary response
MAX/MIN	mm	MAX = initial resting pupil size MIN = pupil size at peak of the constriction
%CH	%	Constriction % or Percentage Change ((MAX - MIN) / MAX)
LAT	Seconds	Latency = time difference between initiation of retinal light stimulation and onset of pupillary constriction
CV/MCV	mm/sec	Average Constriction Velocity (CV) = amount of the constriction divided by duration of constriction Maximum Constriction Velocity (MCV) = peak value of velocity during constriction
DV	mm/sec	Average Dilation Velocity (DV) = amount of pupil size recovery (after the constriction) divided by duration of recovery



- video playback
- used to send information to the printer
- designed to clear information from the device

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- **Product Evaluation:** Comprehensive evaluation program to trial Pupillometer prior to purchase
- **Clinical Education:** Clinical Education Specialists (all RNs) available to train healthcare providers. Detailed instruction manual provided and educational materials available.
- **Simple to use** – very user friendly
- **Helpline:** Customer Support/Technical Assistance Helpline at +1 (949) 250-9792 if you have questions or need support



The Pupillary Evaluation

Clinicians routinely check the pupils of critically injured and ill patients to monitor neurological status. The two main components that are checked are pupil size and reactivity to light. Manual pupil measurements (performed using a penlight or ophthalmoscope) have been shown to be inaccurate and not repeatable or consistent. The NeurOptics® NPi™-100 Pupillometer removes subjectivity from the measurement of the pupil size and reactivity and its NPi™ algorithm provides a way to track and trend pupillary reactivity in a consistent, objective and quantifiable way.

What are the limitations of the current method?

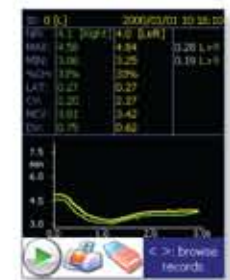
- **Pupil Size:** Pupils should be of equal size. This measurement has traditionally been performed using a pupil gauge to "guesstimate" the diameter in millimeters of the pupil at rest before any light is shone into the eye. This method is very subjective and prone to error.
- **Pupil Light Reactivity:** Pupils should react "briskly" to a light stimulus. A light is shone into a patient's eye to make the pupil constrict in reaction to the light. The pupil should dilate again when the light is moved away. The light reaction is graded as "brisk", "sluggish" or "nonreactive." These terms are very subjective and applied without a standard clinical protocol or definition.

What are the benefits of the NPi™?

Rather than classifying pupillary response as "brisk", "sluggish", or "nonreactive", which are subjective terms, the NPi™ scale provides an objective and quantifiable way for clinicians to rate the pupillary light reflex. When using the NPi™-100 Pupillometer, even the newest nurse can evaluate the pupillary light reactivity as accurately as a very experienced clinician. Once a baseline measurement has been obtained, the clinician can track and trend any subtle changes or deteriorations in pupillary responsiveness.

What is NPi™?

NPi™, or "Neurological Pupil index™", is an algorithm developed by NeurOptics® scientists to remove subjectivity from the pupillary evaluation. A patient's pupil measurement (including variables such as size, latency, constriction velocity, dilation velocity, etc.) is compared against a normative model of pupil reaction to light and **automatically graded by the NPi™ on a scale of 0 to 5.**



How do you interpret NPi™?

An individual measurement taken is rated on a scale between 0 and 5. A score equal to or above 3 means that the pupil measurement falls within the boundaries of normal pupil behavior ("brisk") as defined by the NPi™ model. However, an NPi™ value closer to 5 is more brisk than a value closer to 3. An NPi™ score below 3 means the reflex is abnormal, i.e., weaker than a normal pupil response as defined by the NPi™ model ("sluggish"), and values closer to 0 are more abnormal than values closer to 3.

