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PLR®-3000

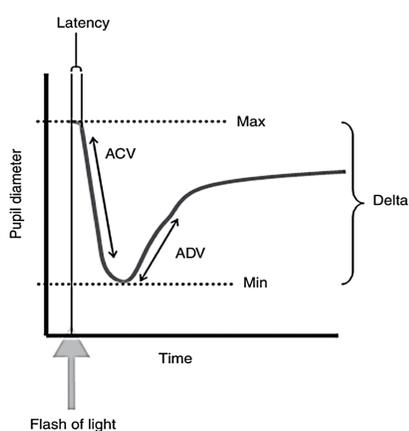**NeuroLight®**

Background

The pupillary light reflex (PLR) is controlled by, and thus mimics the condition of the autonomic nervous system.

PLR is proven to be a valid biomarker of neurological injuries (1). Handheld pupillometers are now commercially available and could be a future tool for biomedical laboratory scientists working in emergency and intensive care units. The aim of this study was to compare the performance of two handheld pupillometers.

Pupillogram demonstrating pupillary response to light (2)

Method

PLR was measured with **PLR®-3000,** NeurOptics, USA and **NeuroLight®,** IDMed, France in a darkened room (0.4 lux).
Each healthy volunteer was measured six times alternating between the pupillometers with a period of 2 minutes dark adaption between each measurement.
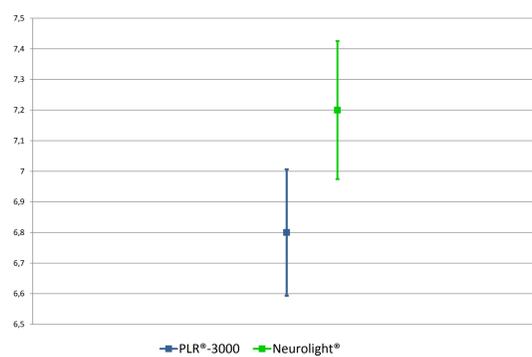
Results

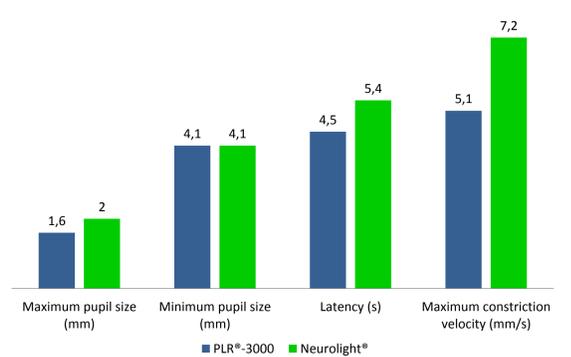PLR was measured in 18 men and 34 women, aged 19 to 56 years.

Data are presented by means and 95% confidence intervals.

Maximum pupil size (mm)

Minimum pupil size (mm)

Latency (s)
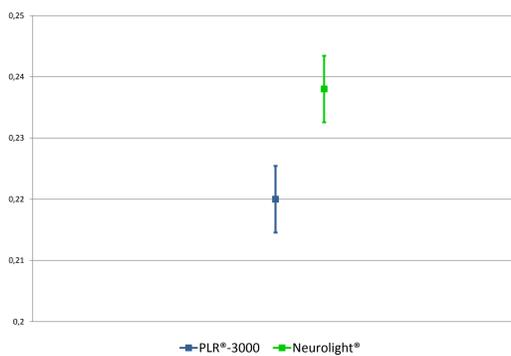
Maximum constriction velocity (mm/s)

There was no statistically significant differences between measurements obtained by PLR®-3000 and NeuroLight®

Coefficients of Variance (CV%)

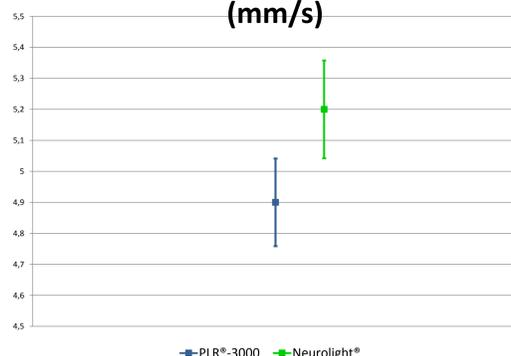Both pupillometers showed acceptable precision with CV% below 7.5.

Failed measurements were 7% with PLR®-3000 and 17% with NeuroLight®, χ^2-test: p=0.006.
The user-friendliness was rated highest with PLR®-3000.

Conclusion

Both pupillometers performed well and seem suited for measuring PLR. The users, to a minor extend, favored PLR®-3000 over NeuroLight®, due to fewer failed measurements and higher user-friendliness.
However, further investigations of the accuracy are needed to fully describe the performance of the two pupillometers.

References:
1. Hall CA, Chilcott RP. Eyeing up the Future of the Pupillary Light Reflex in Neurodiagnostics. Diagnostics [Internet]. 2018 Mar;8(1):19.

2. Patwari PP, Stewart TM, Rand CM, Carroll MS, Kuntz NL, Kenny AS, et al. Pupillometry in congenital central hypoventilation syndrome (CCHS): quantitative evidence of autonomic nervous system dysregulation. Pediatric Research [Internet]. 2012 Jan 25;71:280.

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