Mesopic pupil amplitude depending on the age and the wavelenght of the stimuli

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Purpose In the present study, values of the phases of pupil light reflex were recorded and analyzed depending on the age, and the spectral content of the incident light, in order to determine changes on the pupil light reflex by means of various types of lights and compare their effects in every sub-sample and between them.

Methods The sample consists in 30 old subjects and 32 young subjects. To evaluate possible dementia in old subjects, the clock drawing test was applied. The pupillometer used was Power Refractor II, a binocular, infrared based instrument and autorefractometer. Four optical filters were interposed on the flash: a neutral density filter 05, and three interferential filters with peaks of transmission in 450 nm, 510 nm and 600 nm. Our team designed a parser programmed in java that calculates all the variables implicated.

Results In the old age group, the average amplitude were 1.23 ±0.3 mm, 1.03 ± 0.3 mm, 1.11 ± 0.4 mm, and 0.85 ± 0.3 mm for white light, blue monochrome light, green monochrome light and red monochrome light, respectively. In the young age group, the average amplitude to white light was 2.29 ± 0.4 mm, and the average amplitude for blue, green and red monochrome lights were, respectively, 1.91 ± 0.3 mm, 2.04 ± 0.5 mm, and 1.60 ± 0.6 mm. Both groups exhibited a similar behaviour when reactions were compared depending on the different wavelength.

Conclusion Age affects considerably to mesopic pupil amplitudes values provoked for luminous stimuli. Likewise, blue and green monochrome lights bias the response in both groups.