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System for measurement of the consensual pupil light reflex

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Abstract

The paper presents the measurement system for quantitative investigation into the consensual reaction of pupil to light. This reaction is called the pupil light reflex (PLR). The system enables the recording and analysis of the time characteristics of pupil radius variation during PLR. In the measurement the stimulating light is projected on the left eye in so-called Maxwellian projection but the consensual reaction (i.e., the change in the radius) of the right eye is recorded. As a detection element the system of two linear CCD sensors has been used. Both the linear and the frequency sensitivity is determined by the technical parameters of the sensors and the optical system and are respectively 0.05 mm and 90 Hz. Moreover, a special technical arrangement makes the results of measurement independent on the horizontal and vertical movements of head relative to the recording system. This arrangement improves significantly the stability of results. In the paper the examples of PLR time characteristics obtained with the presented measurement system are shown. The influence of the time parameters of the stimulating light on the characteristics shape has been analysed.



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