Normal values of short-wavelength automated perimetry

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BACKGROUND: The purpose of this study was to evaluate short-wavelength automated perimetry (SWAP, i.e., blue-yellow) in normal volunteers and to review the current normal values provided by the manufacturer. METHODS: 28 eyes of 28 normal subjects (age range 21-48 years, mean age 36.5 years) had SWAP (Octopus 101, two phases of program G2, Interzeag AG, Schlieren, Switzerland). All subjects had normal eye examinations, refractive errors with spherical equivalents <5 diopters and astigmatism <2 diopters, normal intraocular pressures, no history of diseases affecting the visual field or nerve fiber layer, and normal white-white automated perimetry (Octopus 101, program G2). RESULTS: 21% of the subjects (6/28) had to be excluded since visual field testing was not reliable (reliability factor >5%). With the normal values provided by the manufacturer, only 45% of the remaining subjects (10/22) had all other indices within normal limits. With the appropriate normal values based on the multicenter SWAP Octopus 101 study, 11% (3/28) were beyond the normal range: all had abnormal high sensitivities - 2 due to false-positive response. The normal value range for the index Mean Defect is remarkably wide (5., median, 95.- percentile: -4.4, -0.5, +5.3 dB, respectively). The normal value range for the index Loss Variance is surprisingly low and similar to standard perimetry (5., median, 95.- percentile: -1.7, 6.8, +21.2 dB(2), respectively). CONCLUSION: SWAP with the Octopus G2 program reaches appropriate specificity but only if the correct normal values of the multicenter SWAP Octopus 101 study are used. The variability between subjects is remarkably large. The variability within a visual field is similar for SWAP and standard perimetry as reflected by similar values for the visual field index Loss Variance. Further studies have to establish the sensitivity to detect a disease for SWAP on the Octopus 101.