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Reproducibility of Nerve Fiber Layer Thickness Measurements using Optical Coherence Tomography ((J.M. Williams BS, L.M. Zangwill Ph.D, C.C. Berry Ph.D, E. Blumenthal MD, C. Girkin MD, and R.N. Weinreb MD)), Glaucoma Center and Research Laboratories, Department of Ophthalmology and the Department of Family and Community Medicine, University of California at San Diego, La Jolla.

Purpose: To evaluate the reproducibility of retinal nerve fiber layer (RNFL) measurements obtained by Optical Coherence Tomography in normal and glaucomatous eyes. **Methods:** 4 normal (mean age 49 ± 18 years) and 6 glaucoma (mean age 65 ± 10 years) eyes of 10 subjects underwent four dilated scanning sessions on 2 separate days using the Optical Coherence Tomography (OCT) (Humphrey Instruments, San Leandro, CA.). Each session consisted of five scans centered on the optic nerve head using a scan diameter of 3.4 mm. The first two sessions were performed consecutively by two experienced operators. A random effects ANOVA was performed to estimate the components of variance related to differences from subject to subject, operator to operator, visit to visit, session to session and between images. **Results:** The mean RNFL thickness (\pm SD) for glaucomatous and eyes $73.9 \pm 22.2 \mu\text{m}$, and normal eyes $82.9 \pm 13.3 \mu\text{m}$. The mean coefficient of variation (COV) for the glaucoma and normal eyes for mean RNFL thickness was 11.8% and 7.4%, respectively. The COV of RNFL thickness for the glaucomatous and normal eyes in each quadrant is superiorly (14.9%, 13.2%), temporally (21.9%, 12.6%), inferiorly (17.3%, 12.6%), nasally (34.9%, 20.2%), respectively. From the model, the standard error of the estimate of mean RNFL thickness measured from the average of 3 scans is approximately 8 to 9 microns. The largest component of variance was for subject to subject differences; these differences accounted for approximately 80% of the variance. **Conclusions:** These results suggest that the OCT provides reproducible measurements from test to test.

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