BACKGROUND: The present study investigates the possible application of a commercially available on-line measuring device of retinal vessels for conjunctival vessel assessment. METHODS: Repeated measurements in one randomly chosen eye were performed in 11 healthy volunteers (mean age 42.9 +/- 10 years). Measurements of one conjunctival vessel were obtained first without a stimulus followed by measurements after the application of one drop of a topical vasoconstrictor. The examinations were performed by Retinal Vessel Analyzer (RVA, IMEDOS/Germany). This system determines automatically on-line the vessel diameter along a chosen vessel segment. RESULTS: Measurements in the native state without eye drop application showed an intraclass correlation coefficient of 0.97 and a mean variation coefficient of 1.8%. After application of the topical vasoconstrictor a short acting vasodilatation was observed with a magnitude of +10.9% +/- 14.9 (p< 0.001), followed by an increasing vasoconstriction (after 4 min -12.0% +/- 7.6; p = 0.004). One volunteer had no measurable conjunctival vessels in the baseline measurements and was therefore excluded from the study. DISCUSSION: The suggested technique allows the measurement of changes in conjunctival vessel diameter with high precision. The method represents a non invasive technique for the assessment of effects on conjunctival vessels caused by topical or systemic drugs.