Characteristics of on-road driving performance of persons with central vision loss who use bioptic telescopes.

PURPOSE: To compare the on-road driving performance of visually impaired drivers using bioptic telescopes with age-matched controls.

METHODS: Participants included 23 persons (mean age = 33 ± 12 years) with visual acuity of 20/63 to 20/200 who were legally licensed to drive through a state bioptic driving program, and 23 visually normal age-matched controls (mean age = 33 ± 12 years). On-road driving was assessed in an instrumented dual-brake vehicle along 14.6 miles of city, suburban, and controlled-access highways. Two backseat evaluators independently rated driving performance using a standardized scoring system. Vehicle control was assessed through vehicle instrumentation and video recordings used to evaluate head movements, lane-keeping, pedestrian detection, and frequency of bioptic telescope use.

RESULTS: Ninety-six percent (22/23) of bioptic drivers and 100% (23/23) of controls were rated as safe to drive by the evaluators. There were no group differences for pedestrian detection, or ratings for scanning, speed, gap judgments, braking, indicator use, or obeying signs/signals. Bioptic drivers received worse ratings than controls for lane position and steering steadiness and had lower rates of correct sign and traffic signal recognition. Bioptic drivers made significantly more right head movements, drove more often over the right-hand lane marking, and exhibited more sudden braking than controls.

CONCLUSIONS: Drivers with central vision loss...
who are licensed to drive through a bioptic driving program can display proficient on-road driving skills. This raises questions regarding the validity of denying such drivers a license without the opportunity to train with a bioptic telescope and undergo on-road evaluation.