

Abstract

Objectives: To determine the tests most predictive of falls in community-dwelling older people from a range of visual screening tests (high and low contrast visual acuity, edge contrast sensitivity, depth perception, and visual field size). To determine whether one or more of these visual measures, in association with measures of sensation, strength, reaction time, and balance, can accurately predict falls in this group.

Design: Prospective cohort study of 12 months duration.

Setting: Falls and Balance Laboratory, Prince of Wales Medical Research Institute.

Participants: 156 community-dwelling men and women age 63 to 90 (mean age 76.5, standard deviation = 5.1).

Measurements: Screening tests of vision, sensation, strength, reaction time and balance, falls.

Results: Of the 148 subjects available at follow-up, 64 (43.2%) reported falling, with 32 (21.7%) reporting multiple falls. Multiple fallers had decreased vision, as indicated by all visual tests, with impaired depth perception, contrast sensitivity, and low-contrast visual acuity being the strongest risk factors. Subjects with good vision in both eyes had the lowest rate of falls, whereas those with good vision in one eye and only moderate or poor vision in the other eye had elevated falling rates-equivalent to those with moderate or poor vision in both eyes. Discriminant analysis revealed that impaired depth perception, slow reaction time, and increased body sway on a compliant surface were significantly and independently associated with falls. These

variables correctly classified 76% of the cases, with similar sensitivity and specificity.

Conclusion: The study findings indicate that impaired vision is an important and independent risk factor for falls. Adequate depth perception and distant-edge-contrast sensitivity, in particular, appear to be important for maintaining balance and detecting and avoiding hazards in the environment.