Computerized dynamic visual acuity with volitional head movement in patients with vestibular dysfunction

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- PMID: 17044536

- DOI: 10.1177/000348940611500902

Abstract

Objectives: Patients with uncompensated vestibular dysfunction frequently report blurred vision during head movement, a symptom termed oscillopsia. One way to measure the functional deficit associated with an impaired vestibulo-ocular reflex is by comparing visual acuity from a baseline condition in which there is no head movement to visual acuity obtained during a dynamic condition with head movement. A previously described test incorporated a treadmill upon which patients walked during assessment of visual acuity. The objective of the current investigation was to evaluate an alternative method of assessing dynamic visual acuity that uses volitional head movement instead of walking on a treadmill.

Methods: Fifteen participants with normal vestibular function and 16 participants with impaired vestibular function were enrolled. All participants performed the visual acuity task under baseline conditions with no movement and also under dynamic conditions that included 1) walking on a treadmill and 2) volitionally moving their head in the vertical plane.

Results: No difference in performance was observed between the treadmill task and the volitional head movement task. Participants with impaired vestibular function performed more poorly under the dynamic conditions than did participants with normal vestibular function.

Conclusions: The results suggest that the volitional head movement paradigm may be useful in identification of patients with functional deficits of the vestibulo-ocular reflex