Oculomotor rehabilitation for reading in acquired brain injury.

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Abstract

The purpose of this study was to assess reading-related oculomotor rehabilitation in individuals with acquired brain injury. Adults with either stroke (n=5) or traumatic brain injury (n=9) participated. Training paradigms included single-line and multiple-line simulated reading, as well as basic versional tracking (fixation, saccade, and pursuit), twice per week over an 8 week period. Training modes included normal internal oculomotor visual feedback either in isolation (4 weeks) or concurrent with external oculomotor auditory feedback (4 weeks). Training effects were assessed objectively using infrared eye movement recording technology for simulated and actual reading, with the assessments occurring before, midway, and after training. In addition, the individuals were assessed subjectively using a reading rating-scale questionnaire. All reported considerably improved reading ability, and this was confirmed by several of the objective oculomotor measures. There was a trend for improvement to be better with the combined visual and auditory oculomotor feedback. Reading-related oculomotor rehabilitation produced significant gains in both the subjective and objective domains. It is believed that rapid saccadic oculomotor adaptation, as well as the training of rhythmicity and automaticity, were involved in modifying eye movement behavior to produce a more systematic approach and resultant improved reading profile.