



Diagnosis and treatment of vision disorders following brain injury results in improved outcomes

Recent work in brain injury rehabilitation indicates that identification and treatment of various comorbidities, including vision disorders and vestibular disorders, plays a significant role in overall outcomes following brain injury. This issue of the Madonna Minute focuses on current rehabilitation approaches addressing these under-recognized issues in the brain injury population.

Visual system disorders

Visual system disorders following traumatic brain injury are common, with estimates ranging from 3% to 85% depending upon the underlying

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disorder (Kapoor and Ciuffreda 2002; Clarke 2005). Nearly half of all BI patients admitted to a long-term rehabilitation center presented with visual system deficits (Gianutsos 1997). Despite their frequency in this population, it is not uncommon for these visual conditions to be

overlooked as an important target for treatment, which can reduce responsiveness to therapeutic programs and interfere with overall functional progress during rehabilitation (Riggs, Andrews et al. 2007).

Many visual deficits following BI are unrelated to the eye itself. Rather, they are attributable to the inability of the brain to control the motion of the eye or to receive and interpret visual signals. Among the more commonly encountered problems are accommodative dysfunction, binocular fusion deficits, visual field deficits, ocular motility disorders, visual information processing disorders, and photosensitivity (Gianutsos and Suchoff, 1998).

Effective management and treatment of acquired visual system disorders following BI requires a well coordinated team approach (Carman-Merrifield 2005). Team members with primary responsibility for coordination of vision rehabilitation interventions are typically occupational therapists with specialized vision rehabilitation training, working in consultation with a behavioral neuro-optometrist knowledgeable in the diagnosis and treatment of visual sequelae of BI. However, because of their broad impact, the presence of visual system disorders typically benefits from



Brady Beran suffered a traumatic brain injury during a high school football game in 2004 and his Madonna therapy team used the Dynavision 2000 board to improve his visual motor skills.

integrated treatment planning across disciplines. For example, physical therapy may address the impact of disrupted visual processing on balance, while speech therapy concurrently addresses its impact on reading tolerance, or psychology addresses anxiety issues secondary to visual inefficiency. In this manner, team members work synergistically to reduce the practical impact of the disorder on daily function, even if full resolution

continued on reverse



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of the underlying disorder is not achieved.

Corrective interventions may include use of prisms, patching, lenses, and therapeutic vision exercises to improve the visual function. Specific eye exercises have been used with success to assist with correcting deficits in accommodation, convergence and visual tracking. Other therapeutic interventions for visual imperception may include computer-assisted training of visual pursuits or detection of peripheral visual fields (Han, Ciuffreda et al. 2004; Kapoor, Ciuffreda et al. 2004).

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Following her stroke, Glenda Sims' therapists at Madonna incorporated visual rehabilitation techniques and equipment, including prism glasses, which help keep the eyes together and aligned.

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