



NATIONAL ACADEMY OF NEUROPSYCHOLOGY

COGNITIVE REHABILITATION

Official Statement of the National Academy of Neuropsychology

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Brain injury produces a complex constellation of medical consequences including physical, emotional and cognitive deficits. The Centers for Disease Control and Prevention estimates that approximately 5.3 million Americans are living with disabilities resulting from acquired brain injuries, with an estimated annual medical cost of \$48 billion, and approximately \$20.6 billion is related to work loss and disability (Max, Mackenzie, & Rice, 1991). The increased availability and use of safety equipment in vehicles and advances in trauma medicine have been major contributors to the increased number of individuals surviving traumatic brain injuries.

Cognitive impairments in memory, reasoning, attention, judgment and self-awareness are prominent roadblocks on the path to functional independence and a productive lifestyle for the person with a brain injury. In the early development of brain injury treatment programs it became apparent that medical physical rehabilitation services alone were not sufficient for comprehensive treatment. It became dramatically evident to professionals, patients and their families that cognitive impairments, which interact with personality disturbance, were among the most critical determinants of ultimate rehabilitation outcome. Therefore, cognitive rehabilitation became an integral component of brain injury rehabilitation. The Brain Injury Interdisciplinary Special Interest Group (BI-ISIG) of the American Congress of Rehabilitation Medicine provided a definition of cognitive rehabilitation. Cognitive rehabilitation was defined as a “systematic, functionally-oriented service of therapeutic cognitive activities, based on an assessment and understanding of the person’s brain-behavior deficits.” “Services are directed to achieve functional changes by (1) reinforcing, strengthening, or reestablishing previously learned patterns of behavior, or (2) establishing new patterns of cognitive activity or compensatory mechanisms for impaired neurological systems” (Harley, et al., 1992, p.63).

A non-Federal, nonadvocate 16 member panel that included the professions of neurology, neuropsychology, psychiatry and other medical and rehabilitation disciplines, developed the National Institutes of Health (NIH) Consensus Statement on Rehabilitation of Persons with Traumatic Brain Injury (TBI). This panel recommended that...*rehabilitation services should be matched to the needs, strengths, and capacities of each person with TBI and modified as those needs change over time; and rehabilitation of persons with TBI should include cognitive and behavioral assessment and intervention* (NIH Consensus Statement, 1998, p. 23).

The difficulties inherent in the measurement and definition of cognitive rehabilitation were addressed by Carney, et al. (1999) in a review of selected research literature examining interventions and outcomes. The authors concluded that, *based on the evidence found in this review, we recommend the application of compensatory strategies, adapted to patient groups and to individuals, to improve the functional ability of persons with TBI* (p. 306). Additional valuable information and comments relevant to this review

included: identification of barriers in conducting scientific investigations of cognitive rehabilitation, the need to address both cognitive and personality disturbances via therapeutic interventions, the heterogeneity of patient characteristics and the importance of reviewing studies using single-subject or multiple-baseline methodologies (Cicerone, 1999; Kreutzer, 1999; Prigatano, 1999). Recently, the BI-ISIG has concluded an extensive evidence-based review of 171 cognitive rehabilitation studies. Domains of cognitive dysfunction examined included: attention, memory, visuosperception, communication, and problem solving/executive functioning (Cicerone, et al., 2000). Support was found for the effectiveness of several forms of cognitive rehabilitation in alleviating impairments for persons with traumatic brain injury and stroke. *Overall, the available evidence for the effectiveness of cognitive rehabilitation should enable clinicians to advocate for the most effective and realistic treatments for individuals who require services.* (Cicerone, 1999, p. 320).

The National Academy of Neuropsychology supports such empirically and rationally based cognitive

rehabilitation techniques that have been designed to improve the quality of life and functional outcomes for individuals with acquired brain injuries. There remains a need for more evidenced-based work to further define and tailor cost-effective cognitive rehabilitation interventions (Ricker, 1998), and also for an expansion of the graduate academic curriculum by offering training courses in neuropsychological rehabilitation to adequately prepare clinical neuropsychologists to assess for rehabilitation and to treat individuals with brain injuries (Uzzell, 2000). Most importantly, the last several decades have created a clinical and empirical foundation to provide patients with effective cognitive rehabilitation interventions to promote neurobehavioral recovery and to improve opportunities for returning to productive lives.

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