



## AOTA Critically Appraised Topics and Papers Series Traumatic Brain Injury

*\*A product of the American Occupational Therapy Association's  
Evidence-Based Literature Review Project*

### CRITICALLY APPRAISED TOPIC (CAT) WORKSHEET

#### *Focused Question #3*

**What is the evidence for the effect of interventions to address psychosocial, behavioral, and social functions on the occupational performance for persons with traumatic brain injury (TBI)?**

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#### **Clinical Scenario:**

Some people who suffer moderate to severe traumatic brain syndrome fail to achieve social participation without therapeutic intervention while others exhibit nonsocial or at-risk behavior that prevent participation in community life. Various treatment approaches have been developed to improve participation.

#### **Summary of Key Findings:**

##### Summary of Levels I, II, and III

The Level I randomized controlled trial (Powell, Heslin, & Greenwood, 2002) indicated that a multidisciplinary, community-based outreach program using written contracts to achieve short-term or interim goals leading to a client-valued long-term goal resulted in significantly greater gains in activities of daily living (ADL) and social participation compared to the control group.

The two Level III studies did not test the outcomes statistically (Murrey & Starzinski, 2004; McMorrow, Braunling-McMorrow, & Smith, 1998).

##### Summary of Levels IV and V

Because of the paucity of strong evidence regarding this question, these lower level studies have been included as the best evidence available at this time. These studies indicate that poor social skills or maladaptive social behaviors of some people with TBI can be modified or corrected with intensive, long-term therapy. The interventions studied include:

- Education about acquired brain injury using a game format with monetary incentives to increase learning
- Operant conditioning (behavioral analysis) and feedback

- Social skills training (three different training programs for different goals), all by occupational therapists.
- Nonaversive behavioral and skills training; environmental adaptation
- Nonconfrontational approach and use of errorless learning and the client's implicit memory
- Humor, reframing of the situation, diversion of attention antecedent to aggression, environmental modification, positive rewards.

### **Contributions of Qualitative Studies:**

No studies using qualitative methodology were included.

### **Bottom Line for Occupational Therapy Practice:**

Although the Level I multidisciplinary study resulted in significantly greater gains in ADL and social participation, the role the occupational therapist played in this program, and the consequent result, was not reported. The treatment involved written contracts to achieve short-term goals, which occupational therapists certainly can incorporate into their programs without detriment to the patient.

The lower level studies suggest that other interventions may be therapeutic, but no study provides sufficient evidence to support any particular intervention. Only three studies specify occupational therapy interventions; those studies are nonexperimental case reports on a total of 5 patients. The other studies included occupational therapy as part of a multidisciplinary team (with the occupational therapist's role not delineated) or described an intervention that could be included in occupational therapy practice. The evidence these studies offer for an intervention, as weak as it may be, may suggest to a practitioner that that particular intervention is worth trying with a particular patient. If the reader is interested in the use of any of these interventions in clinical practice, reading the entire article is recommended because the interventions, and in some cases the courses of recovery, are written in greater detail than can be included here.

The bottom line is that there is a need for occupational therapists to carefully research the effects of interventions that they use to address psychosocial, behavioral, and social components of occupational performance for persons with TBI.

### **Review Process:**

Procedures for the selection and appraisal of articles:

- Titles of studies retrieved by online database searches were reviewed
- Abstracts of those studies whose titles addressed the topic were retrieved and printed
- Abstracts were read and those studies that did not address the question or did not meet inclusion criteria were deleted
- The remaining studies (N = 22) were retrieved either from Boston University library system, interlibrary loan, online sources, or from the Wilma West Library of the American Occupational Therapy Foundation
- Each study was read and those not meeting inclusion criteria were further deleted (N = 10)
- Each of the remaining studies were analyzed and the CAPs and evidence tables were completed. For this question, 12 studies were analyzed.

**Inclusion Criteria:**

- Published between 1990 and 2004
- Meta-analysis or systematic review
- All levels of evidence, including case reports (Level V) were located, but only Levels I–III were reviewed if they provided adequate evidence. If not, then all levels were included to portray the best evidence available at this time.
- Participants were people with traumatic brain injury
- Participants were adult (> 18 years)
- Written in English
- At least one intervention must be current occupational therapy practice or could become occupational therapy practice.

**Exclusion Criteria:**

- Prediction or correlational studies
- Longitudinal observational studies of natural history of recovery
- Description of programs or treatments without testing the effects.

***Search Strategy***

<b>Categories</b>	<b>Key Search Terms</b>
Patient/Client Population	Traumatic brain injury
Intervention	Occupational therapy rehabilitation, community, social therapy, task-specific training
Comparison	Critical reviews, meta-analyses, randomized control trial , randomized controlled study
Outcomes	Activities of daily living, leisure, return to work, participation

<b>Databases and Sites Searched</b>
PubMed (Medline)
OTSeeker.com
OTCATs.com
DARE (agatha.york.ac.uk/darehp.htm)
Cochrane Collaboration website
PsychINFO
CINAHL
Web of Science (Science Citation Index & Social Science Citation Index)

No hand searching of bibliographies or journals were done

***Quality Control/Peer Review Process:***

Only the author reviewed the studies. The studies were read twice; they were reviewed further if a question arose.

**Results of Search:**

***Summary of Study Designs of Articles Selected for Appraisal***

<b>Level of Evidence</b>	<b>Study Design/Methodology of Selected Articles</b>	<b>Number of Articles Selected</b>
I	Systematic reviews, meta-analysis, randomized controlled trials	1
II	Two groups, nonrandomized studies (e.g., cohort, case-control)	0
III	One group, nonrandomized (e.g., before and after, pretest–posttest)	2
IV	Descriptive studies that include analysis of outcomes (single subject design, case series)	2
V	Case reports and expert opinion, which include narrative literature reviews and consensus statements	7
	Qualitative studies	0
		<b>TOTAL 12</b>

**Limitations of the Studies Appraised:**

The one randomized controlled trial was marred by serious threats to internal validity (inequality of time post onset between groups; inequality of cognitive ability between groups; possible cointervention bias; extreme ceiling effects on some of the subscales of the outcome measures).

The two Level III studies (one group before and after experimental design) have serious threats to internal validity (history and maturation effects; attrition; unblinded evaluation; reliability of measures not reported; and others) and did not analyze the data statistically.

Nine of the twelve studies included are merely single case designs or case reports. These do not support a causal relationship between intervention and outcome because there are

no controls against threats to validity; because they report complex, interrelated components of a treatment program so that no one component can be identified as the causal factor; and because the reports are of a single or very few select persons. Overall, they provide a low level of evidence of the effects of interventions aimed at improving social-behavioral functions to improve occupational performance.

Nine of the twelve articles report on therapeutic programs organized and carried out by professionals other than occupational therapists.

### **Articles Selected for Appraisal**

Bieman-Copland, S., & Dywan, J. (2000). Achieving rehabilitative gains in anosognosia after TBI. *Brain and Cognition*, *44*, 1–5.

Dawson, D. R. (2002). Commentary: A multidisciplinary community based rehabilitation programme improved social functioning in severe traumatic brain injury. *Evidence Based Mental Health*, *5*, 84.

DeHope, E., & Finegan, J. (1999). The self-determination model: An approach to develop awareness for survivors of traumatic brain injury. *NeuroRehabilitation*, *13*, 3–12.

Fluharty, G., & Glassman, N. (2001). Case study: Use of antecedent control to improve the outcome of rehabilitation for a client with frontal lobe injury and intolerance for auditory and tactile stimuli. *Brain Injury*, *15*, 995–1002.

Gutman, S. A., & Leger, D. L. (1997). Enhancement of one-to-one interpersonal skills necessary to initiate and maintain intimate relationships: A frame of reference for adults having sustained traumatic brain injury. *Occupational Therapy in Mental Health*, *13*, 51–67.

McMorrow, M. J., Braunling-McMorrow, D., & Smith, S. (1998). Evaluation of functional outcomes following proactive behavioral-residential treatment. *Journal of Rehabilitation Outcomes Measurement*, *2*, 22–30.

Murrey, G. J., & Starzinski, D. (2004). An inpatient neurobehavioral rehabilitation programme for persons with traumatic brain injury: Overview of and outcome data for the Minnesota Neurorehabilitation Hospital. *Brain Injury*, *18*, 519–531.

Powell, J., Heslin, J., & Greenwood, R. (2002). Community based rehabilitation after severe traumatic brain injury: A randomised controlled trial. *Journal of Neurology, Neurosurgery, and Psychiatry*, *72*, 193–202.

Rothwell, N. A., LaVigna, G. W., & Willis, T. J. (1999). A non-aversive rehabilitation approach for people with severe behavioural problems resulting from brain injury. *Brain Injury*, *13*, 521–533.

Schlund, M. W., & Pace, G. (1999). Relations between traumatic brain injury and the environment: Feedback reduces maladaptive behaviour exhibited by three persons with traumatic brain injury. *Brain Injury*, *13*, 889–897.

Sladyk, K. (1992). Case report: Traumatic brain injury, behavioral disorder, and group treatment. *American Journal of Occupational Therapy*, 46, 267–270.

Yuen, H. K. (1997). Positive talk training in an adult with traumatic brain injury. *American Journal of Occupational Therapy*, 51, 780–783.

Zhou, J., Chittum, R., Johnston, K., Poppen, R., Guercio, J., & McMorrow, M. J. (1996). The utilization of a game format to increase knowledge of residuals among people with acquired brain injury. *Journal of Head Trauma Rehabilitation*, 11, 51–61.

This work is based on the evidence-based literature review completed in May 2005 by Catherine Trombly, ScD, OTR/L, FAOTA.

CAT format adapted from a template provided by Dr. Annie McCluskey and freely available for use on the OT-CATS website (<http://otcats.com>).

For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6611, x 2052.



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