



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 PAPER (CAP)

Focused Question

What is the evidence for the effect of interventions (published between 2000-2004) to enable persons with traumatic brain injury (TBI) to participate in areas of occupation (activities of daily living [ADL], instrumental activities of daily living [IADL], work, leisure, social participation, and education)?

Malec, J. F. (2001). Impact of comprehensive day treatment on societal participation for persons with acquired brain injury. *Archives of Physical Medicine and Rehabilitation*, 82, 885–895.

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

Nine comprehensive day treatment programs and six other community reintegration brain injury rehabilitation programs have been reported in the literature. Only 29% of the combined 856 graduates were unemployed and over 56% were involved in independent work, school, or homemaking at long-term follow-up. In comparison, in 12 studies of no, unspecified, or inpatient-only rehabilitation after brain injury, only 43% of 913 subjects were in work, school, or homemaking at long-term follow-up; 47% were unemployed; the remaining 10% were in volunteer, sheltered, or long-term supported employment.

State the problem the authors are investigating in this study.

Comprehensive day treatment (CDT) would result in positive changes in outcome measures at a level equal to those of other postacute rehabilitation programs and better than outcomes for comparison groups.

RESEARCH OBJECTIVE(S)

List study objectives.

To evaluate CDT for survivors of brain injury by time since injury and to identify some predictors of recovery (latter not included in this CAP).

Describe how the research objectives address the focused question.

The goal of the CDT is increased societal participation for persons with acquired brain injury.

DESIGN TYPE:

Before & after (pre-post)

Level of Evidence:

Level III

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *If no, explain.*

Yes

No

✓ There is enough evidence (as cited in the literature review) that comprehensive programs after brain injury result in better outcomes than less intensive therapy. It is time to test CDT directly against the other programs (Level I or II) and to identify the causal factors of the program.

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

Only 25% of those persons with traumatic brain injury (TBI) who were evaluated by a rehabilitation team were recommended for the CDT program. Seventeen (15%) of those dropped out of the CDT program. All graduates of the program between 1988 and 1998 were included in the sample.

Inclusion Criteria

- Brain injury
- Limited awareness of disability
- Cognitive impairments
- Ineffectual communication and social skills
- Limited emotional and behavioral control
- Independent in mobility
- Ability for functional communication
- Some capacity for carryover of new learning

Exclusion Criteria

Significant risk to self or others

Sample Selection Biases: If yes, explain.

Volunteers/Referrals

Yes

No The records of all persons who completed the program were included in data analysis

Attention

Yes

No

Others (list and explain):

SAMPLE CHARACTERISTICS

N= 96 (34 in 1st cohort; 62 in 2nd cohort; different versions of the Portland Adaptability Inventory (PAI) were used to evaluate)

% Dropouts

#/ (%) Male #/ (%) Female

Ethnicity

Disease/disability diagnosis

NR = Not reported.

Check appropriate group:

<20/study group	20–50/study group	51–100/study group <input checked="" type="checkbox"/>	101–149/study group	150–200/study group
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Sample Characteristics Bias: If no, explain.

If there is more than one study group, was there a similarity between the groups?

Yes

No

N/A

Were the reasons for the dropouts reported?

Yes Could not engage in goal setting.

No

INTERVENTION(S)—Included are only those interventions relevant to answering the evidence-based question

Add groups if necessary

Group 1

Brief Description	Mayo Brain Injury Outpatient Program (BIOP), a comprehensive day treatment, milieu-oriented program that included daily group sessions to build cognitive and behavioral skills through a transdisciplinary approach, supportive feedback, and a variety of therapeutic modalities (peer, staff, videotape) to build self-awareness. There were five daily groups: orientation, cognitive, social awareness, communication, and life skills. There were two additional weekly groups: health education and vocational. There was a monthly patient/family group. NOTE: The life skills group was conducted by the physical therapist and the recreational therapist, <i>not the occupational therapist</i> . Individual therapy was also provided as required.
Setting	Rehabilitation center
Who Delivered?	Program staff of nine disciplines, including occupational therapy (OTR & OTA)
Frequency?	Daily (weekdays)
Duration?	Mean LOS = 189.5 days (including weekends when treatment was not in session)

Intervention Biases: *Explain, if needed.*

Contamination

Yes

No

Co-intervention

Yes Some patients received individual therapy in addition to group therapies.

No

Timing

Yes

Data were collected over 10 years and the program changed in some aspects; personnel also could have changed.

No

Site

Yes

No

Use of different therapists to provide intervention

Yes

No

NR

This was not reported, but is probable over a 10-year span.

MEASURES AND OUTCOMES—Included are measures relevant to answering the focused question

Name of measure:

Independent Living Scale

Outcome(s) measured (what was measured?):

Independent living status, scored from 1–3: 1 = 24-hour supervision required; 2 = some supervision required; 3 = living in community without supervision.

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

After completion of treatment program and at a 1-year follow-up

Name of measure:

Vocational Independence Scale

Outcome(s) measured (what was measured?):

Work outcome

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

After completion of the treatment program and at a 1-year follow-up

Name of measure:

Portland Adaptability Inventory (PAI) (N= 34); or Mayo-Portland Adaptability Inventory (MPAI-22; N=62)

Outcome(s) measured (what was measured?):

Overall level of disability (occupational therapists contributed functional information to the score). It also rates emotional and behavioral, functional, and physical impairments and disabilities specific to persons with brain injury.

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes	<input checked="" type="checkbox"/> $r_s = .81$ with the Disability Rating Scale
No	<input type="checkbox"/>
NR	<input type="checkbox"/>

How frequently was the measure used for each group in the study?

Months before admission to the program; at completion of the program
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Name of measure:

Goal Attainment Scaling (GAS)

Outcome(s) measured (what was measured?):

Achievement of goals; one scale for each of 5 goals—one goal per daily group
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Is the measure reliable (as reported in article)?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
NR	<input checked="" type="checkbox"/>

Is the measure valid (as reported in article)?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
NR	<input checked="" type="checkbox"/>

How frequently was the measure used for each group in the study?

Every 2 weeks during the program and at the end of the program
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Measurement Biases

Were the evaluators blinded to treatment status? *If no, explain.*

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>

Recall or memory bias. *If yes, explain.*

Yes

No

Others (list and explain):

Limitations (appropriateness of outcomes and measures) *If no, explain.*

Did the measures adequately measure the outcome(s)?

Yes

No

RESULTS

List results of outcomes relevant to answering the focused question

Include statistical significance where appropriate ($p < 0.05$)

Include effect size if reported

Significant goal achievement (GAS) and improvement on the MPAI-22; increased societal participation at 1-year follow-up: 72% were living independently, 39% working independently, 10% in transitional placements, and 18% in supported or volunteer work. Vocational Independence Scale: Before = 84% unemployed, 4% independently employed; After = 27% unemployed, 39% independently employed at 1-year follow-up (but only 10% at end of program)
Independent Living Scale: Before = 47% independent; After = 69% independent; 1-year follow-up = 72% independent
MPAI-22 (n= 62): Before = 546.3; After = 448.3 (t = 8.35, P < .0001)
GAS: 552 goals set, 81% met at expected or higher level of outcome. Mean T score = 53.4 (slightly better than expected which is 50)

Was this study adequately powered (large enough to show a difference)? *If no, explain.*

Yes

No

Were appropriate analytic methods used? *If no, explain.*

Yes

No None were used.

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No None were used.

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

CDT appears to be effective in improving activity and societal participation even among persons with a long history of limited participation after brain injury.

The small percentage of the most severely disabled persons who were in community-based employment at the 1-year follow-up challenges the field to develop more effective interventions and supports for assisting vocational reintegration with this patient group.

Were the conclusions appropriate for the study design (level of evidence)? *If no, explain.*

Yes

No

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No No statistical analysis was reported

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

Although professional occupational therapists and occupational therapy assistants participated in the team who delivered this CDT program, their roles were not described. The life skills group, the one group that occupational therapy would be expected to be involved in, was conducted by physical and recreational therapists. They taught how “to organize and plan leisure and fitness activities; increase awareness of and ability to access community resources including transportation; develop and practice advanced Activities of Daily Living.” Therefore, this study offers little to practicing occupational therapists. Occupational therapy research needs to demonstrate the effectiveness of occupational therapy in improving independence in social participation.

A finding that some participants became more depressed (24%) and more irritable (29%) over the course of the program was noted. It is important for therapists to consider these outcomes as possible results of increased self-awareness.

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

CAP Worksheet adapted from: Critical Review Form – Quantitative Studies ©Law, M., Stewart, D., Pollack, N., Letts, L., Bosch, J., & Westmorland, M., 1998, McMaster University. Used with permission.

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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