



# AOTA Evidence Briefs

## Brain Injury

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

### BI #3

## A functional approach to treatment may produce better functional performance

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Neistadt, M. E. (1992). Occupational therapy treatments for constructional deficits. *American Journal of Occupational Therapy*, 46, 141–148.

### Level: IA2b

Randomized controlled trial, 20 or more participants per condition, moderate internal validity, moderate external validity

### Why research this topic?

Occupational therapists use two approaches to perceptual retraining for adults with head injury: training in adaptive functional activities and training in remedial perceptual skills. The first approach engages clients in functional tasks such as meal preparation; the second involves them in activities that call for perceptual skills, such as constructing a puzzle. Researchers have studied the effects of both approaches but have not compared them.

### What did the researcher do?

The researcher, of Tufts University (Medford, Massachusetts), compared the effects of the two approaches on clients' **constructional ability** (*see Glossary*) and meal preparation skills. The participants were 45 men aged 18 to 55 years (average 33.2 years) recruited from 10 head-injury programs in Massachusetts. They met selection criteria that were typical of a long-term rehabilitation client with head injury. All had sustained their injury at least 6 months earlier. All showed room for improvement in the outcome areas of interest to the researcher.

The participants were randomly assigned to either a functional group or a perceptual skills group. Both groups received three 30-minute individual treatment sessions per week for 6 weeks. The participants in the functional group received training in preparing snacks and hot beverages. The participants in the perceptual skills group received training in constructing parquetry block designs. The tasks presented to both groups were graded in difficulty, with the participants beginning with the easiest tasks and progressing to more difficult ones as they demonstrated mastery. The therapists working with the groups used the same cuing procedure with all participants when they encountered difficulties, asking “What do you see?” and then “Does what you see suggest the steps you need to take to complete the task?”

The researcher was interested in *constructional ability* (as measured by the Parquetry Block Test and the Block Design subtest of the Wechsler Adult Intelligence Scale—Revised) and *meal preparation performance* (as measured by the Rabideau Kitchen Evaluation—Revised).

### What did the researcher find?

On one of the measures of constructional ability, the perceptual skills group improved **significantly** (*see Glossary*) more than the functional group. On the other measure, there was no significant difference between the groups.

On the measure of meal preparation, there was no significant difference between the two groups. However, a small-to-medium **effect size** (see *Glossary*) suggested more improvement in the functional group than in the perceptual skills group.

### What do the findings mean?

- For *therapists and other providers*, the findings suggest that training in functional activities may be better than training in perceptual skills for competence in meal preparation. The perceptual skills group scored significantly higher than the functional skills group on parquetry block assembly, and the functional group performed significantly better than the perceptual skills group on meal preparation. Their learning did not readily transfer from skill to function, or vice versa.
- The findings should encourage confidence in programs that use a functional approach to improve performance of functional activities by adult men with head injury. However, more research is needed to determine whether the results would be the same with a different patient population (e.g., adult women) and whether learning might transfer to a similar functional task.

### What are the study's limitations?

The researchers' method of selecting study participants was systematic; that is, they selected the participants randomly. This feature raises confidence that the results of the study can be attributed to the intervention.

The study provides useful information. However, it has limited generalizability for the population of persons with traumatic brain injury across settings because the participants do not represent women, patients with acute injuries, and other age groups.

## Glossary

**constructional ability**—capacity to assembly parts into a whole

**effect size** (Cohen's *r*)—An effect size is a measure of clinical significance. It provides information about the magnitude of effect of the treatment. Although related to significance, it is not as influenced by the size of the sample. Therefore, it is possible to have an outcome on which the treatment had a large effect (i.e., the treatment group improved a lot more than the control group) and still have a nonsignificant result. If the results have a large effect but no significance, this means that this effect may be sample specific and not generalizable outside the study. There are many different types of effect sizes. What is reported here is Cohen's *r*. Cohen's *r* can be interpreted in a manner similar to a Pearson's correlation coefficient:

<b>Effect size <i>r</i></b>	<b>Size of the effect</b>
<0.09	Negligible
0.10–0.29	Small
0.30–0.49	Medium
>0.50	Large

Cohen, J. (1977). *Statistical Power Analysis for Behavioral Sciences*. New York: Academic Press.

**significance (or significant)**—A statistical term, this refers to the probability that the results obtained in the study are not due to chance, but to some other factor (such as the treatment of interest). A significant result is one that is likely to be generalizable to populations outside the study.

Significance should not be confused with clinical effect. A study can be statistically significant without having a very large clinical effect on the sample. For example, a study that examines the effect of a treatment on a client's ability to walk, may report that the participants in the treatment group were able to walk significantly longer distances than the control. However, if you read the study you may find that the treatment group was able to walk, on average, six feet, while the control group was able to walk, on average, five feet. While the outcome may be statistically significant, a clinician may not feel that a one foot increase will make his or her client functional.

■ Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

This work is based on the evidence-based literature review completed by Beatriz C. Abreu, PhD, OTR, FAOTA, and colleagues. For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.



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