AOTA Evidence Briefs
Stroke

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

S #4

Functional treatment may be as beneficial as sensorimotor integration

Jongbloed, L., Stacey, S., & Brighton, C. (1989). Stroke rehabilitation: Sensorimotor integrative treatment versus functional treatment. *American Journal of Occupational Therapy, 43*, 391–397.

Level IB2b

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

Why research this topic?

In the 1980s, occupational therapists were increasingly using the **sensorimotor** (*see Glossary*) integrative approach for treating stroke clients. However, the literature contained no studies comparing the effectiveness of this approach with the functional approach traditionally used.

Sensorimotor integration emphasizes treating causes rather than symptoms. It follows five principles: (1) provide planned and controlled sensory stimulation through purposeful activity; (2) provide meaningful activity; (3) simplify the activity or break it down to ensure achievement and enhance motivation; (4) provide visual and auditory cues to help patients "cognitively organize motor planning" (p. 396); and (5) select activities appropriately and provide assistance as necessary to help clients through the developmental sequence.

The functional approach emphasizes treating symptoms rather than causes. It focuses on practicing particular tasks, usually activities of daily living (ADL), encouraging clients to compensate for a problem or to modify the environment so that it will support greater ease and independence. This approach uses functional activities to improve limb function, endurance, and balance. Therapists may provide functional or resting hand splints.

What did the researchers do?

Jongbloed and colleagues (1989), variously of the University of British Columbia (Vancouver, B.C., Canada) and Holy Family Hospital (Vancouver), compared the two approaches. The participants in their study were 90 stroke patients, 41 men and 40 women, admitted to Holy Family Hospital between August 1985 and November 1986. Their average age was 71.3 years. The criteria for inclusion were that they (a) had been admitted to the hospital within 12 weeks of their first stroke, (b) had a weakness in the upper and lower extremities on one side of their body on admission, (c) had not resided in an extended-care setting before the stroke, and (d) did not have severe aphasia (unable to use or comprehend words).

The participants were randomly assigned to either the functional treatment group or the sensorimotor integration group. Occupational therapists delivered the treatment in clinics. Each participant received occupational therapy for 40 minutes a day, 5 days a week, for 8 weeks.

The researchers were interested in the following outcome areas: *ADL* (as measured by the Barthel ADL Index); *home maintenance* (as measured by the participants' ability to prepare a meal); and *sensorimotor integration* (as measured by eight subtests of the Sensorimotor Integration Test Battery).

What did the researchers find?

Both groups improved **significantly** (*see Glossary*) over time on most of the outcome measures. There was **no significant** *(see Glossary)* difference between the two groups on any of the outcome measures.

What do the findings mean?

For therapists and other providers, the findings suggest that the sensorimotor integration approach is as beneficial as the functional approach. Thus therapists may not have to restrict themselves to a single type of treatment.

What are the study's limitations?

First, both groups received similar medical and nursing care, physical therapy, and training in morning and evening self-care. This "co-intervention" may have influenced the results. Second, spontaneous recovery may have occurred because both groups improved and the participants were in the acute phase of recovering from their stroke, a time when spontaneous recovery is likely to happen.

Glossary

nonsignificant or no significance—A statistical term that refers to study findings that are likely to be due to chance differences between the groups rather than to other factors (like the treatment of interest). A nonsignificant result is not generalizable outside the study. Like significance, a nonsignificant result does not indicate the clinical effect. Often studies will show nonsignificant results, yet the treatment group's mean will be better than the control group's. This is usually referred to as a trend in the right direction. Because significance is closely determined by sample size, nonsignificant results would often become significant if the sample size were increased.

sensorimotor—"of, relating to, or functioning in both sensory and motor aspects of bodily activity" (*Merriam Webster's Collegiate Dictionary,* 10th ed., p. 1066).

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).

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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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