



AOTA Evidence Briefs

Multiple Sclerosis

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

MS #17

A course on energy conservation may reduce the impact of fatigue on patients with moderate to severe multiple sclerosis

Vanage, S. M., Gilbertson, K. K., & Mathiowetz, V. (2003). Effects of an energy conservation course on fatigue impact for persons with progressive multiple sclerosis. *American Journal of Occupational Therapy, 57*, 315–323.

Level: II

Non-randomized controlled trial, two groups.

Why research this topic?

Fatigue is a common and troublesome symptom of multiple sclerosis. It may negatively affect performance of activities of daily living and occupational roles. Occupational therapists often teach energy conservation to their patients with multiple sclerosis. There was, however, limited scientific evidence to support the efficacy of such teaching. One of the authors of the study reported in this brief (Mathiowetz) collaborated in an investigation of the effectiveness of a particular energy conservation course, *Managing Fatigue*, in reducing the impact of fatigue on people with mild to moderate multiple sclerosis. The results were positive.

What did the researchers do?

Vanage, Gilbertson, and Mathiowetz (2003), of Replay Physical Therapy (Kokomo, Indiana), Mayo Clinic (Rochester, Minnesota), and the University of Minnesota (Minneapolis), respectively, decided to study whether the energy conservation course would produce similar results with people with moderate to severe multiple sclerosis.

The participants in their study were 37 people who regularly attended a rehabilitation center for people with multiple sclerosis. All were volunteers, and all met the study's entrance criteria: a diagnosis of multiple sclerosis; a score of 5.5 or higher on the Expanded Disability Status Scale (indicative of an inability to walk without aid or rest for more than 100 meters and disability precluding full daily activities); a score of 4 or more on the Learning Potential subtest of the Rehabilitation Institute of Chicago Functional Assessment Scale, Version IV (indicative of mild to moderate learning difficulties); and a score of 4 or more on the Fatigue Severity Scale (indicative of moderate to strong severity of fatigue). Eight were men, and 29 were women. The average age was 55.6 years.

The course was adapted to meet the needs of the study participants, who were more disabled than previous audiences for the course. For example, it was taught 1 hour a week for 8 weeks, instead of 2 hours a week for 6 weeks, and groups consisted of 3–8 people instead of 8–10. The course emphasized the following principles:

- (a) The value of rest; (b) budgeting and banking energy; (c) incorporating rest periods throughout the day;
- (d) learning to communicate personal needs to others; (e) using good body mechanics and posture; (f) using energy-efficient appliances and organizing stations of activity; (g) separating fatiguing tasks into com-

ponents; (h) prioritizing and setting standards for activities; (i) planning rest periods with self-care, productivity, and leisure activities so that a balance can be maintained; and (j) reviewing course principles and setting short-term and long-term goals (p. 316).

The participants were assigned to group A (n=21) or group B (n=16), each of which consisted of four subgroups. First, group A took the course (the experimental condition) for eight weeks while group B participated in the traditional support group led by the center's chaplain (the control condition). Then group B took the course while group A participated in the support group. After both groups had taken the course, they resumed regular participation in the support group.

The researchers were interested in the following outcomes: *impact of fatigue* (as measured by the Fatigue Impact Scale [FIS]) and *behavioral changes as a result of the course* (as measured by the Measuring Change assessment). Measures on the FIS were taken before the course (groups A and B), immediately after the course (groups A and B), 8 weeks after group A completed the course (groups A and B), and 8 weeks after group B completed the course (group B only). Measures were taken on the Measuring Change assessment only after the course and only on the group that had just completed the course.

What did the researchers find?

Immediately following the course, the groups in the experimental condition showed a **significant** (see *Glossary*) reduction in the impact of fatigue, whereas the groups in the control condition did not show such a reduction. Further, the groups in the experimental condition showed significantly more reduction than the groups in the control condition.

Eight weeks after the course, the groups showed **no significant** (see *Glossary*) increase in the impact of fatigue. In other words, they were maintaining the effects of the course.

On the measure of behavioral change, 70% of the participants reported making at least six behavioral changes. The changes that they most frequently reported were as follows:

- a) Incorporating rest breaks throughout the day (70%); (b) changing body position when performing certain activities (68%); (c) omitting part of an activity or having someone else do it (65%); (d) resting throughout activities lasting 30 minutes or longer (62%); and (e) identifying ergonomically poor work heights (62%; p. 321).

What do the findings mean?

For therapists and other providers, the findings suggest that this particular energy conservation course can reduce the impact of fatigue on patients with moderate to severe multiple sclerosis.

What are the study's limitations?

The study has two limitations. First, assignment to treatment and **control groups** (see *Glossary*) was not random, and second, the participants and the evaluators knew who was in which group at any given time. This knowledge may have subconsciously altered their responses.

Glossary

control group—A group that received special attention similar to that which the treatment group received, but did not receive the treatment.

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 (e.g., the treatment of interest). A nonsignificant result cannot be generalized 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.

significance (or significant)—A statistical term that refers to the probability that the results obtained in the study are not due to chance, but to some other factor (e.g., the treatment of interest). A significant result is likely to be able to be generalized 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 those in the control group. However, after reading the study one may find that the treatment group was able to walk, on average, 6 feet, whereas the control group was able to walk, on average, 5 feet. Although the outcome may be statistically significant, a clinician may not feel that a 1-foot increase will make his or her client functional.

This work is based on the evidence-based literature review completed by Vidyalakshmi Sundar, BS, and Marian Arbesman, PhD, OTR/L. 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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