



# AOTA Evidence Briefs

## Parkinson's Disease

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

### P #10

## **Exercise may improve function in clients with Parkinson's disease**

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Hurwitz, A. (1989). The benefit of a home exercise regimen for ambulatory Parkinson's disease patients. *Journal of Neuroscience Nursing, 21*, 180–184.

### **Level IIB2b**

Nonrandomized controlled trial, 2 groups, less than 20 participants per condition, moderate internal validity, moderate external validity

### **Why research this topic?**

Recent studies suggest that exercise serves as a preventive measure in Parkinson's disease, assisting clients in maintaining their independence. Hurwitz (1989), of the City College of the City University of New York, hypothesized that a weekly home exercise program taught by senior nursing students would improve Parkinson's disease clients' self-care.

### **What did the researcher do?**

The researcher and her associates in the study identified 30 participants from a pool of 60 persons with Parkinson's disease living in the New York City area. They randomly assigned the participants to an experimental group (15), which received a home-supervised exercise program; and a control group (15), which received a weekly home visit but no exercise program. One participant in the experimental group subsequently moved, leaving 29 participants altogether (22 men and 7 women). Fifteen were in **stage 1** of the disease, 12 were in **stage 2**, and 2 were in **stage 3** (see *Glossary*). Their average age was 72, they all lived at home, and none had been hospitalized within 6 months of the beginning of the study. People were excluded from the study if they were in stage 4 or beyond or presented medical or social conditions that would interfere with a weekly visit.

Fourteen nursing students selected on the basis of academic standing, experience, and a personal interview delivered the home exercise program to members of the experimental group. Before the visits began, the students received orientation in five weekly 3-hour sessions, which included instruction in the cause and treatment of Parkinson's disease and rehabilitation of clients with Parkinson's. During the study, they participated in 1-hour weekly sessions that included lectures, demonstration of exercises, and review of data assessment.

Subsequently, once a week for 8 months, the nursing students visited the participants in the experimental group and performed exercises with them for 30 minutes. The instructor accompanied the students in the early and later months of the project.

The exercise regimen for the experimental group consisted of head-to-toe range-of-motion exercises followed by a cool-down period. All the participants in the experimental group reported performing the exercises daily between the visits.

The control group received weekly home visits from nursing students but were not given exercises. About half of the control group participants said that they did some form of exercise on their own.

The researcher was interested in the effect of exercise on *self-care*, as measured by the Parkinson's Home Visiting Assessment Tool, a modification of a nursing assessment tool. The 53-item tool covered 10 categories: medication, memory, mental changes, family, ophthalmologic symptoms, gastrointestinal symptoms, genitourinary symptoms, objective data (on aspects of Parkinson's, such as tremor and rigidity), self-care, and feeding or eating. Ratings on the tool were analyzed at 4 and 8 months after initiation of the exercise program.

### **What did the researchers find?**

At both 4 and 8 months, patients in the experimental group showed **significantly** (*see Glossary*) more improvement than patients in the control group on 4 of the 53 items: memory of recent events, nausea, incontinence, and sucking. At 8 months, they also showed significantly more improvement in refusal to eat. **No significant** (*see Glossary*) improvements were found in self-care.

### **What do the findings mean?**

- For therapists and other providers, the study suggests that exercise may improve function in clients with Parkinson's disease.

### **What are the study limitations?**

The results of the study may have limited generalizability because the sample size was small (n=29). This design flaw threatens internal validity because the findings may not be applicable to the population of persons with Parkinson's disease. Another flaw is that no test of interrater reliability was done to determine whether the nursing student evaluators were rating participants similarly on the assessment tool, and variation could have contributed to error in the measurement.

## **Glossary**

**Hoehn & Yahr**—system of classifying symptoms

**Stage 1:** unilateral involvement only, usually with minimal or no functional impairment.

**Stage 2:** bilateral or midline involvement, without impairment of balance.

**Stage 3:** first sign of impaired righting reflexes. This is evident by unsteadiness as the patient turns or is demonstrated when he is pushed from standing equilibrium with the feet together and eyes closed. Functionally, the patient is somewhat restricted in his activities but may have some work potential depending upon the type of employment. Patients are physically capable of leading independent lives, and their disability is mild to moderate.

**Stage 4:** fully developed, severely disabling disease; the patient is still able to walk and stand unassisted but is markedly incapacitated.

**Stage 5:** confinement to bed or wheelchair unless aided.

Hoehn, M. M. & Yahr, M. D. (1967). Parkinsonism: Onset, progression, and mortality. *Neurology*, 17(5), S11–S26.

**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.

**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 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 group. However, if you read the study you 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 believe that a 1-foot increase will improve his or her client's function.

■ 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* (OTA, 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* (OTA, 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 Susan Murphy, ScD, OTR/L, and Linda Tickle-Degnen, PhD, OTR/L, FAOTA.

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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