

CPAIN #9

Diary keeping may not be a reliable method of measuring the activity levels of patients.

White, J., & Strong, J. (1992). Measurement of activity levels in patients with chronic pain. *Occupational Therapy Journal of Research*, *12*, 217–228.

Level: IIB3c

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

Why research this topic?

Therapists treating patients with chronic low-back pain often ask them to keep a daily diary of their "up-time"—that is, their time standing or walking or simply out of bed. This method may be somewhat unreliable, however, because of inconsistent reporting or undue influence of emotional factors. Thus, there is increasing interest in developing devices that will automatically record the activity levels of patients.

What did the researchers do?

White and Strong (1992), of the University of Queensland (Brisbane, Australia), developed a portable electromechanical device to measure the up-time of patients with chronic low-back pain. They then designed a study to compare the device's effectiveness with that of diary keeping.

For their device the researchers modified a unit described in the literature. It consisted of a timer worn on a belt around the waist and a mercury tilt switch placed on the thigh. The researchers used a miniature timer in place of the larger one in the original device, and they housed the timer, the mercury tilt switch, and a circuit board in an aluminum case. They placed the case in a Lycra pouch with Velcro closures. The pouch is attached to an elastic belt that the patient wears around his or her waist. The case (within the pouch) then is mounted on the patient's right leg, aligning with the palm of the right hand when the patient is standing with arms and hands hanging naturally. The tilt switch activates the timer when the patient stands, deactivates it when the patient sits.

To test the effectiveness of the device compared with that of diary keeping, the researchers recruited 20 patients with chronic low-back pain consecutively admitted to the Pain Clinic of the Royal Brisbane Hospital. Eleven of the patients were male, 9 were female. (Their average age was not reported.)

The researchers asked the participants to wear the up-timer unit for 4 consecutive days, 8 hours a day. They told the participants only that the unit measured physiological function of the leg muscle. The researchers also asked the participants to maintain a diary while they were wearing the unit, keeping track of how much time they spent standing, lying, walking, and sitting.

The outcome areas of interest were *average daily hours of up-time* (as calculated from the diaries and from the data in the up-timer unit).

What did the researchers find?

The participants reported **significantly** (see *Glossary*) fewer hours of up-time in their diaries than the up-timer unit recorded.

What do the findings mean?

For therapists and other providers, the findings suggest that having patients monitor and record their up-time in a diary is not a reliable method of measuring their activity levels. A device like the one described in this article holds promise for measuring such levels more accurately.

What are the study's limitations?

The study has several limitations. First, it was conducted in an inpatient setting; therefore, the results may not be applicable to other settings. Second, the device was modified for this study and may not be the one ultimately used in clinical practice. Third, the confounding effects of the use of pain medications on self-reporting are not known.

GLOSSARY

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 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, 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.

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 (ICIDH-2).

This work is based on the evidence-based literature review completed by Joyce M. Engel, PhD, OTR/L, FAOTA, with contributions from Amol Karmarkar, MS, OT.

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.



Copyright 2005 American Occupational Therapy Association, Inc. All rights reserved. This material may be reproduced and distributed without prior written consent.