

■ The Centralization Phenomenon

Its Usefulness as a Predictor of Outcome in Conservative Treatment of Chronic Low Back Pain (A Pilot Study)

Audrey L. Long, BSc PT, Dip MDT

Study Design. Two-hundred-forty-three patients with chronic low back pain were studied in a prospective comparative survey to determine whether the "centralization phenomenon" was associated with outcome after an interdisciplinary work hardening program.

Objective. The hypothesis was that patients who demonstrated centralization during initial mechanical assessment would have better outcomes than noncentralizers.

Summary of Background Data. Overall, subjects had decreased pain intensity ratings (mean 10%), increased lifting ability (6-8 kg), and a 59.2% return-to-work rate at a mean of 9.7 months follow-up.

Methods. Patients were classified as either centralizers or noncentralizers, based on results of their initial assessment. Changes in pain ratings, one-time maximal weights lifted, Oswestry scores, and return-to-work status were compared between groups.

Results. The centralizers reported significant decreases in their maximum pain ratings (centralizers, 16%; noncentralizers, 6%) and had a higher return-to-work rate (centralizers, 68%; noncentralizers, 52%) than the noncentralizers.

Conclusion. Centralization can help identify subgroups within the population with chronic low back pain and could be a useful goal setting and case management tool in the rehabilitation of low back pain. [Key words: centralization phenomenon, chronic low back pain, outcome prediction, rehabilitation, work hardening] *Spine* 1995;20:2513-2521

The centralization phenomenon (CP) was first observed by Robin McKenzie in 1956 and has gained wide acceptance as a basis for evaluating and planning treatment of patients with low back pain, with or without referred leg symptoms. Centralization can be observed during a mechanical evaluation protocol of the patient, as outlined by McKenzie.^{7,18} The location of the most distal symptom is recorded and monitored during a series of standardized repeated movements. The CP is considered to be present when the most distal symptom is relocated to a more proximal (i.e., more central) location during the evaluation. The often-observed rapid

change in symptomatology has been embraced with enthusiasm by many clinicians and warrants further investigation.

There are two reasons why a physical therapist may assess a patient for the presence or absence of the CP. First, the presence or absence of centralization is used as a basis for treatment planning in the McKenzie system. Movements or activities that improve (centralize) symptoms are emphasized, and those that provoke (peripheralize) symptoms are avoided. Second, clinical observations indicate that patients who demonstrate the CP respond more favorably in rehabilitation than their "chronic" counterparts.

Predictors of outcome are needed to help allocate strained healthcare resources. Cost effectiveness could be improved by identifying better means of selecting the patients who would maximally benefit from an interdisciplinary rehabilitation program.

Despite the increasing clinical use of McKenzie procedures for mechanical diagnosis and treatment of spinal disorders, little research has been conducted to validate the clinical predictive usefulness of the CP. In a retrospective study by Donelson et al,⁹ the CP was shown to be a reliable predictor of outcome after conservative treatment in a population of patients with acute low back and radiating leg pain. The main purpose of the present study was to replicate Donelson et al's findings in a prospective design using a sample of patients with chronic low back pain. It was predicted that patients who can centralize symptoms will have better outcomes in rehabilitation.

■ Methods

Subjects. The Columbia Rehabilitation Centre is a privately owned interdisciplinary rehabilitation facility. All subjects were receiving compensation, the majority from the Workers' Compensation Board (98%). The remainder were receiving compensation from private insurance companies. Clients were screened medically and psychologically before they entered the program. Subjects were excluded if they presented with: serious neurologic deficits (e.g., surgical candidates), serious comorbid conditions (e.g., unstable angina, uncontrolled hypertension), excessive substance abuse, excessive hostility, or a refusal to consent to treatment. Psychometric tests included

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