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# Critically Appraised paper for "Does cognitive treatment for illness perceptions increase patient-specific physical activity levels of patients with chronic low back pain when compared to no intervention?"

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## AOTA Critically Appraised Papers Series

# Evidence Exchange

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

### CRITICALLY APPRAISED PAPER (CAP)

#### **FOCUSED QUESTION**

**Does cognitive treatment for illness perceptions increase patient-specific physical activity levels of patients with chronic low back pain when compared to no intervention?**

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Siemonsma, P., Stuive, I., Roorda, L., Vollebregt, J., Walker, M., Lankhorst, G., & Lettinga, A. (2013). Cognitive treatment of illness perceptions in patients with chronic low back pain: A randomized controlled trial. *Journal of American Physical Therapy Association, 93*, 435–448. <http://dx.doi.org/10.2522/ptj.20110150>

#### **CLINICAL BOTTOM LINE:**

Previous research suggests that illness perceptions have negative effects on patients' physical activity. However, there is no known previous research on the effect of illness perceptions with patients experiencing chronic low back pain (CLBP). This Level I research was based on a two group randomized controlled trial study, which revealed that cognitive treatment of illness perceptions (CTIP) for patients with CLBP have statistically significant effects in increasing patients' physical activity specific to the individuals. The researchers recruited 156 adults with CLBP between the ages of 18 and 70. Following treatment protocol, trained occupational and physical therapists delivered 10–14 1-hour treatment sessions within 18 weeks. Compared to 26% of the waitlist group, 49% of the CTIP participants showed clinically relevant changes. *Clinically relevant changes* were defined as a change of at least 18 mm on the Patient-Specific Complaints (PSC) questionnaire. The findings in this research article offer supporting evidence for a cognitive treatment intervention that may have potential for increasing physical activity participation in adults with CLBP.

Used as the main treatment throughout this study, the Self-Regulation Model (SRM) suggests that maladaptive illness perceptions can lead to maladaptive behavior, such as avoidance of physical activity. The CTIP intervention itself was divided into 4 phases. In the first phase, the therapists identified current illness perceptions. In the second phase, the therapists challenged maladaptive illness perceptions by questioning the participants' reasoning. In the third phase, alternative illness perceptions were provided. The final phase tested and strengthened the alternative illness perceptions through application into daily practice.

With such favorable results, CTIP may serve as a clinically important addition to the available treatment for CLBP. A primary goal of occupational therapy is to increase individuals' occupational performance. This study indicated that individuals with CLBP experienced decreased levels of physical activity, which ultimately decreased their performance in meaningful occupations. Occupational therapists can utilize the CTIP intervention as a remedial approach to increase clients' occupational performance.

## RESEARCH OBJECTIVE(S)

List study objectives.

1. To test the hypothesis that patient-relevant activity limitations can be reduced in patients with CLBP after receiving CTIP.
2. To determine which maladaptive illness perceptions are detected and impacted by the CTIP.

## DESIGN TYPE AND LEVEL OF EVIDENCE:

Level I: Randomized controlled trial, pretest–posttest control group design

### Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *Circle yes or no, and if no, explain.*

YES/NO

## SAMPLE SELECTION

How were subjects selected to participate? Please describe.

Participants were invited to an outpatient rehabilitation center. Prior to their first consultation visit, participants were invited by a written letter to participate in the study during the time span of December 2004 to May 2008. Initial screening was completed by a written screening questionnaire. Those who met the eligibility criteria were randomly selected to participate in either the CTIP group or waitlist (WTL) group.

## Inclusion Criteria

Participants were adults between the ages 18 and 70 who had experienced nonspecific low back pain for at least 3 months and had a current episode of low back pain lasting less than 5 years. The participants must have had presented increased physical activity limitations with a score greater than three in the Roland-Morris Disability Questionnaire. The participants also must have had no previous multidisciplinary treatment for CLBP and no involvement in litigation involving CLBP.

## Exclusion Criteria

Individuals were excluded from the study if they had serious psychological or psychiatric problems as determined by self-report, and by onsite psychiatrists' and psychologists' clinical expertise. Other exclusion criteria included pregnancy and current substance abuse that may have interfered with treatment. Individuals who required assistance to fill out the required questionnaires were also excluded.

## SAMPLE CHARACTERISTICS

N=156

% Dropouts

10.89%

#/ (%) Male

69/44%

#/ (%) Female

87/56%

Ethnicity

Disease/disability diagnosis

Check appropriate group:

< 20/study group	20–50/study group	51–100/study group	101–149/study group	150–200/study group
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The researchers used a 2:1 ratio in randomization, which resulted in 104 participants for the CTIP group and 52 participants for the WTL group.

### INTERVENTION(S) AND CONTROL GROUPS

*Add groups if necessary*

Group 1

Brief Description	In the first phase of the intervention, therapists obtained an overview of the participants' existing illness perceptions using the Illness Perceptions Questionnaire-Revised (IPQ-R). In the second phase, therapists questioned the participants' maladaptive perceptions to help the participants reevaluate their physical limitations. In the third phase, therapists provided the participants with alternative perceptions that could have helped facilitate an increase in activity levels. Finally, in the fourth phase, the therapists and the participants applied the alternative perceptions into the participants' daily routines to test the hypothesis that maladaptive illness perceptions limited their activity levels.
Setting	Outpatient rehabilitation clinic.
Who Delivered?	Four physical therapists, three occupational therapists, and an experienced psychologist. All therapists received CTIP training prior to providing treatment.
Frequency?	10–14 1-hour treatment sessions
Duration?	18 weeks

Group 2

Brief Description	WTL group received no treatment during the study period.
Setting	NA
Who Delivered?	NA
Frequency?	Pre and post follow-up assessments
Duration?	18 weeks

Intervention Biases: Circle yes or no and explain, if needed.

Contamination

YES/NO

Co-intervention

YES/NO

Both groups were asked not to participate in additional therapeutic CLBP treatments. However, both groups were required to keep a 2-week cost diary on other CLBP-related interventions and expenses associated with pain medication and routine visits to their general practitioner, medical specialists, physical therapists, or alternative medical practitioners. Researchers did not report specific interaction effects between the CTIP or the co-intervention provided during the study.

Timing

YES/NO NR

Site

YES/NO NR

Use of different therapists to provide intervention

YES/NO

Four physical therapists and three occupational therapists, all of whom received extensive training in CTIP prior to the beginning of the study and three annual refresher courses during the duration of the study.

## MEASURES AND OUTCOMES

**Complete for each relevant measure when answering the evidence-based question:**

**Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article – yes/no/NR [not reported]), and how frequently the measure was used.**

The PSC questionnaire was the primary outcome measure administered at baseline and at the 18-week follow-up. It considers the participants' perceptions. Administration involved having participants prioritize a list of daily activities according to what was difficult to perform, what they wanted to improve, and what was most important. The primary outcome was the score of each participant's most important activity. The PSC is reliable, valid, and sensitive to change, but no value was reported in the study.

**Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article – yes/no/NR [not reported]), and how frequently the measure was used.**

The IPQ-R was a secondary outcome measure administered at baseline and at the 18-week follow-up. It measures changes in the participants' illness perceptions. It was specifically designed to measure the five dimensions of the SRM, which was used in main treatment of this study. The IPQ-R's reliability and validity have been demonstrated in different populations with chronic illness, but no value was reported in the study.

**Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article – yes/no/NR [not reported]), and how frequently the measure was used.**

The Quebec Back Pain Disability Scale (QBPDS) was a secondary outcome measure administered at baseline and at the 18-week follow up. It measures 20 physical activities to determine an individual's level of physical function. It is a valid outcome measure in the field of chronic low back pain research. It is one of the most reliable and valid scales that measures physical disability, and it can reliably detect changes in most people. The reliability and validity values were not reported in the study.

**Measurement Biases**

**Were the evaluators blind to treatment status? Circle yes or no, and if no, explain.**

YES/NO Therapists could not be blinded for treatment allocation.

**Recall or memory bias. Circle yes or no, and if yes, explain.**

YES/NO

**Others (list and explain):**

A possible bias or limitation of the study is the lack of specificity of the PSC to measure deterioration in participants with mild to moderate back pain. This lack of sensitivity of the PSC to detect this change may have influenced the results.

**RESULTS**

**List results of outcomes relevant to answering the focused question**

**Include statistical significance where appropriate ( $p < 0.05$ )**

**Include effect size if reported**

The values for the crude analysis ( $p = .018$ ) and adjusted analysis ( $p = .010$ ) indicated a significant group effect, which implies that the decrease of PSC scores were significantly lower in the CTIP group than in the WTL group. In comparison to the WTL group, the CTIP group demonstrated significantly improved PSC values after receiving CTIP after 18 weeks. In comparison to the mere 26% of the WTL participants, 49% of the CTIP participants showed a clinically relevant change, defined as a decrease from 18 to 24 mm on the PSC questionnaire, after CTIP treatment. It resulted in an odds ratio of 2.77 and a number needed to treat of 4, which implies that 1 out of 4 patients would have a beneficial effect after receiving CTIP.

**Was this study adequately powered (large enough to show a difference)? Circle yes or no, and if no, explain.**

YES/NO After receiving PSC results, researchers calculated the sample size required to achieve significant results. They calculated sample size with a minimum change of 18 mm, a two-sided  $\alpha$  of .05, a  $1 - \beta$  of .90, and a standard deviation

of 26.01, which was calculated using PSC data from patients with CLBP at the Amsterdam Rehabilitation Research Center similar to the participants included in the study. This calculation resulted in a total of 135 participants needed to adequately power the study.

Were appropriate analytic methods used? *Circle yes or no, and if no, explain.*

YES/NO  NO The researchers used intention-to-treat analysis.

Were statistics appropriately reported (in written or table format)? *Circle yes or no, and if no, explain.*

YES/NO  NO

**CONCLUSIONS**

**State the authors’ conclusions that are applicable to answering the evidence-based question.**

This study showed statistically significant and clinically relevant improvements in patient-relevant physical activities and significant changes in illness perceptions after 18 weeks of interventions. However, a closer look at the results revealed that the patient-relevant physical activities rated on the PSC may have differed in levels of physical exertion required to complete them. Thus, changes in PSC scores should not be interpreted as accurate indicators of participants’ overall physical function. However IPQ-R scales were shown to be related to the PSC changes, and the IPQ-R scale “personal control” significantly contributed to the CTIP. As mentioned above, the IPQ-R scales were specifically designed to measure the same five dimensions of the SRM used in main treatment. Hence, though it is unclear whether CTIP improved physical activity, it did result in notable changes in illness perceptions. The researchers identified a limitation in the fact that they did not research the long-term effectiveness of the CTIP. Future research should consider comparing the effects of CTIP against another intervention. Future studies should also determine how CTIP can be best implemented in a clinic, with which population, and under which circumstances. With such favorable results, CTIP may serve as a clinically important addition to the available treatment for CLBP.

This work is based on the evidence-based literature review completed by Jaclyn Fok, OTS, Shannon Landau, OTS; Liberty Bellah, OTS; and Kitsum Li, OTD, OTR/L, Faculty Advisor, Dominican University of California.

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