

Influence of Goal Attainment Scaling on Cognitive-Behavioral Based Physical Therapy Outcomes

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Background

- Patient-centered goal setting is considered an important component of behavioral interventions for chronic pain
 - Encourages patient to become active participant in recovery process
 - Utilizes S-M-A-R-T framework
 - Considers patient's confidence in attaining goals
- Goal achievement can be measured using goal attainment scaling
- Limited data exist on the relationship between goal attainment and rehabilitation outcomes



Changing Behavior through Physical Therapy (CBPT)

- Telephone-based program delivered by a physical therapist
- Utilizes cognitive behavioral strategies including patient-centered goal setting for improving postoperative spine surgery outcomes

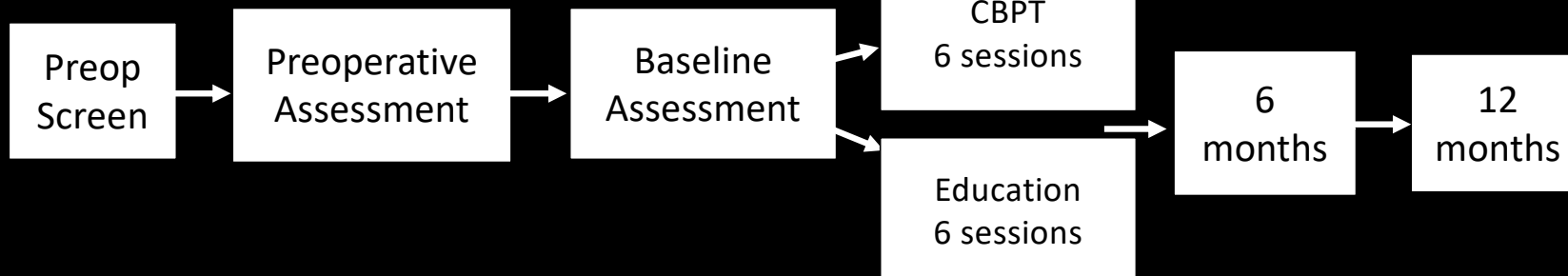


Preoperative

6 weeks after surgery

Treatment

Follow-up



n = 124



n = 124

Cognitive-Behavioral Physical Therapy (CBPT)	Education (Information Provided)
<ul style="list-style-type: none"> • deep breathing, • progressive muscle relaxation, • graded activity plan, • goal-setting, • distraction techniques, • automatic thoughts, • coping self-statements, • pacing techniques, and • relapse prevention and symptom management plans 	<ul style="list-style-type: none"> • benefits of physical therapy, • proper biomechanics after surgery, • importance of daily exercise, • ways to promote healing • stress reduction, • sleep hygiene, • energy management, • communication with health providers, and • preventing future injury



Objective and Rationale

- *Objective: to examine the relationship between goal attainment during CBPT and 6 and 12-month physical function and pain after spine surgery*
- In intent-to-treat analyses, there were small and non-significant group differences at 6 and 12 months
- Evidence suggested that patients who completed CBPT had better outcomes than controls



Study Design

- Secondary analysis of prospective data from a multisite randomized trials
- Subset of data from trial -> 108 participants receiving a CBPT intervention and who completed program
- Outcome data from 6 weeks (baseline), 6 and 12 months after spine surgery



Participants

Inclusion Criteria

- English speaking adults (age > 21 years)
- Lumbar degenerative condition including spinal stenosis, spondylosis with or without myelopathy, degenerative spondylolisthesis
- Surgical treatment: laminectomy with or without fusion

Exclusions: Microsurgical techniques; surgery for spinal deformity, trauma, tumor, infection



Goal Attainment Scaling

- Patients set specific activity goals at each session for the coming week
- Progress from least -> more difficult
- *On a scale of 0 to 10, where 0 is not confident at all and 10 is completely confident, how confident are you that you can _____?*
 - Scores < 8 – modify goal

Activity Goal Worksheet

Study ID: _____ Date: _____

Week	Activity	Goal	Confidence Level (0-10)



Goal Attainment Scaling

- CBPT therapist rated whether patients met prior week's goals as expected, more than expected, or less than expected
- Goal attainment scores were obtained for each goal set throughout CBPT intervention

Goal Attainment Scale				
-2 (Much less than expected)	-1 (Somewhat less than expected)	0 (as expected)	+1 (Somewhat more than expected)	+2 (Much more than expected)
Goal	Week	Score		



Goal Attainment Scaling

- Goal Categories

Goal Category	Examples
Activities of daily living	Cleaning, cooking, vacuuming, hygiene
CBPT strategy	Deep breathing, present-mindedness, imagery
Exercise	Physical therapy, home exercises
Healing	Ice/heat, attend MD appointment or message MD
Lifestyle	Back to school, look for job, pay bills
Physical/recreational activity	Walking, gardening, outdoor activity, stair climbing
Social	Attend church, Eat out at restaurant, family reunion

Each patient goal set at each session was coded by a single evaluator



Goal Attainment Scaling

- A goal attainment scaling t-score was computed for each participant based on meeting individual goals
- Participants with t-scores > 50 (goals met as expected) were grouped as high goal attainment

Kiresuk et al. 1994; Turner-Stokes 2009



Outcomes

- Physical function (PROMIS)
- Pain interference (PROMIS)
- Back and leg pain intensity (Brief Pain Inventory)



Outcomes measured at 6 weeks (baseline), 6 and 12 months after surgery



Data Analysis

- Separate regression models for 6 and 12-month outcomes
 - High vs low goal attainment as independent variable
 - Controlled for baseline outcome



Goals

- 1356 total goals were set across all CBPT sessions
- Median goals per session = 3 (range: 1 to 6)

Goal Category	Number (Percent) of Total Goals
Physical/recreational activity	496 (37)
CBPT strategy	341 (25)
Activities of daily living	239 (18)
Exercise	167 (12)
Lifestyle	46 (3)
Social	40 (3)
Healing	27 (2)



Goal Attainment Groups

	High Goal Attainment (n = 46)	Low Goal Attainment (n = 62)
Age, mean \pm SD in years	64.3 \pm 10.1	62.9 \pm 12.2
Sex, N (%) females	19 (41)	35 (57)
Education, N (%) some college or more	39 (85)	44 (71)
BMI, mean \pm SD kg/cm ²	31.0 \pm 5.2	33.2 \pm 6.5
Pain duration, mean \pm SD in months	52.3 \pm 118.1	45.4 \pm 58.6
Expectations of surgical success, mean \pm SD 0-10 scale	9.3 \pm 0.9	8.8 \pm 1.5
Fusion status, N (%) yes	28 (61)	36 (58)
Total goals set, mean \pm SD	11.3 \pm 5.1	13.4 \pm 5.3
Total goals met, mean \pm SD	9.7 \pm 4.2	8.7 \pm 4.2
Percent of goals met, mean \pm SD	86.6 \pm 11.8	63.6 \pm 17.4



Goal Attainment and Outcome

	6 month	12 month
<i>Physical function (PROMIS)</i>		
High vs low goal attainment	4.3 (1.6; 6.9)*	3.5 (0.6; 6.4)*
<i>Pain interference (PROMIS)</i>		
High vs low goal attainment	-2.2 (-5.3; 1.0)	-2.5 (-5.6; 0.5)
<i>Back pain intensity (BPI)</i>		
High vs low goal attainment	-0.6 (-1.4; 0.1)	-0.9 (-1.8; -0.1)*
<i>Leg pain intensity (BPI)</i>		
High vs low goal attainment	-0.6 (-1.5; 0.3)	-0.7 (-1.6; 0.2)

Values are beta (95% CI), *indicates $p < 0.05$

Models controlled for baseline (6 week) outcome score



Summary

- Patient-centered goal setting is an important component of CBPT after spine surgery
 - Patients set a range of goals with most relating to physical activity, CBPT strategies, and activities of daily living
 - Patients meeting high goal attainment in CBPT had higher physical function at 6 and 12 months and lower back pain intensity at 12 months
 - On average, patients meeting high goal attainment met > 85% of their personalized goals



Limitations

- Goal coding strategy was developed for this study and performed by a single evaluator
- Did not explore relationship of goal categories, goal profiles (e.g., patterns of goals set), goal attainment, and outcomes
- Regression models limited in accounting for covariates



Clinical Implications

- Patient-centered goal setting and goal attainment scaling can be used to tailor interventions for improving physical function in patients with chronic pain
- Physical therapists should consider the potential importance of these processes within clinical practice



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Thank You



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