
Title: *There is strong evidence that functional everyday activities reduces pain-related disability and pain experience for adults with recurrent low back pain*

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Date: December 4, 2014

CLINICAL SCENARIO:

Client Population and Treatment Context

This CAT investigates the use of functional everyday activities as an intervention for adults ages 18-65 with recurrent low back pain (LBP) in an outpatient setting. Following an initial episode of LBP, about 60% of adults experience another episode(s) (Schenkman et al., 2009). A systematic review that examined the global prevalence of LBP found its occurrence higher among females ages 40-80 ($35.3 \pm 18.8\%$) than males ages of the same age ($29.4 \pm 18.5\%$). This may be related to osteoporosis, menstruation, and pregnancy. This review also found that the prevalence of activity-limiting LBP lasting for more than a day was $11.9 \pm 2.0\%$ and activity-limiting LBP lasting for one month was $23.2 \pm 2.9\%$ (Hoy et al., 2012).

Intervention Investigated

The intervention involved performing daily life tasks that a client identified as problematic and meaningful. It included instruction and education from a therapist on efficiently and effectively completing a task within the client's limits of pain. Education included a discussion of anatomy, ergonomics, proper body mechanics, back stabilization techniques, or perceived pain that may be applied to everyday tasks. This education was provided via an informational manual or individualized therapy. The intervention provided education and demonstration, with the expectation that the learned information will alleviate pain and prevent further injury when incorporated into daily life. The intervention of functional everyday activities in conjunction with education lasted at least six hours total and was dispersed over a four to six week period, with higher intensity producing the most optimal gains (Schenkman; Woods & Asmundson, 2007).

Science Behind Intervention

Recurrent low back pain (LBP) is often a complex condition involving many factors. Anatomically, the lumbar region is comprised of the iliocostalis lumborum (part of the erector spinae muscle group), multifidus and rotatores lumborum (part of the transversospinalis muscle group), interspinales, and intertransversarii muscles (Drake, Vogl, & Mitchell, 2012). The small size, fiber structure, and orientation of these muscles result in a very short moment arm putting the individual at a mechanical disadvantage when using the low back for activities involving a high degree of rotation and flexion. The short moment arm increases the compressive load on the intervertebral discs when in an upright posture. These factors increase the likelihood of injury to this region, which is often a common source of recurrent pain for many individuals (Greene & Roberts, 2005).

The vertebral column is comprised of eight cervical, 12 thoracic, five lumbar, five sacral, and one coccygeal vertebrae. Between each vertebral body is an intervertebral disc that is made up of two layers. The inner layer is the nucleus pulposus and the outer layer is the anulus fibrosis. Both the vertebrae and intervertebral discs lie anterior to the spinal cord. The nucleus pulposus can herniate through the anulus fibrosis, often moving lateral since the posterior longitudinal ligament prevents

movement posterior toward the spinal cord. The herniated disc can then put pressure on the nerve roots of the spinal cord, causing LBP pain when it occurs in the lumbar region (Blumenfeld, 2010).

An osteophyte is a degenerative outgrowth of bone that can form between adjacent vertebrae, closing the intervertebral canal. Spinal stenosis occurs as a result of deterioration and thickening of the vertebrae. This causes the spinal canal to slowly narrow over time. Both osteophytes and spinal stenosis can apply pressure to nerve roots, causing LBP when present in the lumbar region (Blumenfeld, 2010). Specific training and education regarding the anatomy or proper biomechanical position needed for various meaningful occupations provides the individual with new strategies on how to complete activities without exacerbating symptoms of pain.

Impact of the Problem on Occupational Performance

A wide range of occupational performance problems can be seen in adults with recurrent low back pain (LBP). Activities of daily living (ADLs), instrumental activities of daily living (IADLs), rest and sleep, work, and social participation may all be affected secondary to pain experienced. Specific ADLs affected include bathing/showering, toileting, dressing, functional mobility, personal hygiene, and sexual activity. IADLs affected by recurrent LBP include care of others, care of pets, driving/community mobility, home management, meal preparation, and shopping. All of these activities have components that require the individual to bend and twist at the waist or use the low back in some capacity to successfully complete the activity. Such movements can exacerbate symptoms of pain in the lumbar region, keeping the individual from fully engaging in these occupations (American Occupational Therapy Association, 2014).

Recurrent LBP can affect rest and sleep as symptoms of pain can keep an individual from fully relaxing and/or keep an individual awake at night. Symptoms of pain can affect job performance, as many jobs require a high degree of movement and lifting involving the low back. When pain symptoms arise, it can be difficult to work at the same pace prior to the onset, or difficult to work at all. Social participation is affected as it incorporates a variety of occupations mentioned above that involve bending and twisting movements. They may also find it difficult to socialize while experiencing pain (American Occupational Therapy Association, 2014). The fear that movement will exacerbate symptoms may also have an impact upon occupational engagement. An individual's fear may keep him or her from engaging in necessary and meaningful occupations (Woods).

Why is this intervention appropriate for OT?

Within the three appraised studies, the intervention was executed by physiotherapists or physical therapists, and included functional activities or occupations and educational components. The use of functional activities as an intervention for an individual with recurrent low back pain (LBP) could also fall under the scope of practice for a physical therapy assistant, occupational therapist, or an occupational therapy assistant. It is proposed that this intervention is appropriate for occupational therapy as both occupations and activities in conjunction with client education and training are appropriate intervention techniques according to the Occupational Therapy Framework (American Occupational Therapy Association, 2014). The intervention of interest for this CAT incorporated a combination of these intervention techniques. Since occupational therapists and occupational therapy assistants are both specifically trained in the use of functional everyday activities as an intervention, both would lead the current intervention knowing how to appropriately adjust or adapt the activity according to an individual's abilities while providing client-specific education. With an occupational therapy perspective, the therapist would emphasize occupational engagement as a means and ends. It should be noted that within the field of occupational therapy, limited research about functional everyday activities for those with recurrent LBP currently exists.

Aspects of the Occupational Therapy Framework that are addressed within this intervention include client factors, performance skills, performance patterns, and the context and environment (American Occupational Therapy Association, 2014).

ICF Level of Intervention

The ICF levels addressed through this intervention are body functions, body structures, and activities.

OT Theoretical Basis

This intervention falls under a rehabilitative frame of reference in the field of occupational therapy as it includes grading or modifying activities according to a client's current level of performance, rather than aiming to reduce symptoms of low back pain through conventional exercises. It is proposed that the use of functional daily activities and education be used to adapt an activity that is deemed as problematic and meaningful to the client, so they are able to engage in that occupation successfully (Biomechanical and rehabilitative frames, 2008).

FOCUSED CLINICAL QUESTION:

What is the effect of participation in functional everyday activities compared to exercises and/or no treatment in managing the pain-related disability and pain experience in adults with recurrent low back pain?

SUMMARY:

Summary of Clinical Question

Functional everyday activities as an intervention was compared to exercises and/or no treatment for adults with recurrent low back pain to determine if reductions were made in pain-related disability and pain experience.

Search

A comprehensive search of the UW Database, OT Seeker, PEDro, and Cochrane was done. Nine relevant articles were located. Two level 1b and one level 2b were chosen for critique. These three articles showed the highest level of evidence that best answered the clinical question.

Summary of Findings

Individualized functional everyday activities in conjunction with education about the fear-avoidance model show reductions in pain-related disability and pain experience in adults with recurrent low back pain.

CLINICAL BOTTOM LINE:

There is strong evidence that functional everyday activity reduces pain-related disability and pain experience for adults with recurrent low back pain.

Limitation of this CAT: This critically appraised paper (or topic) has been reviewed by occupational therapy graduate students and the course instructor.

SEARCH STRATEGY:

Table 1: Search Strategy

Databases Searched	Search Terms	Limits used	Inclusion and Exclusion Criteria
UW Murphy Library Database	"Activities of daily living occupational therapy and low back pain" "Functional activities occupational therapy and low back pain" "Functional movement activities occupational therapy low back pain" "Functional training occupational therapy low back pain" "ADL training and low back pain" "In vivo adl training low back pain" "In vivo adl chronic low back pain" "In vivo activities of daily living low back pain"	None	None
Cochrane	"ADL low back pain" "Functional training low back pain"	None	None
OT Seeker	"Activities of daily living and low back pain" "Functional training and low back pain" "Malmivaara" "Tsauo" "Schenkman" "ADL training low back pain" "ADL training and chronic low back pain" "Chronic low back pain"	None	None
PEDro	"In vivo chronic low back pain" "Graded activity chronic low back pain"	None	None

RESULTS OF SEARCH

All of the relevant studies that were located should be categorized by level of evidence (using the Canadian Levels of Evidence) and listed in Table 2.

Table 2: Summary of Study Designs of Articles Retrieved

Level	Study Design/ Methodology of Articles Retrieved	Total Number Located	Data Base Source	Citation (Name, Year)
Level 1a	Systematic Reviews or Metanalysis of Randomized Control Trials	None		
Level 1b	Individualized Randomized Control Trials	3	UW Murphy Library PEDro	(Schenkman et al., 2009); (Malmivaara et al., 1995) (Leeuw et al., 2007)
Level 2a	Systematic reviews of cohort studies	None		
Level 2b	Individualized cohort studies and low quality RCT's (PEDro < 6)	3	PEDro	(Woods & Asmundson, 2007); (De Jong et al., 2005); (Vlaeyen et al., 2002)
Level 3a	Systematic review of case-control studies	None		
Level 3b	Case-control studies and non-randomized controlled trials	None		
Level 4	Case-series and poor quality cohort and case-control studies	1	UW Murphy Library	(Vlaeyen et al., 2001)
Level 5	Expert Opinion	2	UW Murphy Library	(Fisher et al., 2007); (Persson et al., 2013)

STUDIES INCLUDED

Fill out Table 3 with a summary of the 3 articles that you have selected to review for this CAT.

Table 3: Summary of Included Studies (add more columns if necessary)

	Study 1: (Schenkman et al., 2009)	Study 2: (Malmivaara et al., 1995)	Study 3: (Woods & Asmundson, 2007)
Design	RCT	RCT	RCT
Level of Evidence	1b	1b	2b
PE德罗 score (only for RCT)	6/10	6/10	5/10
Population	<p>Individuals between ages 25-65 with a previous episode of LBP requiring treatment, with current LBP for 6 weeks or longer. Exclusion criteria included receiving PT for LBP within the previous 6 weeks, significant or unstable neurologic signs, lumbar surgery within 12 months, or other orthopedic, surgical, or medical conditions limiting participation in the exercise program, other chronic pain syndromes, workers compensation, or non-English speaking without an interpreter.</p>	<p>Employees of the city of Helsinki, Finland presenting with non-specific LBP as primary symptom. Included patients with acute LBP and exacerbations of chronic LBP for less than 3 weeks. Mean age between groups ranged from 39.1-41.1 years. Exclusion criteria included those who worked in public transport or electricity supply services, who were pregnant, had a history of cancer, sciatic syndrome, fracture of lumbar spine, or urinary tract infection.</p> <p>186 randomly assigned: 67-bed rest, 52-exercise, and 67-control. 16 ended up being excluded from 186 total (9 from exercise group, 4 in bed-rest group, and 3 in control group).</p>	<p>Individuals with low back pain and a mean age of 46.45 years who were recruited from April 2004-March 2005 via newspaper, email, and posters hung in local hospitals and physicians' and physiotherapists' offices; eligibility criteria included being between 18 and 65 years old, a score of 38 or higher on the Tampa Scale for Kinesiophobia, no pending medical investigations or surgery for their back pain, and not in current psychotherapy or physical therapy services.</p> <p>83 individuals were randomly assigned to 1 of 3 groups and 44 completed the study: GivE=36, 15 completed (21 dropouts), GA=25, 13 completed Wait-list (control)=22, 16 completed</p>
Intervention Investigated	<p>Functional mvmt training (Group 3): 80% of time devoted to core stability training through performance of actual</p>	<p>Bed rest: Instructed to take 2 days of complete bed rest only walking when necessary</p>	<p>GivE: educating participants on cognitive-behavioral perspective on fear and avoidance models and their</p>

	<p>daily functional activities and education on strategies for managing pain when it recurred (vacuuming, sweeping, lifting household items). 20% of time was spent on impairment-based interventions.</p>		<p>functional consequences, in addition to graded exposure techniques</p>
Comparison Intervention	<p>Standard back education group (Group 1): single 60-minute educational session 50% patient education, 50% impairment-based deficits in flexibility and strengthening. Body mechanics education for tasks involving pushing, pulling, lifting. (NO FMT)</p> <p>Conventional PT (Group 2): 90% of time to impairment-based interventions (soft tissue work, mobilization, manipulation, core stability exercises, body mechanics training for simulated tasks involving pushing, pulling, lifting). 10% of time to patient education. (NO FMT)</p> <ul style="list-style-type: none"> The Back Book was provided to all 3 groups. This is a brochure including guidelines to continue normal activities and avoid rest Specific impairment-based interventions were allowed. A list was made, and specific tactics were chosen based on the 	<p>Control: Avoid bed rest and asked to continue normal activities within the limits of their pain.</p> <p>Exercise: complete back extension and lateral bending movements every other hour until pain subsided. Recommended to do for 10 min in each direction. Also instructed to avoid bed rest and continue activities as usual within limits of pain.</p>	<p>Wait list control group: administered primary and secondary outcome measures at post, 2 weeks later, 4 weeks later, and 8 weeks later.</p> <p>Graded Activity (GA): graded activity exercises derived from current physiotherapy treatments for low back pain and based upon operant condition principles were individualized to each participant depending upon their work demands and functional capacity</p>

	<p>subject's specific impairments.</p> <ul style="list-style-type: none"> • % of time for total intervention, not individual sessions 		
Dependent Variables	<ol style="list-style-type: none"> 1. Observed physical functional performance 2. Pain-related disability 3. Pain impairment 	<ol style="list-style-type: none"> 1. Perceived functional status 2. Pain and disability at work 3. Straight leg raises 4. Lumbar flexion 	<ol style="list-style-type: none"> 1. <i>Primary outcome measure:</i> functional abilities 2. <i>Secondary outcome measures:</i> rating of pain, pain self-efficacy, non-pain related emotional distress 3. <i>Process variables:</i> pain-related fears, anxiety, avoidance behavior 4. <i>Working alliance measure:</i> therapeutic relationship 5. <i>Treatment credibility:</i> perception of therapy
Outcome Measures	<ol style="list-style-type: none"> 1. Continuous Scale Physical Functional Performance test (CS-PFP) 2. Revised Oswestry Disability Index (ODI) 2, Roland Morris Disability Questionnaire (RM) 3. Standard visual analogue pain scale (VAS) <p>Measures taken at baseline, 2 mo., 6 mo., & 12 mo.</p>	<ol style="list-style-type: none"> 1. Oswestry low-back-pain disability questionnaire, Health related measure of quality of life index 2. Duration of absences from work via medical records, duration of pain measured in no. of days, intensity of pain via VAS, pain radiating below knee, ability to work via VAS 3. Straight leg raises measurement via physiotherapist 4. Lumbar flexion measurement via physiotherapist 	<p><i>Primary:</i></p> <ol style="list-style-type: none"> 1. Pain Disability Index (PDI) <p><i>Secondary:</i></p> <ol style="list-style-type: none"> 2. The Hospital Anxiety and Depression Scale (HADS) 3. McGill Pain Questionnaire-short form (SF-MPQ) 4. Pain Self-Efficacy Questionnaire (PSEQ) <p><i>Process:</i></p> <ol style="list-style-type: none"> 5. Tampa Scale for Kinesiophobia (TSK) 6. The Fear Avoidance Belief Questionnaire (FABQ) 7. Pain Anxiety Symptoms Scale-short-form version

		<p>Follow-up questionnaires given asking about compliance and other medical services received different than prescribed by study.</p>	<p>(PASS-20) 8. Pain Catastrophizing Scale (PCS)</p> <p><i>Working alliance:</i> 9. The Working Alliance Inventory-Client Form (WAI)</p> <p><i>Treatment credibility:</i> 10. Two questions rated on a 10-point Likert scale: "How logical did this type of treatment seem to you?" and "How confident would you be in recommending this treatment to a friend who had chronic back pain?"</p>
Results	<p>No statistical significance with any outcome measure at any test point.</p> <p><i>2 months:</i> ODI improved in each group CS-PFP change score revealed trend toward greater improvement in groups 2 & 3 vs. group 1</p> <p><i>6 months:</i> Differences in CS-PFP approached significance, particularly groups 2&3</p> <p><i>12 months:</i> ODI & CS-PFP approached significance for groups 2&3</p> <p>ODI: Group 1-little change at 2 months, and remained the same for 12 months. Group 2: Mean change score of 11 pts at 2 months, and remained constant for 12 months. Group 3: Mean change over 16 pts at 2 months,</p>	<p>Compliance: <i>Bed rest:</i> spent 22 hours average at rest, 1 patient had back surgery, 93% took anti-inflammatory/analgesics <i>Control:</i> spent 2 hours at rest, 3 sets of exercises, 93% took anti-inflammatory/analgesics <i>Exercise:</i> performed average of 61 sets of exercises, 91% took anti-inflammatory/analgesics</p> <p><i>3 weeks:</i> Statistical significance was not determined between control group and exercise group on any variable. Only statistically significant differences found between control and bed rest groups was in # of sick days at one and two weeks. At week 1 ($p=0.01$), at week 2 ($p=0.002$)</p>	<p>Analysis of covariance revealed a statistically significant treatment effect at post treatment on the SF-MPQ ($p=.031$) and PSEQ ($p=.049$) and no significance on the PDI ($p=.101$) and HADS ($p=.083$). Statistical significance was also reached on the process measures: the TSK ($p=.004$), FABQ ($p=.019$), PASS-20 ($p=.046$) and the PCS (.015).</p> <p>Furthermore, paired comparisons reveal that the GivE group demonstrated statistically significant improvements on the HADS ($p=.028$), SF-MPQ ($p=.009$), and every process measure (TSK: $p=.002$, FABQ: $p=.008$, PASS-20: $p=.036$, PCS: $p=.004$), and no significance on the PDI ($p=.063$) and PSEO ($p=.060$) when compared to wait-list controls at</p>

	<p>and remained constant after (SIMILAR TREND FOR CS-PFP)</p> <p>ODI: 2 months: .028* 6 months: .66 12 months: .07</p> <p>CS-PFP: 2 months: .072 6 months: .064 12 months: .09</p> <p>RM: 2 months: .405 6 months: .67 12 months: .57</p> <p>VAS: 2 months: .085 6 months: .53 12 months: .43</p> <p>*=significant</p>	<p>12 weeks: Statistical significance was not determined between bed rest and control group nor between exercise and control group on any variables. Though, bed rest recovered slower than controls in # of sick days, intensity of pain, ability to work, lumbar flexion, and Oswestry index. Recovery slower in exercise group when compared to control in no. of sick days and lumbar flexion.</p>	<p>post-treatment.</p> <p>Additionally, the GivE group demonstrated statistically significant improvements over the GA group on on the PSEQ (p=.028), TSK (p=.008), FABQ (p=.027), and PASS-20 (p=.027) and no significance on the PDI (p=.064) and PCS (p=.076) at post-treatment testing.</p> <p>No statistical significance was demonstrated between the GA and control group on any measure.</p> <p>ANCOVAs to compare post-treatment and follow-up: No statistically significant differences (p<.01) for the GivE group on any of the dependent variables</p>
Effect Size	<p>Change scores for ODI: Group 1 and 2: 2 mo.= 1.891 6mo.= 1.838 12 mo.= 1.654 Group 1 and 3: 2 mo.= 3.309 6 mo.= 2.994 12 mo.= 3.440 Group 2 and 3: 2 mo. = 1.592 6 mo. = 1.298 12 mo. = 2.005</p> <p>Change scores for CS-PFP: Group 1 and 2: 2 mo: .024 6 mo: 1.199 12 mo: 0.329 Group 1 and 3: 2 mo: 1.694</p>	N/A	<p>PDI: .109 HADS: .116 SF-MPQ: .160* PSEQ: .140* TSK: .240* FABQ: .180* PASS-20: .143* PCS: .188* WAI: not calculated Credibility questions: not calculated *=significant</p> <p>Post hoc testing (paired comparisons) Clinically Significant Change: GivE paired with GA: >.44 GivE paired with WLC: >.46</p>

	6 mo: 1.833 12 mo: 1.575 Group 2 and 3: 2 mo: 1.803 6 mo: .686 12 mo: 1.35		
Conclusion	<p>At 2 months, groups 2 & 3 improved on the ODI where group 1 did not. Although not significant, there are trends that groups 2 & 3 had lower disability throughout the 12 months.</p> <p>-Numbers suggest that FMT had greater improvement than conventional PT</p>	<p>Compliance may have been lower than reported since subjects often overestimated participation when reporting adherence via questionnaire. Placebo effect is unlikely to have occurred for control group since healthcare practitioners involved thought exercise was superior to normal activity and bed rest. The degree of satisfaction with treatment did not differ between groups. Results align with 2 previous studies reporting poor results with bed rest treatment. Of 4 studies examining effectiveness of physiotherapy, only 1 demonstrated positive effect of exercise.</p> <p><i>Bottom line:</i> This study demonstrated that avoiding bed rest and maintaining normal activity level within pain limits lead to increased recovery in # of sick days, intensity of pain, ability to work, lumbar flexion, and Oswestry index.</p>	<p>Individuals receiving GivE showed statistically significant differences on 6/8 outcome measures (primary, secondary and process) and the GA group on 4/8 outcome measures (primary, secondary, and process) when compared to wait-list control individuals. None of the treatment groups demonstrated statistically significant improvement on the primary outcome measure (PDI) which measured pain-related disability; however, other secondary and process measures were found to have measured this dependent variable and did result in statistically significant reductions in pain-related disability.</p> <p>GivE group results offer support for an intervention that effectively reduces pain-related disability and pain experience. It was shown not only to be effective, but also efficient because gains were seen in just 8 sessions and maintained at 4-week follow-up.</p> <p>The maintenance of treatment gains for GivE group at 4-week follow-up may be explained by inclusion of education</p>

			about fear-avoidance model of chronic musculoskeletal pain in combination with successful performance of graded exposure tasks within this treatment approach.
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IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH (Synthesis Section)

What is the effect of participation in functional everyday activities compared to exercises and/or no treatment in managing the pain-related disability and pain experience in adults with recurrent low back pain?

Overall Conclusions

The definition of low back pain (LBP) between the three studies included at least one episode of LBP or exacerbations of pain being present for less than three weeks to as much as six weeks or longer. Recurrent was defined as any episode of LBP following an initial onset. Functional everyday activities, as defined by the three studies, included performance of daily life tasks and work-related graded activities in conjunction with education. The first dependent variable examined, pain-related disability, was the client's perception of functional activity impairment resulting from recurrent LBP. The second dependent variable, pain experience, was the overall intensity of pain, duration of pain, type and degree of pain sensation, anxiety related to pain, and thoughts or feelings related to pain.

Functional everyday activity interventions were found to be successful in reducing pain-related disability. Beliefs about how work and physical activity affect LBP, fear of movement and re-injury, and level of confidence in performance of everyday tasks, were all statistically significant, with small to moderate effect sizes (Woods & Asmundson, 2007; Ferguson, 2009). The presence of pain (Schenkman et al., 2009) and level of pain interference (Schenkman; Malmivaara et al., 1995) within daily life tasks did not show statistically significant reductions. Degree of disability within daily life tasks did not show statistically significant reductions (Woods). Significance was not determined for ability to work (Malmivaara).

Functional everyday activity interventions were found to be successful in reducing the pain experience. The type and degree of pain sensation, pain intensity, anxiety related to pain, and thoughts or feelings related to pain showed statistically significant reductions in one study, with small to moderate effect sizes (Ferguson, 2009; Woods). No significant reductions were found for duration of pain (Malmivaara) or pain intensity in the other two studies (Malmivaara; Schenkman).

One study (Woods) demonstrated reductions that were stable over time. No statistically significant difference was found on any dependent variable after one month for those receiving functional everyday activity intervention plus education, demonstrating that participants maintained reductions of pain-related disability and pain experience (Woods).

Therapist rating of daily task performance was only measured in one study (Schenkman), and change from pre-test to post-test was not statistically significant.

One study (Woods) demonstrated statistical significance with individualized and graded functional activities in conjunction with education. This functional activity intervention (Woods) included activities related to work that were identified as problematic by the client. These activities were then graded as

necessary to challenge the individual and increase exposure to the functional activities identified. The education was based on the fear-avoidance model and included instruction of the impact their fear of pain may have on occupational engagement (Woods). In contrast, one of the other two studies (Schenkman) used functional activities with standard education from an informational booklet about guidelines for continuing activities and avoiding rest, in addition to education about ways to manage pain. The other of the two studies (Malimavaara), instructed participants to continue functional activities as usual, without the use of education, and to avoid bed rest. The use of individualized graded functional activity treatment with education about fear may have been what impacted the results.

The treatment provided in the study that used graded functional activity with education (Woods) was more intense than the other two studies (Schenkman; Malimavaara). Treatment occurred twice per week over a four-week period, reaching a total of six hours (Woods). The other two studies (Schenkman; Malimavaara) provided differing amounts of treatment intensity. One study (Schenkman) provided treatment that also totaled six hours, but it occurred over a longer period of time; treatment occurred once a week over six weeks. Treatment time for the other study (Malimavaara) was not controlled in a clinical setting and was not calculable. Compliance may have also altered total treatment time. The intensity of treatment may have played a role in the statistically significant improvements found in the study, which incorporated graded functional activity with education (Woods).

Post-testing increments ranged from three weeks to two months after baseline, while follow-up increments ranged from eight weeks to 12 months after baseline among the three studies (Malimavaara; Woods; Schenkman). One study did not do post-treatment testing until two weeks following treatment, which may have altered results at that testing time (Schenkman).

Additionally, each study had high dropout rates, with no specific pattern among the experimental or control groups. The inconsistency throughout each study may have influenced results; the studies may not have been effective in determining significance due to the resulting small sample size. (Woods; Schenkman; Malimavaara)

All were randomized control trials of varying strengths that examined the use of functional everyday activities as an intervention. Two of the three appraisals revealed grade A, level 1b evidence (Schenkman; Malimavaara) and the other revealed grade B, level 2b evidence (Woods).

Summary of Overall Conclusions:

The study by Woods and colleagues (2007) demonstrated statistically significant improvements between pre-test and post-test in the type and degree of pain sensation, pain intensity, anxiety related to pain, and thoughts or feelings related to pain. This study (Woods) found mixed results from pre-test to post-test for pain-related disability. These statistically significant results were achieved through a treatment program completed twice a week for four weeks, totaling six hours, with the use of individualized graded activity and education about the impact fear of pain has on occupational engagement (Woods).

Boundaries

A total of 241 participants took part in the three studies appraised. Participants ranged in age from 18-65 years with a mean age ranging from 39.1-46.45 years. Participants included were those who predominantly experienced recurrent low back pain (LBP). Among the three studies, more than half the participants (60-71%) were female, which is consistent with prevalence of LBP among the general population (Hoy et al., 2012). None of the participants in the studies had additional medical conditions that would impede participation (Schenkman; Woods; Malimavaara). Two of the three studies

(Schenkman; Woods) excluded those that were receiving additional physical therapy and other medical interventions.

Implications for Practice

In these studies, the most effective treatment was the combination of individualized graded activity and education about the impact that fear of pain has on occupational engagement. Statistically significant reductions in pain-related disability and the pain experience were seen with an intervention period involving a minimum of six hours of treatment over four weeks. Effects of treatment were maintained one month following the treatment (Woods).

The statistical significance found in one study (Woods) compared to the other two studies (Schenkman; Malmivaara) may have been due to the more intense treatment time. The use of individualized education and activity interventions (Woods) as opposed to an educational manual with functional activity (Schenkman) or functional activity intervention with no education (Malmivaara), may have led to the statistically significant reductions seen in the study by Woods and colleagues (2007). Specifically, education on the fear avoidance model (Woods) may have led participants to have a better understanding of their pain, which resulted in reductions of pain-related disability and pain experience. It can be concluded that client education about fear of pain was an important piece to accompany individualized and graded occupation-based treatment techniques.

An interesting finding through this research is the fear-avoidance model of the pain experience, which poses a potential explanation to the effectiveness of education for clients with recurrent low back pain (LBP). This model suggests that individuals can respond to the experience of pain in one of two ways: either adaptively or maladaptively. If fear of pain is better understood, then performance of engagement in typical occupations will be maintained and lead to functional performance gains. Conversely, if pain is perceived as disabling, then occupational engagement will decrease due to fear of exacerbating pain through activity and result in more long-term occupational performance deficits (Woods; Leeuw et al., 2007). *The Fear-Avoidance Model of Musculoskeletal Pain: Current State of Scientific Evidence*, by Leeuw and colleagues (2007) builds upon this previous review by Vlaeyn and Linton (2000) and provides a diagram of a contemporary fear-avoidance model as well as explains this model more in-depth for those who may have further interest in this finding.

Treatment of LBP within occupational therapy primarily consists of ergonomics training, proper biomechanical positioning, and energy conservation (Grangaard, 2013). With this, current literature about the treatment of LBP is predominantly seen within physical therapy. This CAT revealed statistically significant improvements with an intervention that included education about the fear-avoidance model and graded functional activity (Woods). Occupational therapists are specifically trained in the grading and adaptation of activities in conjunction with education, making the intervention discussed in this CAT an appropriate intervention for the field to research and incorporate into practice.

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Related Articles (not individually appraised)

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