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# What is the Effectiveness of a Biopsychosocial Approach to Individual Physiotherapy Care for Chronic Low Back Pain?

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### ABSTRACT

A systematic review of randomized controlled trials was conducted to investigate the effectiveness of a biopsychosocial approach to management for chronic low back pain when applied by individual physiotherapists. Eight primary databases and three secondary databases were searched electronically. A manual reference search was also performed. To be eligible, trials had to provide treatment according to biopsychosocial principles in primary care or comparable settings. This approach is a holistic intervention that addresses social, psychological, and biological aspects of chronic pain. Included trials defined chronic low back pain as of greater than eight weeks duration. Primary outcome measures were reductions in pain or improvement in function. Nine trials were identified that provided a biopsychosocial intervention evaluated qualitatively by evidence of a combined approach of education and empowerment of the patient, neurobiological conditioning, and graded exposure. Comparison treatments included exercise alone, cognitive behavioral therapy alone, usual care, and no treatment. Data from these trials were extracted for comparison and the findings synthesized against research evidence quality dimensions to evaluate the effectiveness of a biopsychosocial approach applied by physiotherapists. Five trials found strong evidence for the effectiveness of a biopsychosocial approach to individual physiotherapy care, three trials found moderate evidence, and one trial found limited evidence. This review supports the use of biopsychosocial approaches for chronic low back pain and informs clinical practice. The findings may have particular relevance for physiotherapists working in professional or geographical isolation.

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### INTRODUCTION

Evidence in support of holistic patient centered care for chronic low back pain is based largely on intensive multidisciplinary interventions.<sup>1-6</sup> Multidisciplinary approaches are a response to the perceived need for multifactorial interventions in recognition of the complexity of chronic low back pain, yet these are not widely available. In the absence of multidisciplinary care, the clinical physiotherapist is one of the most consistently available front line practitioners involved in the assessment and management of chronic low back pain.<sup>7</sup>

Multi-disciplinary management of chronic low back pain has been compared with individual physiotherapy care. Both interventions produced a favorable effect at reducing pain intensity, disability, and health care consumption.<sup>8</sup> It has been argued that multidisciplinary approaches to managing chronic low back pain confer no additional advantages to management by individual physiotherapists who employ biopsychosocial principles to administer treatment.<sup>8</sup>

Conceptual models for implementing biopsychosocial theory into clinical practice encourage physiotherapists to utilize clinical reasoning strategies which support mutual decision making (between patient and therapist), contextual interaction, and reflective

enquiry.<sup>9-11</sup> Collaborative reasoning processes include the patient as an active participant with the expectation that behavioral change will occur through an increased understanding of the condition.

Biopsychosocial physiotherapy recognizes that unhealthy, sensitive, and stiff tissues maintained by both specific and general dysfunctions, as well as psychosocial distress contribute to illness behaviour.<sup>12,13</sup> Treatment aims to restore normal activity through,

- education and empowerment of the patient.
- facilitation of neurobiological conditioning
- graded exposure.<sup>14</sup>

The primary objective of this systematic review is to assess the effectiveness of a biopsychosocial approach used by individual physiotherapists in the management of chronic low back pain.

## **METHOD**

### **Definitions**

The term "Biopsychosocial Approaches" has not been defined in health literature. Clinical application remains subject to individual interpretation. For this review, biopsychosocial therapy was defined as that which acknowledges and attends both the biological and psychosocial aspects of well being and their interdependence.

Chronic pain was defined as pain which persists beyond expectation of tissue healing (eight weeks).<sup>12</sup> Low back pain was defined as pain of a nonspecific nature arising from the musculoskeletal system of the lumbar spine or pelvic girdle.<sup>29</sup> Pain caused by specific pathological entities was excluded.

### ***Criteria for considering trials for the review.***

Included studies had to fulfill a number of criteria:

1. Be an experimental study such as a randomized controlled trial (RCT) or systematic review of experimental studies. Observational studies, case studies, abstracts and unpublished studies were excluded.
2. Include interventions provided by individual/single physiotherapists. An intervention that demonstrated collaboration with one other health professional was accepted into the review on the premises that this reflects usual clinical practice. Multi-disciplinary interventions utilizing physiotherapists as one of three or more health professionals actively participating in the intervention were excluded.
3. Include an intervention protocol with explicit evidence of psychosocial therapy (eg cognitive-behavioral therapy, or pain education). Traditional physiotherapy single method approaches (eg manipulation, electrotherapy and traction) were excluded, as were surgical approaches, acupuncture, and multimodal approaches without identified psychosocial interventions.
4. Report a primary outcome measure of reduction in pain or improvement in function.
5. Include subjects with a primary complaint of non specific chronic low back pain. Studies which reported on "acute" or "subacute" low back pain were excluded. Studies that included low back pain caused by specific pathological entities such as rheumatoid arthritis, infection, neoplasm, and osteoporosis were excluded as were studies including subjects with spondylolisthesis and post surgical pain.
6. Studies of adults between ages of 18 to 65 years were included. Studies on children were excluded.
7. Only English language studies were included.

### **Identification and Selection of Studies**

The conceptual nature of the intervention investigated required a search strategy to expose profession specific literature and social science publications to ensure comprehensive identification of relevant studies. To overcome software comparability between databases, keywords/terms were exploded and all combinations of keywords were applied. Databases were searched up to March 2007.

### **Primary Databases**

CINAHL, OVID Medline R, Sociological Abstracts Database and Ebscohost were searched electronically using five keywords or terms: physiotherapy: chronic pain: biopsychosocial: "low back pain" and "pain education." The multi-disciplinary navigational tool, Scopus was searched using the same keywords in subject areas of Health, Psychology and Life Sciences. The search was repeated in Pubmed using the phrase "Chronic Low Back Pain" with keywords "physiotherapy" and "biopsychosocial" and on Google Scholar and Journals @ Ovid to ensure literature saturation.

### Secondary Databases

- PEDro (Physiotherapy Evidence Database) was searched using terms: “musculoskeletal system”, “pain”, “lumbar spine/pelvis” and “education or spinal manipulation/massage”.
- The TRIP database was searched using the phrase “chronic Low Back Pain” and keywords “physiotherapy” and “biopsychosocial”.
- The Cochrane Database of Systematic reviews was searched to identify relevant systematic reviews.

A manual reference search of relevant identified publications was performed to ensure saturation. Potentially eligible papers were retrieved for evaluation against the inclusion criteria. A qualitative evidence grid was applied to all the potentially eligible studies to evaluate the intervention against the biopsychosocial framework. Interventions met criteria for description as a biopsychosocial approach if they provided evidence addressing management of cognitive, biological, and behavioral aspects of well being. Studies which did not address all 3 elements of the evidence grid were excluded.

### Data Evaluation

Information was extracted in to a purpose built Ms Excel file identifying, participants, health care setting, intervention, clinical, and statistical significance (Table 1). Clinical features of the intervention and outcomes were extracted separately (Table 2). Data were classified against the five dimensions of evidence. Experimental study hierarchy was determined using the NH&MRC hierarchy of evidence.<sup>15, 16</sup> Methodological quality was evaluated by critical appraisal using the PEDro critical appraisal tool for experimental studies. Significance was determined by a p value < .05 or 95% confidence intervals that did not encompass zero. Clinical significance was evaluated by evidence of clinically meaningful change (effect size, number needed to treat (NNT) or odds ratio). An effect size of less than 0.4 was considered small, 0.4-0.75 moderate and greater than 0.75, large.<sup>17</sup> Clinical relevance was evaluated using the READER generic appraisal instrument.<sup>18</sup> The READER method has been found to be generalisable, accurate and repeatable and intends to focus the general practitioner on studies which will alter clinical practice.<sup>19</sup>

### Data Synthesis

A rating system was developed to summarize the strength of the evidence. It consisted of 4 levels.

Strong evidence	-	consistent findings from multiple high quality RCT's relevant to primary care practice.
Moderate evidence	-	consistent findings of multiple moderate or low quality RCT's demonstrating good relevance to primary care practice.
Limited evidence	-	single trials of high or low quality with some relevance to primary care practice
No evidence	-	No trials.

### RESULTS

The search strategy identified 99 potentially relevant articles, in which there were 25 duplications. Twenty seven studies were retained after reading the Abstract. Nine studies met all the inclusion criteria. All 9 studies were randomized controlled trials (RCT). A total of 418 subjects with chronic low back pain received an intervention by physiotherapists consistent with the concept of biopsychosocial management. Three-hundred-thirty-six (336) subjects received a control intervention which consisted of exercise therapy alone, cognitive behavioral therapy alone, 'usual care' or no treatment.

### Description of Studies

To meet inclusion criteria for this trial, it was necessary to exclude some comparison groups. One study compared the effectiveness of lumbar fusion (intervention) to cognitive therapy plus exercise (control) for reducing pain and disability, only the control group was included in this review and compared to its baseline.<sup>20</sup> Two studies utilized the same cohort of patients to report on the effect of compliance and disability in a combined exercise and motivation program at 12 months follow up and levels of disability at 5 years follow up respectively.<sup>21, 22</sup> One study applied biopsychosocial strategies in a comparative trial of two experimental groups.<sup>23</sup> Both interventions included education and neurobiological conditioning and were compared to baseline measures when extracting data. One study compared cognitive-behavioral therapy (CBT) alone, physical therapy (PT) alone and combined CBT and PT against a waiting list control.<sup>24</sup> Only the combined therapy group was analyzed for this review.

### Critical Appraisal

Seven studies were high quality trials, scoring eight or more on the PEDro appraisal tool.<sup>20, 23-28</sup> Two studies of moderate quality failed to achieve measures of at least one key outcome for more than 85% of subjects.<sup>21, 22</sup> Methodological constraints were blinding of patients and therapists. It is not possible to blind therapists performing an interactive intervention.

### Statistical and clinical significance

Eight studies demonstrated significance ( $p < .05$ ) for one or more primary outcome measure.<sup>20-26, 28</sup> One study did not achieve significance for the primary outcome measure of pain or improved function; however, it reported a reduced risk of absence from work in the graded activity intervention group.<sup>27</sup>

Effect size was reported in six of nine trials.<sup>21, 22, 24-27</sup> The effect size for disability was calculated from the data in one trial.<sup>20</sup> A large effect for reduced disability or improved function was found across all but one of the studies.<sup>27</sup> Analysis of NNT (where reported) and the odds ratio confirm the clinical significance of these results (Table 1).

**Table 1. Methodological characteristics of the included studies**

AUTHOR	PARTICIPANTS	INVESTIGATION (control)	STATISTICAL SIGNIFICANCE	CLINICAL SIGNIFICANCE	
				EFFECT SIZE	NNT
Friedrich <sup>21</sup>	n= 93 20-60 years tertiary care	exercise and motivation training is more effective than exercise alone (exercise only)	p<.004 disability p<. 026 pain	1.68 disability	
Friedrich <sup>22</sup>	n= 93 20-60 years tertiary care	long term effect of exercise combined with motivation training on disability levels in chronic and low back pain (exercise only)	p<.003 disability p<. 001 pain	2.34 disability	
Moseley <sup>25</sup>	n = 57 primary care	combined physiotherapy and education is better than usual GP directed care (no physiotherapy)	p<.025 (CI)(.7-2.3)pain (2-5.6) disability	3.9 disability 1.9 pain	3 pain 2 disability
Moseley <sup>26</sup>	n = 41 primary care	Cognition - targeted motor control training is as effective for Chronic Low back pain in groups and individually (group education only)	p<.025 (CI)(.3-2.0) pain (.8-4.2)disability	6.1 disability 3.1 pain	3.5 disability 3.2 pain
Aure <sup>23</sup>	n = 49, 20-60 yrs, social security clients	effect of manual therapy to exercise therapy in reducing sick leave (exercise only)	p<.05 both groups		
Brox <sup>20</sup>	n = 27 tertiary care	Cognitive therapy and exercise verses surgery for chronic low back pain (baseline measures)	p<.05	1 disability	
Staal <sup>27</sup>	n = 134 primary care	graded activity and operant conditioning (usual care)	p>.02pain (CI) (-3.3-0.4) p= .11function (-3.3 -0.4 )	-1.5 functional status -0.4 pain	
Von Korff <sup>28</sup>	n = 240 25-60 yrs primary care	a trial of the effectiveness of an active intervention in primary care and physical therapy settings (usual care)	p<.01		odds ratio 2.1 12mths 1.8 24 mths
Smeets <sup>24</sup>	n = 223 18-65 yrs primary care	the effectiveness of combined therapy for chronic low back pain (physical therapy, CBT)	p<.01disability	.64 disability .3 main complaints	

Of primary importance to this review was that the intervention was performed by physiotherapists working alone or with limited professional support. In one study, the intervention was applied by a physiotherapist and psychologist.<sup>28</sup> The psychologist was

responsible for initiating the educational program aimed at reducing fear and increasing activity levels. The physiotherapist provided support to the educational program in subsequent sessions. Another provided the trial intervention utilizing physiotherapists and an occupational physician.<sup>27</sup> The occupational physician contributed educational material, ergonomic and return to work advice, and pacing strategies. The physiotherapists contributed a graded activity intervention using behavioral principles after receiving specific training in patient- therapist interactions.

**Table 2. Clinical features of the intervention models**

FIRST AUTHOR	INTERVENTION		MAIN FINDINGS		
	BY	CONTACT HOURS			
Friedrich <sup>21</sup>	Physiotherapist	10 x 25 min sessions 2-3 x per week	↓ pain	↓ disability	↑ work ability
Friedrich <sup>22</sup>	Physiotherapist	10 x 25 min sessions	↓ pain	↓ disability	↑ work ability
Moseley <sup>25</sup>	Physiotherapist	2 sessions p/week 4 one hour education sessions over 4 weeks	↓ pain	↓ disability	↓ health care utilization
Moseley <sup>26</sup>	Physiotherapist	2 treatments p/week 4 x 1hr or one 4hr education session over 4 weeks	↓ pain	↓ disability	
Aure <sup>23</sup>	Physiotherapist	16 treatments 45 mins each 2 x per wk over 8 weeks	↓ pain ability	↓ disability	↑ work
Brox <sup>20</sup>	Physiotherapist	25 hrs per week (1st, 4th & 5th week) home exercise 2nd & 3rd week	↓ pain ability	↓ disability	↑ work
Staal <sup>27</sup>	Physiotherapist	1hr exercise sessions 2 x per wk for up to 3 mths	↓ pain ability	↓ disability	↑ work
Von Korff <sup>28</sup>	Physiotherapist & Psychologist	3-4.5 hrs of education, exercise	↓ pain	↓ disability	
Smeets <sup>24</sup>	Physiotherapist	CT = 11 hrs over 19 contact sessions	↓ pain	↓ disability	(all interventions)

### Intervention Characteristics

Delivery models varied, with contact time ranging from a minimum of three hours to 75 hours.<sup>20,28</sup> Aerobic conditioning was a specific requirement in only two of the studies.<sup>20</sup>

Fitness advice, encouragement to stay active, and postural advice were reported inconsistently across the studies. Dynamic strength and stabilization exercise for the trunk formed the basis of most individual exercise strategies prescribed. Treatment contracts for frequency, duration, and progression of exercise intensity were implemented in two studies.<sup>21,22</sup> Individualized exercise plans using patient specific postures and training targets were used in two studies.<sup>25,26</sup> All studies included a home exercise program.

Interventions that support effective outcomes over longer periods could be reasonably considered of greater clinical value than shorter term outcomes. Seven studies reported on a follow up period of 12 months or more.<sup>20-23,25,26,28</sup> One study provided follow up of 6 months while one study reported only on 10 weeks follow up.<sup>24,27</sup>

**Outcome Measures**

All studies included measurement of pain intensity. Five studies utilized a numerical rating scale (NRS) and four studies a visual analogue scale (VAS). One study included a graded chronic pain scale which has been tested favorably for validity yet lacks evidence for sensitivity to detect change over time.<sup>28</sup>

All studies included a measure of disability. Five studies utilized the Roland Morris Disability Questionnaire (RMDQ), two studies used the Oswestry Disability Index (ODI), and two a low back pain outcome scale that incorporated both measures of pain intensity and functional status that the authors analyzed separately. RMDQ and ODI have good construct validity allowing reasonable comparison of results across the trials in this review.<sup>30</sup>

**Synthesis of findings**

All interventions had a positive effect on clinical outcomes (Table 2). Yet interpretation of trials with technical merit into improved clinical practice remains a challenge for the average clinician. Table 3 synthesizes the evidence dissected from the included trials against evidence quality dimensions.<sup>15</sup> In addition, the evidence was considered qualitatively with reference to the keys aspects of the biopsychosocial approach.<sup>14</sup>

**Table 3 - Synthesis of Evidence Dimensions**

MAIN AUTHOR	STUDY								
	Friedrich <sup>21</sup>	Friedrich <sup>22</sup>	Moseley <sup>25</sup>	Moseley <sup>26</sup>	Aure <sup>23</sup>	Brox <sup>20</sup>	Von Korff <sup>28</sup>	Smeets <sup>24</sup>	Staal <sup>27</sup>
Hierarchy Level	II	II	II	II	II	II	II	II	II
(Study Design)									
Study Quality (PEDro)	Moderate	Moderate	High	High	High	High	High	High	High
Relevance	Good	Good	Good	Good	Good	Fair	Good	Good	Good
(Reader Score)									
Clinically Meaningful	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No *
Change									
Applicability									
. Population	N	N	Y	Y	Y	N	Y	Y	Y
. Replicable by sole practitioner	Y	Y	Y	Y	Y	N	N/A	Y	Y

\* No significance achieved for pain and function outcomes but was a significant reduction in days absent from work

**Strength of the body of evidence**

Five high quality studies provide strong evidence for the effectiveness of biopsychosocial approaches in individual physiotherapy care.<sup>23-26,28</sup> These studies have a population match to the target population (primary care) and are sufficiently well described to be applied by a sole physiotherapy practitioner. Intervention protocols implemented by psychologists in the Von Korff et al trial are not fully described.<sup>28</sup> The physiotherapists in this study contributed to the education programme and provided problem-solving skills for unresolved issues discussed at the initial encounter with the psychologist. It was not determined whether this role could be undertaken by a physiotherapist with appropriate training. The authors state the interventions are compatible with physical therapy practice, yet differ from typical physical therapy practice for back pain.<sup>28</sup> Three studies provided moderately strong evidence.<sup>21,22,27</sup> Educational programs for the therapists implementing the protocols in these studies included training in compliance research and special training in patient-therapist interaction.<sup>21,22,27</sup> This may reduce the generalisability of these findings. These studies highlight the importance of the base level of knowledge and capability of the intervention therapists.

One study provides limited evidence.<sup>20</sup> The material provided by physiotherapists in this program is compatible with typical goals of clinical practice, but the contact time of 25 hours per week, extensive psychometric testing, and an intensive exercise protocol would be difficult to replicate in a clinical setting by an individual physiotherapist.

## DISCUSSION

This review provided a descriptive synthesis and moderately strong evidence for the effect of a biopsychosocial model of care provided by individual physiotherapists. It was the authors' intent that the interventions analysed could reasonably be implemented in clinical practice.<sup>29</sup> To this end the intervention characteristics and outcome measures must be relevant. NRS and VAS are quick, repeatable, and easily understood by patients and therapists. Despite conjecture over the validity and reliability of such outcome measures, they are used widely and reflect reasonable clinical practice. Intervention methodology varied but only Brox et al used an intensive program consistent with multidisciplinary approaches described elsewhere.<sup>1,2,4,8</sup> Themes did emerge on qualitative assessment and are broadly identified.<sup>20</sup>

**Education and Empowerment:** All studies included in this review outlined the need for patients to learn more about the scientific basis of their pain. It is reasonable to conclude that pain education should inform patients about pain physiology and the role of the nervous system. This may facilitate a process of desensitization through a change in symptom interpretation and is consistent with Cognitive Behavioral therapy (CBT) approaches described elsewhere.<sup>31</sup> Understanding behavioral and operant conditioning models, as well as biofeedback principles, is an essential element in the successful management of chronic pain.<sup>7,9,32-34</sup>

Evaluation of the educational elements of the biopsychosocial model will be essential to refine and direct further research. In this review the terms cognitive-behavioural techniques and pain education are used interchangeably but can mean very different things. Education may be simply the teaching of factual content and can variously be applied via pamphlets, videos and back schools. There is little evidence that this form of instruction transfers to higher cognitive skills such as reasoning and problem solving.<sup>35</sup> Inadequate or ineffective education can adversely affect outcomes.<sup>36,37</sup>

**Neurobiological Conditioning:** The studies in this review link cognitive strategies to the physical environment by ongoing interactive learning between the therapist and the patient. Arguably deeper learning may result from the multi-sensory input of a model where physical experiences can provide positive reinforcement as fear and pain abates.<sup>37</sup> One approach combined an educational strategy based on pain physiology with the application of manual therapy for symptom management.<sup>25</sup> This involved spinal manipulation or mobilization, soft tissue and neuromeningeal techniques. Manual therapy is thought to trigger changes to pain mechanisms by activation of endogenous analgesic systems.<sup>38</sup> These movement-based protocols have recently been combined with specific trunk muscle training protocols aimed at a reduction in fatigability of deep spinal stabilizers.<sup>26,39</sup> Manual therapy has been shown to be effective at reducing disability in chronic low back pain when used alone and combined with motor control strategies.<sup>40,41</sup>

A general physiological effect on the sympathetic nervous system can be gained through aerobic conditioning, influencing important neurotransmitters involved in pain. This can lead to a desensitization of symptoms associated with exertion and may provide support for general aerobic and functional conditioning.<sup>42</sup> An analysis of the exercise strategies used in these trials offers little evidence in support of a specific exercise recommendation. This review would be enhanced by more detailed knowledge of the exercise protocols implemented and the biological rationale for their use.

**Graded Exposure:** Graded exposure, or pacing, is the final common theme to emerge on qualitative synthesis. Graded exposure to education and physical conditioning allows rehabilitation to progress as new learning becomes entrenched. Links between education, exercise, and graded exposure must be valued by the intervening therapist. A belief in the reversibility of the condition must be instilled into the patient. Friedrich et al emphasized the importance of enhancing a patient's internal locus of control through mutual decision-making and problem-solving.<sup>21,22</sup> It is important to recognize that the quality of the relationship which develops between the physiotherapist and patient may impact on the outcome.

### Implementation of Approaches

Biopsychosocial concepts currently underpin multi-disciplinary rehabilitation methods and have been shown to be effective at increasing the number of work days, increasing self efficacy and lifting capacity, reducing sick leave, and reducing health care utilization in low back pain patients.<sup>1,3,4,6</sup>

Methods of implementing a biopsychosocial approach varied widely across the studies included in this review. All studies advocate an intervention that falls within the professional knowledge base of physiotherapists and can be implemented by a sole practitioner, but it remains unclear whether the average clinician has the skills to apply these interventions holistically.<sup>44</sup>

### Limitations

The cost effectiveness of programs implemented by multidisciplinary personnel has been highlighted elsewhere; the higher salaries of many health professionals involved make the multi-disciplinary program more expensive.<sup>8</sup> The physiotherapists' income is modest compared to many allied health professionals involved in managing chronic low back pain. This review would also have benefited from a cost analysis. If clinical models such as the ones included in this review can produce highly statistically and clinically significant results from interventions that include minimal health professional involvement and could reasonably be employed in general clinical practice then current notions of management of chronic low back pain can be challenged on the basis of cost alone.

Lack of consensus definitions for keyword terms and assessment of an intervention that overlaps professional boundaries required the casting of a broad search strategy net. Although the process of refining the search is transparent, it relies largely on qualitative evaluation by the author. Two independent reviewers were required. Enlisting the use of experts to develop a definition of the key terms may have resulted in a greater number of studies which could be included.

This search was restricted to experimental studies. Homogeneity of research design imparts greater opportunity to synthesize findings. The ability to compare subjects is important to external generalisability. To the clinician, these aspects of research are initially more relevant than the methodology. When target population, intervention, and outcome measures resonate with the clinician, they are more inclined to explore the less familiar world of research statistics. This review identified intervention subjects that exemplified clients presenting to private physiotherapy clinics. A meta-analysis was not performed in this review and would have allowed more objective appraisal of the evidence.

Qualitative research must be an essential part of future evaluation of the biopsychosocial model. Exploration of the cognitive reasoning behind the social and emotional value of a therapeutic intervention will help direct and refine management.<sup>43</sup> Quantitative research such as the trials included in this review will help ground contextual knowledge in evidence based practice.

### CONCLUSION

An evidence based approach to health care demands physiotherapists utilize practices that are clearly shown to be effective and also challenges practices for which no evidence exists.<sup>45</sup> Clinical physiotherapy practice remains an eclectic mix of assessment tools, treatment protocols, and philosophies.

The studies analyzed in this systematic review offer clear evidence for the effectiveness of a biopsychosocial approach to chronic low back pain. The robustness of these findings is constrained only by the small number of patients undergoing the targeted intervention and narrow research base from which these studies were drawn. Further evaluation of service provision methodologies will inform clinical practice.

The potential use of this model in primary care settings is profound, particularly in rural areas where lack of professional support and specialty services compound difficulties in management.

Future research should include cost effectiveness studies and explore the legitimacy of the physiotherapists' role as primary care provider for this recalcitrant condition.

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