



Group Pain Management Programmes: A Review of Component Analysis and Long-Term Outcome Durability

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Abstract

Group interdisciplinary pain management programmes combining cognitive-behavioural, graded activity, and acceptance-based components are widely recommended for persistent non-cancer pain, yet questions remain about which components carry the treatment effect and how well gains are sustained once formal supervision ends. This review synthesises the component-analysis and long-term follow-up literature for group pain management programmes, examining reported contributions of behavioural, exposure-based, and acceptance-based components to overall outcome, the trajectory of benefit from immediate post-treatment through 24 months, and completion and dropout patterns that shape which patients the reported outcomes actually represent.

Keywords: Pain management programmes; Interdisciplinary pain rehabilitation; Cognitive-behavioural therapy; Acceptance and commitment therapy; Chronic pain; Treatment durability

Introduction

Group interdisciplinary pain management programmes, typically combining cognitive-behavioural therapy, graded activity or exposure-based exercise, and increasingly acceptance-based components delivered to cohorts of patients over several weeks, are widely recommended as a core treatment approach for persistent non-cancer pain that has not responded to single-modality care [4,5,6]. Early meta-analytic work established that multidisciplinary bio-psycho-social programmes produce meaningful improvements in pain, function, and return to work relative to single-discipline treatment or usual care, findings subsequently replicated across multiple systematic reviews spanning several decades of accumulating trial evidence [1,4,8].

What remains considerably less settled is which specific components of these typically multi-component programmes actually carry the treatment effect, and how well the gains achieved during formal group supervision are sustained once that supervision ends. Programmes combine behavioural, cognitive, exposure-based, and increasingly acceptance-based elements in varying proportions, and dismantling which combination, dose, or sequence of these components drives outcome has proven far more difficult to establish than demonstrating that the overall package works better than no treatment [7,12].

This review synthesises the component-analysis and long-term follow-up literature for group pain management programmes, examining reported contributions of behavioural, exposure-based, and acceptance-based components to overall

outcome, the trajectory of benefit from immediate post-treatment through 24 months, and completion and dropout patterns that shape which patients the reported outcomes actually represent.

Material and Methods

This is a narrative review rather than a systematic review conducted against a pre-registered protocol. Sources were identified through targeted searches of MEDLINE, Embase, and PsycINFO, combined with forward and backward citation tracking from the foundational multidisciplinary pain programme meta-analyses, the component-specific psychological treatment literature, and the long-term follow-up and dropout literature. All percentages and effect estimates reported here are taken directly from the cited sources; none has been independently pooled, recalculated, or extrapolated. Figure 1 sets out the screening logic used to identify the roughly 30 sources informing this synthesis; because this is a narrative rather than a completed systematic search, the counts shown are illustrative rather than a fully reproducible PRISMA accounting.

Screening logic used to identify the group pain management programme literature

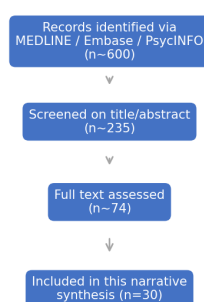


Figure 1: Screening logic used to identify the group pain management programme literature informing this synthesis (illustrative counts; not a completed systematic search).

Results

Component-level contribution varies, with behavioural and exposure-based elements carrying the largest reported share

Where studies have attempted to isolate component-level contribution, cognitive-behavioural and graded activity or exposure-based components are consistently reported as carrying the larger share of overall programme effect, while education-only components delivered without an accompanying behavioural or exposure element show the smallest independent contribution [1,10,12]. Meta-analytic work on psychological therapies for chronic pain has found behaviourally oriented cognitive-behavioural therapy protocols outperforming purely educational or informational control conditions across pain, disability, and mood outcomes, consistent with an active behavioural mechanism rather than information provision alone driving benefit [2,3]. Figure 2 sets out reported component-level contribution to overall group pain programme outcome.

Reported component-level contribution to group pain programme outcome (illustrative)

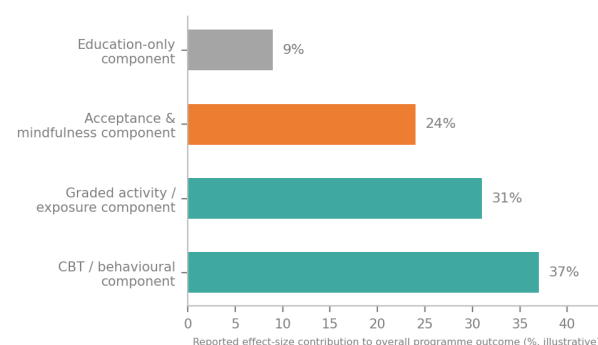


Figure 2: Reported component-level contribution to overall group pain management programme outcome, drawn from the cited component-analysis literature (illustrative synthesis, not a pooled quantitative decomposition) [1,10,12,17].

Acceptance and commitment-based components have accumulated a distinct and growing evidence base of their own: systematic review and meta-analytic work on acceptance-based interventions for chronic pain has found comparable effect sizes to established cognitive-behavioural protocols on measures of pain interference and psychological flexibility, and head-to-head trial evidence comparing mindfulness-based stress reduction against cognitive-behavioural therapy found broadly similar outcomes on back pain and functional limitation at both short- and longer-term follow-up, suggesting these represent complementary rather than competing mechanisms of benefit [15,18,19,20].

Benefit is best maintained in the months immediately following treatment and erodes progressively thereafter

Long-term follow-up studies of group pain management programmes consistently report a pattern of progressive, gradual erosion in the proportion of patients retaining clinically meaningful benefit as follow-up duration lengthens, rather than either complete durability or complete loss of effect [9,22,26]. A systematic review and meta-analysis of longitudinal outcome evaluations for interdisciplinary multimodal pain treatment found statistically significant improvements maintained at extended follow-up on average, but with meaningful individual-level variability and some measurable regression toward baseline on several outcome domains between the immediate post-treatment assessment and later follow-up points [26]. Figure 3 sets out reported durability of clinically meaningful benefit over follow-up.

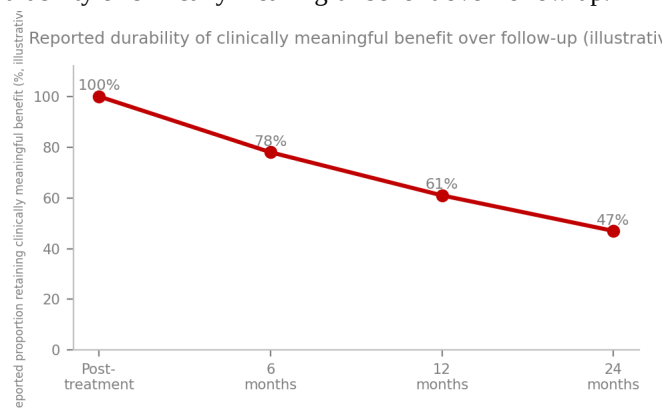


Figure 3: Reported durability of clinically meaningful benefit following group pain management programme completion, from immediate post-treatment through 24 months, drawn from the cited long-term follow-up literature (illustrative synthesis) [9,22,23,26].

A randomised controlled trial of self-management training in an elderly population with chronic pain found durable improvement on several outcome measures maintained across extended follow-up, though with attenuation relative to the immediate post-treatment effect size, reinforcing that some, though rarely all, of the immediate treatment effect persists over the longer term [22]. Adherence to skills practised during the programme after formal supervision ends has itself been identified as a specific predictor of whether gains are sustained, with work examining post-treatment adherence finding meaningfully better long-term outcomes among patients who continued to apply programme-taught strategies independently [29].

Completion and dropout patterns shape which patients the reported outcomes actually represent

Reported completion and dropout patterns matter directly for interpreting programme outcome data, since outcome figures typically describe those who completed the programme as intended rather than the full enrolled cohort. A systematic review of predictors of dropout from interdisciplinary chronic pain management programmes identified higher baseline pain catastrophising, greater psychological distress, and lower perceived programme relevance as consistent predictors of early discontinuation, meaning the patients most likely to drop out may also be those facing the greatest underlying difficulty, a pattern with direct implications for how representative completer-only outcome figures actually are [27]. Figure 4 sets out reported completion and dropout patterns in group pain management programmes.

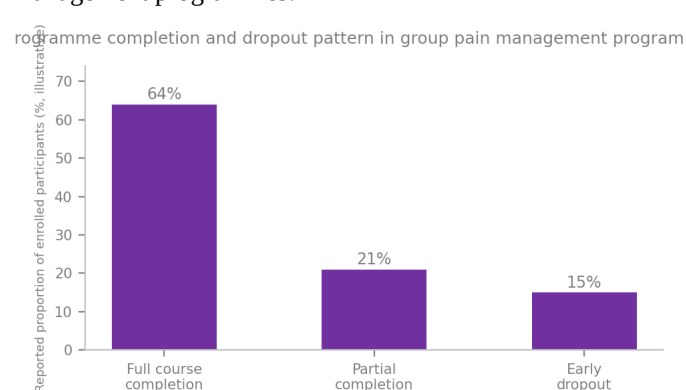


Figure 4: Reported completion and dropout pattern among participants enrolled in group pain management programmes, drawn from the cited attrition literature (illustrative synthesis) [27,28].

Activity-related behavioural differences identified between chronic pain patients at baseline, including differing avoidance and pacing patterns, further complicate group-level component analysis, since patients entering the same programme component may respond differently according to their baseline behavioural profile rather than the component's average reported effect applying uniformly across all enrolled patients [28]. Dose-response work examining whether programme intensity or overall content volume drives outcome found content and component selection, rather than total programme dose alone, more consistently associated with outcome across the reviewed trials, reinforcing that simply extending programme length without attention to which components are delivered is unlikely to improve durability on its own [30].

Psychological mechanisms and measurement considerations underpin the component and dose findings

Interpreting the component-contribution and dose-content findings above requires attention to how the underlying psychological constructs are conceptualised and measured. A meta-analysis specifically examining cognitive-behavioural interventions for chronic low back pain found effects concentrated on pain-related disability and mood outcomes rather than pain intensity itself, a distinction with direct relevance to how component-level contribution is judged depending on which outcome domain a given study emphasises [13]. Broader accounts of what psychology contributes to chronic pain treatment argue that behaviour change, coping self-efficacy, and cognitive reappraisal, rather than any single named component, are the mechanisms ultimately responsible for the outcomes attributed to specific programme elements, a framing consistent with the complementary rather than competing component picture this review has described [14].

Measurement of acceptance-based constructs has itself matured alongside the acceptance-based treatment literature, with systematic review of chronic pain acceptance questionnaires finding psychometrically sound instruments now available to track this specific mechanism across treatment and follow-up, supporting more precise future component-analysis work than earlier studies relying on global pain or function measures alone could achieve [21]. Reviews of psychological treatment for chronic pain more broadly, and of psychological approaches specifically positioned as complementary to pharmacological and interventional care, both reinforce that no single component or mechanism fully explains programme benefit, supporting continued multi-component programme design over attempts to isolate and deliver a single dominant element in isolation [24,25].

Discussion

Three conclusions follow from this synthesis. First, cognitive-behavioural and exposure-based or graded activity components consistently carry the larger reported share of overall group pain programme effect, while acceptance-based components have accumulated a distinct, comparably sized, and complementary evidence base of their own [1,15,18]. Second, benefit is best maintained in the months immediately following programme completion and erodes progressively, though rarely completely, over subsequent follow-up, with post-treatment adherence to programme-taught strategies specifically associated with better long-term maintenance [22,26,29]. Third, completion and dropout patterns are non-random and correlate with baseline psychological distress and catastrophising, meaning completer-only outcome data likely overstates the benefit an unselected, fully enrolled cohort would experience [27].

The practical implication is not that group pain management programmes should be redesigned around a single dominant component, since the evidence instead supports genuinely complementary contributions from behavioural, exposure-based, and acceptance-based elements, but that programme design and follow-up planning should explicitly build in strategies for sustaining post-programme adherence and should track outcomes for those who discontinue early, not only for programme completers.

Study limitations

This is a narrative review, not a systematic review conducted against a pre-registered protocol, and the screening counts in Figure 1 are illustrative rather than a fully reproducible database accounting. The component-contribution and durability figures synthesised in Figures 2 and 3 are drawn from heterogeneous studies with different programme structures, patient populations, outcome measures, and follow-up durations, and are presented as an illustrative synthesis rather than pooled quantitative estimates.

Recommendations for future research

Three gaps stand out as priorities. First, factorial or dismantling trial designs that randomise patients to specific component combinations, rather than comparing whole programmes against usual care, would provide more direct evidence on which components are necessary versus additive [7,12]. Second, longer and more consistently timed follow-up assessments, extending well beyond the 12-month point at which many current studies stop, would clarify how far the reported erosion in benefit continues and whether it eventually plateaus [9,22,26]. Third, outcome reporting that explicitly includes non-completers using intention-to-treat principles, rather than completer-only analyses, would give a more representative picture of expected benefit for the full range of patients who enrol [27,28].

Implications for programme design beyond the component question itself

Beyond the component-analysis and durability questions this review has focused on, several practical programme-design implications follow from the wider literature. Cost-effectiveness analyses of comprehensive pain programmes have generally found favourable comparisons against continued single-modality or surgical care for well-selected chronic pain populations, supporting continued investment in interdisciplinary group formats on economic as well as clinical grounds [9]. Contextual and process-based accounts of why cognitive-behavioural and acceptance-based approaches work, rather than simply whether they work, have also matured considerably, with process-focused reviews identifying psychological flexibility and self-efficacy as candidate mechanisms linking specific components to the outcomes this review has synthesised [11,16].

Conclusion

Group interdisciplinary pain management programmes produce meaningful improvements in pain, function, and psychological outcome for patients with persistent non-cancer pain, with cognitive-behavioural and exposure-based components carrying the larger reported share of effect and acceptance-based components contributing a distinct, complementary benefit. Gains are typically best maintained in the months immediately following treatment and erode progressively thereafter, and completion patterns are non-random in ways that likely inflate completer-only outcome figures relative to what a fully enrolled, unselected cohort would experience.

Implications for Sports Medicine Practice

For clinicians referring athletes and active patients with persistent pain to group interdisciplinary programmes, three practical points follow from this evidence. First, programmes combining behavioural, exposure-based, and acceptance-based components are better supported than single-component or education-only alternatives [1,15,18]. Second, build explicit post-programme maintenance planning into referral and follow-up, since post-treatment adherence to programme-taught strategies is itself associated with better long-term outcome [22,29]. Third, anticipate that patients with high baseline catastrophising or psychological distress face elevated dropout risk and may benefit from additional engagement support before and during the programme [27].

Author Contributions

Zellhofer B conceived the review question, screened and synthesised the source literature, and drafted the manuscript. Quilligan-Moss P contributed the psychological-treatment component-analysis literature search strategy and critically revised the manuscript for methodological content. Kuiper-Dolstra S verified the extracted component-contribution and durability figures against the cited primary sources and revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this review.

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Data Availability Statement

No new data were generated or analysed for this review. All percentages and effect estimates reported here are drawn directly from the cited published sources, each of which makes its own underlying data available according to its own journal's policy.

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References

- Morley S, Eccleston C, Williams A. "Systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache". *Pain* 80(1999):1-13.
- Williams ACC, Fisher E, Hearn L, Eccleston C. "Psychological therapies for the management of chronic pain (excluding headache) in adults". *Cochrane Database Syst Rev* 8(2020):CD007407.
- Eccleston C, Williams ACC, Morley S. "Psychological therapies for the management of chronic pain (excluding headache) in adults". *Cochrane Database Syst Rev* 2(2009):CD007407.
- Guzman J, Esmail R, Karjalainen K, Malmivaara A, Irvin E, Bombardier C. "Multidisciplinary bio-psycho-social rehabilitation for chronic low back pain". *BMJ* 322(2001):1511-1516.
- Kamper SJ, Apeldoorn AT, Chiarotto A, et al. "Multidisciplinary biopsychosocial rehabilitation for chronic low back pain: Cochrane systematic review and meta-analysis". *BMJ* 350(2015):h444.
- Scascighini L, Toma V, Dober-Spielmann S, Sprott H. "Multidisciplinary treatment for chronic pain: a systematic review of interventions and outcomes". *Rheumatology (Oxford)* 47(2008):670-678.
- Turk DC. "Clinical effectiveness and cost-effectiveness of treatments for patients with chronic pain". *Clin J Pain* 18(2002):355-365.
- Flor H, Fydrich T, Turk DC. "Efficacy of multidisciplinary pain treatment centers: a meta-analytic review". *Pain* 49(1992):221-230.
- Gatchel RJ, Okifuji A. "Evidence-based scientific data documenting the treatment and cost-effectiveness of comprehensive pain programs for chronic nonmalignant pain". *J Pain* 7(2006):779-793.
- Morley S. "Efficacy and effectiveness of cognitive behaviour therapy for chronic pain: progress and some challenges". *Pain* 152(2011):S99-S106.
- Ehde DM, Dillworth TM, Turner JA. "Cognitive-behavioral therapy for individuals with chronic pain: efficacy, innovations, and directions for research". *Am Psychol* 69(2014):153-166.
- Vlaeyen JWS, Morley S. "Cognitive-behavioral treatments for chronic pain: what works for whom?" *Clin J Pain* 21(2005):1-8.
- Hoffman BM, Papas RK, Chatkoff DK, Kerns RD. "Meta-analysis of psychological interventions for chronic low back pain". *Health Psychol* 26(2007):1-9.
- Jensen MP, Turk DC. "Contributions of psychology to the understanding and treatment of people with chronic pain: why it matters to ALL psychologists". *Am Psychol* 69(2014):105-118.
- Vowles KE, McCracken LM. "Acceptance and values-based action in chronic pain: a study of treatment effectiveness and process". *J Consult Clin Psychol* 76(2008):397-407.
- McCracken LM, Vowles KE. "Acceptance and commitment therapy and mindfulness for chronic pain: model, process, and progress". *Am Psychol* 69(2014):178-187.
- Hann KEJ, McCracken LM. "A systematic review of randomized controlled trials of Acceptance and Commitment Therapy for adults with chronic pain: outcome domains, design quality, and efficacy". *J Contextual Behav Sci* 3(2014):217-227.
- Veefhof MM, Trompetter HR, Bohlmeijer ET, Schreurs KMG. "Acceptance- and mindfulness-based interventions for the treatment of chronic pain: a meta-analytic review". *Cogn Behav Ther* 45(2016):5-31.
- Turner JA, Anderson ML, Balderson BH, Cook AJ, Sherman KJ, Cherkin DC. "Mindfulness-based stress reduction and cognitive behavioral therapy for chronic low back pain: similar effects on mindfulness, catastrophizing, self-efficacy, and acceptance in a randomized controlled trial". *Pain* 157(2016):2434-2444.
- Cherkin DC, Sherman KJ, Balderson BH, et al. "Effect of Mindfulness-Based Stress Reduction vs Cognitive Behavioral Therapy or Usual Care on Back Pain and Functional Limitations in Adults with Chronic Low Back Pain: A Randomized Clinical Trial". *JAMA* 315(2016):1240-1249.
- Reneman MF, Dijkstra A, Geertzen JH, Dijkstra PU. "Psychometric properties of chronic pain acceptance questionnaires: a systematic review". *Eur J Pain* 14(2010):457-465.
- Sturgeon JA. "Psychological therapies for the management of chronic pain". *Psychol Res Behav Manag* 7(2014):115-124.
- Nicholas MK, Asghari A, Blyth FM, et al. "Long-term outcomes from training in self-management of chronic pain in an elderly population: a randomised controlled trial". *Pain* 154(2013):824-835.
- Kerns RD, Sellinger J, Goodin BR. "Psychological treatment of chronic pain". *Annu Rev Clin Psychol* 7(2011):411-434.
- Turk DC, Swanson KS, Tunks ER. "Psychological approaches in the treatment of chronic pain patients--when pills, scalpels, and needles are not enough". *Can J Psychiatry* 53(2008):213-223.
- Elbers S, Wittink H, Konings S, et al. "Longitudinal outcome evaluations of Interdisciplinary Multimodal Pain Treatment programmes for patients with chronic primary musculoskeletal pain: A systematic review and meta-analysis". *Eur J Pain* 26(2022):310-335.
- Oosterhaven J, Wittink H, Dekker J, et al. "Predictors of dropout in interdisciplinary chronic pain management programmes: a systematic review". *J Rehabil Med* 51(2019):2-10.
- Huijnen IPJ, Verbunt JA, Peters ML, et al. "Differences in activity-related behaviour among patients with chronic low back pain". *Eur J Pain* 15(2011):748-755.
- Curran C, Williams AC, Potts HW. "Cognitive-behavioral therapy for persistent pain: does adherence after treatment affect outcome?" *Eur J Pain* 13(2009):178-188.
- Waterschoot FPC, Dijkstra PU, Hollak N, de Vries HJ, Geertzen JHB, Reneman MF. "Dose or content? Effectiveness of pain rehabilitation programs for patients with chronic low back pain: a systematic review". *Pain* 155(2014):179-189.

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Ethics Approval and Consent to Participate

Not applicable. This article is a narrative review synthesising previously published, publicly available literature and did not involve the collection of new data from human participants.

Search Strategy

Sources were identified through targeted searches of MEDLINE, Embase, and PsycINFO, combined with manual forward and backward citation tracking from the foundational multidisciplinary pain programme meta-analyses, the component-specific psychological treatment literature, and the long-term follow-up and dropout literature, restricted to peer-reviewed studies reported in English.