

**Acceptance and mindfulness
in the management of persistent pain:
a summary of recent relevant research
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Key messages:

- A large proportion of patients attending for osteopathic care do so for persistent pain.
- Mindfulness-based interventions (MBIs) can positively influence the way in which individuals *respond to* and *cope* with pain experiences. Evidence that MBIs alter the experience of pain itself is weak.
- Depression is a common comorbidity, and patients with persistent pain are more likely to have higher levels of anxiety symptoms. Osteopaths should be aware of the scope of their practice, and should refer patients where appropriate.
- Study findings should be interpreted with caution, since many trials of MBIs have methodological limitations. Further research is likely to change our understanding of the role of MBIs in the management of persistent pain.

CONTEXT

This article is intended to give a brief overview of predominantly manual therapy and osteopathic-relevant research, with references provided for further reading. It is not intended to be an exhaustive account of the literature.

Acceptance and mindfulness in the management of persistent pain

A large proportion of patients attending for osteopathic care do so for persistent pain (Leach et al 2013). This summary seeks to identify and summarise current evidence to inform the management of patients with persistent pain.

This summary was based on existing published systematic reviews, Clinical Knowledge Summaries (CKS), and National Institute for Health and Care Excellence (NICE) guidelines.

We identified and reviewed four systematic reviews published between 2011 and 2017 to create this summary (Simpson et al 2017; Bawa et al 2015; Song et al 2014; and Chiesa & Serretti 2011). All four reviews assessed clinical outcomes such as pain intensity and depression. In addition, Bawa et al (2015) assessed other outcomes such as economic outcomes, health related quality of life and physical functioning; and Simpson et al (2017) assessed a wide range of primary and secondary outcomes including pain interference, disability, acceptance, activities engagement, global impression of change, sick-leave and medical utilisation.

Terminology: persistent or chronic pain?

Chronic pain is defined by the International Association for the Study of Pain as “that which has persisted beyond normal tissue healing time, usually interpreted as 3 months” (Taylor et al 2016). The American Geriatrics Society Panel on the Pharmacological Management of Persistent Pain in Older Person (2009) explain that, ‘in the medical literature, the terms “persistent pain” and “chronic pain” are often used interchangeably, but the newer term, “persistent pain,” is preferred, because it is not associated with the negative attitudes and stereotypes that clinicians and patients often associate with the “chronic pain” label.’

Acceptance and mindfulness-based techniques

Acceptance and mindfulness-based interventions are widely-used for a variety of conditions (Song et al 2014). Some distinctions between these similar approaches are described here.

Mindfulness is an acceptance-based approach that involves paying attention to the present moment without trying to change or control any thoughts or feelings (Chiesa & Serretti 2011). The goal of mindfulness-based interventions (MBIs) is therefore to modify the way in which individuals respond to experiences, rather than to alter the experience itself (Bawa et al 2015).

The most frequently cited method of mindfulness training is the mindfulness-based stress reduction programme (MBSR). Other approaches include mindfulness-based cognitive behaviour therapy (MBCT). Courses are typically taught in groups and may last 8-10 weeks. Participants learn mindfulness practices and recognise patterns of thinking and feeling that cause distress or worsen their symptoms.

Acceptance and commitment therapy (ACT) aims to modify behaviours, primarily by focusing on the development of psychological flexibility. This encourages patients to either engage with a pattern of behaviours or to change that pattern, depending on the situation and the patient's goals (McCracken et al 2013). The duration and number of sessions of ACT can vary depending on the needs of the client or treatment provider.

Who was involved in the studies?

The populations studied were similar in three of the four papers (Bawa et al 2015; Song et al 2014; and Chiesa & Serretti 2011) and included: fibromyalgia, rheumatoid arthritis, chronic musculoskeletal pain, failed back surgery syndrome (Bawa et al, 2015), female breast cancer survivors and mixed aetiology. Simpson et al (2017) included cohorts with chronic pain, fibromyalgia, chronic pain with whiplash disorders, functional impairment due to pain, and those at risk of increased sick leave. All four reviews reported that the populations were predominantly female and white.

The control groups were similar and included active comparators such as education, support groups, massage, and cognitive behaviour therapy (CBT) as well as inactive comparators such as waiting list groups. One review included a study with a pharmacological intervention as a comparator (Simpson et al 2017).

Comorbidities of persistent pain

All studies found tentative evidence to suggest that MBIs can help psychological issues such as depressive symptoms. Persistent pain interacts with social and psychological factors and the strength of this interaction is stronger for depression and anxiety than for the other mental health disorders (Song 2014).

Improvements in coping, acceptance and tolerance of pain were found by Chiesa & Serretti (2011) and Bawa et al (2015). Chiesa & Serretti (2011) also noted improvements in quality of life and reported stress levels. This is reinforced by Song

et al who reported an improvement in psychological comorbidities such as anxiety, and by Simpson et al who found significant effects for anxiety and depression related outcomes.

MBIs/ACTs may improve the ability to cope with persistent pain

All reviews found a significant effect for MBIs/ACTs in improving the ability to cope with persistent pain.

The results of 3 of the studies included in this review (Bawa et al 2015, Song et al 2014, Chiesa & Serretti 2011) do not show a significant effect on pain intensity for mindfulness-based interventions. In contrast, Simpson et al found moderate- and low-quality evidence to suggest that ACT had a significant effect on pain intensity.

Osteopaths and manual therapists may wish to consider MBIs/ACTs when discussing options with patients, however all clinicians must be aware of their scope of practice, and onward referrals should be made where appropriate.

Limitations of the studies

The results should be interpreted with caution, since the reviewers note that all trials suffered from limitations that reduce confidence in their reported findings. Further research is therefore likely to change our understanding of the role of MBIs in the management of persistent pain.

All reviews reported that trials were of variable quality. The need for better-designed and adequately powered trials was a consistent recommendation. Common limitations in the reviewed trials included: heterogeneity in patient and control groups; small sample sizes; self-rated scales; high rates of attrition; a level of variability in the mindfulness-based interventions used; and a lack of fidelity to the study intervention being reported. Bawa et al additionally questioned the value of measuring pain intensity, noting that MBIs aim to alter response to an experience rather than the experience itself.

Summary table

Authors	Type of study	Inclusion and exclusion criteria	Number of studies included	Interventions	Outcomes	Analysis	Conclusions
Bawa, et al., 2015	Systematic review and meta-analysis	<p>Studies were included if they were randomised controlled trials with active or inactive control groups, and if they measured any combination of economic, clinical, and humanistic outcomes at end point.</p> <p>Chronic pain was defined as pain persisting for 13 weeks or longer. Studies of patients solely with irritable bowel syndrome, multiple sclerosis, chronic fatigue syndrome, or with malignant pain were excluded.</p> <p>There were no limitations on age, ethnicity, or sex of study populations, nor sites. There were no restrictions on dates, language, or publication status.</p>	11	<p>MBSR and MBCT interventions. Modifications of the standard MBSR or MBCT courses were considered if they included group-based mindfulness meditation tuition and a course length of at least 6 weeks.</p> <p>Pain conditions included: fibromyalgia, rheumatoid arthritis, chronic musculoskeletal pain, failed back surgery syndrome, and pain of mixed aetiology.</p>	<p>Main outcomes measures were pain intensity, depression, physical functioning, quality of life, pain acceptance, and mindfulness. Economic outcomes were “rarely reported”.</p> <p>Included studies were assessed with the Yates Quality Rating Scale (Yates et al 2005).</p> <p>Outcomes were compared at 8 weeks (the time for a “standard mindfulness programme”) between intervention and control groups.</p>	<p>Meta-analysis showed effect sizes for clinical outcomes ranged from 0.12 for depression (95% confidence interval [CI] = -0.05 to 0.30) to 1.32 for sleep quality (95% CI = -1.19 to 3.82), and for humanistic outcomes 0.03 for mindfulness (95% CI = -0.66 to 0.72) to 1.58 for pain acceptance (95% CI = -0.57 to 3.74).</p> <p>Studies comparing active and inactive control groups showed smaller effects.</p>	<p>The authors conclude that there is “insufficient evidence that mindfulness intervention relieves pain intensity. However, it improves depression and trait anxiety in patients with chronic pain. Further research in larger, properly powered, and better-designed studies is warranted.”</p>
Song, et al., 2014	Systematic review and meta-analysis	<p>RCTs of mindfulness intervention for chronic pain written in English and published up to January 2012 were considered.</p> <p>Studies were included if their populations comprised adults aged at least 18 years with pain for a minimum of three months.</p>	8	<p>MBSR, or mindfulness meditation, or MBI, or “loving-kindness meditation”. 7 trials were conducted for 8 weeks, 1 for 6 weeks. Participants in 3 of the studies embarked on a “retreat”, 4 trials used compact discs for daily practice.</p>	<p>Primary outcome measures were pain symptoms including pain intensity and pain acceptance. Secondary outcomes were psychological symptoms including depression and anxiety.</p> <p>Risk of bias was assessed for all studies using the</p>	<p>Meta-analysis showed mindfulness intervention compared to control had no specific effect on reducing pain intensity (weighted mean difference 3.24, 95% confidence interval [CI]: -8.92 to 2.45).</p> <p>Mindfulness intervention led to greater</p>	<p>The authors conclude: “There is limited evidence for effectiveness of mindfulness-based interventions for patients with chronic pain. Better-quality studies are required.”</p>

				Pain conditions included: chronic low back pain, “chronic pain disorder”, fibromyalgia, and pain following breast cancer survival.	revised Jadad Scale (Jadad et al 1996).	improvement in psychological comorbidity with chronic pain, such as depression (weighted mean difference -3.91, 95% CI -5.94 to -2.32) and trait anxiety (weighted mean difference -4.07, 95% CI -4.48 to -3.65).	
Chiesa and Serretti, 2011	Systematic review	Articles, letters and abstracts about mindfulness-based interventions for chronic pain, written in English, and published up to July 2009 were considered. Pain had to have lasted at least months. Exclusion criteria were: absence of a control group, qualitative reports, speculative reports, and review articles.	10	MBSR, or MBI, or mindfulness meditation, or “stress reduction”. Pain conditions included low back pain, fibromyalgia, “musculoskeletal pain”, and rheumatoid arthritis.	Primary outcomes were the reduction of pain and the reduction of depressive symptoms. Secondary outcomes were the improvement of coping with pain, physical function, stress reduction and quality of life, and psychological changes related to the intervention. Risk of bias was assessed for all studies using the revised Jadad Scale (Jadad et al 1996).	The authors state that differences in comparison and control groups, and the heterogeneity of diseases under investigation prevented them from performing meta-analysis. Consequently they take a narrative approach to analysis.	The authors conclude that “there is not yet sufficient evidence to determine whether MBIs could be more efficacious than nonspecific interventions such as support and educational control groups for the reduction of pain and depressive symptoms in patients with chronic pain. Further larger and properly powered studies are needed”.
Simpson, et al., 2017	Systematic review	RCTs, controlled clinical trials and cohort trials with comparison groups reported in English were considered. Populations with chronic, persistent or intractable pain using ACT as in intervention in adult populations. Excluded were trials involving acute pain, trials involving pain of malignancy chronic musculoskeletal pain such as chronic low back pain in the clinical setting and paediatric	10	ACT, although there was no consistent ACT intervention across the 10 trials. ACT was administered to individuals or to groups or varying sizes; sessions were of various lengths and for and for a various number of weeks.	Fifteen primary outcome measures were used across the 10 trials. In total 44 primary and secondary outcome measures were used. Primary outcome measures were: pain interference, pain disability, pain intensity, fibromyalgia impact, anxiety, depression, pain willingness, activities engagement, pain acceptance, psychological fusion, pain avoidance, increase in physical health and level of function.	The authors state that heterogeneity across sample populations, ACT interventions, outcome measures and risk of bias ratings precluded opportunities for meta-analysis. Consequently they take a narrative approach to analysis.	The authors conclude that “moderate and low quality evidence suggests that ACT demonstrates promise as a therapeutic intervention for non-malignant, chronic pain populations with significant effects across a number of pain, anxiety and depression related outcomes.” They caution that the findings should be interpreted judiciously due to the

		chronic pain studies. Also excluded were case-series, case-controlled and case reports as well as non-ACT interventions such as CBT alone.					limitations of the included studies.
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ACT: Acceptance and commitment therapy

RCT: randomised-controlled trial

MBSR: mindfulness-based stress reduction programme

MBCT: mindfulness-based cognitive therapy

MBI: mindfulness-based intervention

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