

# Body In Mind Training: Mindful Movement for the Clinical Setting

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## Abstract

As the evidence base for mindfulness based interventions (MBIs) grows, there is considerable interest in what the “next wave” of MBIs might look like. In the following article, the rationale, development, and initial implementation of a mindful movement-based intervention, body in mind training (BMT), is described. BMT is a mindfulness training approach informed by neuroscience data and using embodied learning that can be used for both individuals and groups in the clinical setting. It provides an alternative methodology for working mindfully with clients who might struggle, for whatever reason, to engage with the currently available MBI protocols. The BMT Framework provides a guide to therapists and health care workers to implement mindfulness in their personal and professional lives and from this, support clients in their exploration of mindfulness.

The intention of this article is to share, in Part I, the underlying theoretical concepts and research underpinning this predominantly body and movement based mindfulness training method. Part II details how the BMT framework and BMT group protocol evolved from trainings and consultations with a variety of health care workers. Part III provides further details about the implementation of the BMT framework in the clinical environment. This article is not a review of mindfulness but rather a presentation of a model alongside the early observations of its implementation.

It is hoped that this paper might inspire others to consider how to integrate mindful movement into their work and stimulate research and debate in this different route to mindfulness. Working from neurological principles this approach has transdiagnostic appeal. If the principles of mindfulness and neuroscience knowledge are combined, the BMT Framework can be used in any setting.

*Key words:* mindfulness, mindful movement, embodied psychotherapy, neuroscience, clinical mindfulness.

## Part 1: theoretical underpinnings of body in mind training (BMT)

### *The task of therapy*

For clients entering psychological services, a key task is to enhance emotion regulation skills (Berking et al, 2008). Emotion regulation is defined

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as “all of the conscious and non-conscious strategies we use to increase, maintain, or decrease one or more components of an emotional response” (Gross, 2001, p. 215). Emotion dysregulation presents in both chronic and acute forms and arises following emotional or physical trauma (Cicchetti, Ackerman, & Izard, 1995; Thayer & Lane, 2000). Fundamentally, a proactive and effective emotion regulation requires the integration of bodily and cognitive processes in a way that brings into consciousness the sensations, mental habits, and emotional states that usually lie outside of awareness (Maiese, 2011; Mehling et al., 2011; Niedenthal, 2007; Thayer & Lane, 2000).

### ***What is currently offered?***

In the currently prevalent cognitive behavioural therapy (CBT) approach, the collaborative therapeutic endeavour requires access to and manipulation of dysfunctional cognitions and attitudes (Beck & Beck, 2011; Leahy, 2006), emphasising a more mental as compared to bodily psychotherapeutic dimension. This explicit process relies on the ability to overtly label and engage with cognitive and emotional material—changing cognition in order to impact on emotion (Leajy, Tirch, & Napolitano, 2011). While a large evidence base supports this approach (Roth & Fonagy, 2005) clients with neurological damage, learning difficulties, or with chronic, complex, or severe issues, may be less well served by this approach (Lynch, Laws, & McKenna, 2010; Meyer & Hautzinger, 2012). Psychoanalytic approaches work more implicitly (Schore, 2011) through slow and dynamic modifications of the underlying structure of mind. This makes the effects hard to measure and as a result, psychodynamic approaches are often positioned outside of the mainstream health services (Sandell, Blomberg, & Lazar, 1997).

More recently, the growing field of mindfulness based interventions (MBIs) offers a new and refreshing perspective (Eberth & Sedlmeier, 2012; Kabat-Zinn, 2003). These approaches include mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), acceptance and commitment therapy (ACT), and dialectical behavioural therapy (DBT). All of these approaches integrate aspects of mindfulness (to a greater or lesser degree) and a growing evidence base supports their efficacy across a range of mental and physical health conditions (Baer, 2005; Carlson, 2012; Mace, 2007).

The MBIs are structured in an integrative body/mind framework, with most working through the body via a specific aspect of cognition (attention training). MBIs protocols support the development of “the moment by moment attention to bodily sensations and thoughts” (Kabat-Zinn, 2003; Segal, Williams, & Teasdale, 2002; Williams & Penman, 2012).

The progressive development of different metacognitive abilities is the driver behind this training, but the fundamental role of the body to the effects is often played down (Worsfold, 2009).

### ***The body in mindfulness training***

In Buddhist traditions, mindfulness starts with the breath and body. “If one thing . . . is developed and cultivated, the body is calmed, the mind is calmed, discursive thoughts are quieted, and all wholesome states that partake of supreme knowledge reach fullness of development. What is that one thing? It is mindfulness directed to the body” (Bodhi & Bodhi, 2012). This emphasis on the body is not exclusive to Eastern philosophies. Nietzsche commented “Behind your thoughts and feelings, my brother, there stands a mighty ruler, an unknown sage—whose name is self. In your body he dwells; he is your body. There is more reason in your body than in your best wisdom.” (Nietzsche, 1954).

Mindfulness of the body is the first step in the task of calming the mind and regulating emotions as taught in MBIs and a different sort of engagement with the non-verbal “felt sense” of the body is fundamental to MBIs and their effects. The fact that bodily sensations can only be experienced in the present moment, and particularly so during movement, makes them an accessible entry point to mindfulness. However, assessment of bodily awareness is not usually a feature of these studies. Measurement of bodily awareness is a developing, but problematic area of research (Mehling et al., 2011), relying on subjective reports of non-verbal experiences.

Neurophysiological research demonstrates that mindfulness does indeed, start with the body (Kerr, Sacchet, Lazar, Moore, & Jones, 2013). Kerr and colleagues state that,

Learning to control alpha oscillations in SI [primary somatosensory cortex] through localized body-focused attention may be a key gateway mechanism for learning to use thalamocortical alpha regulation to suppress irrelevant sensory inputs across sensory neocortex in an internally directed, top-down manner, for forms of regulation such as selective attention and working memory. (Kerr, Sacchet, Lazar, Moore, & Jones, 2013, p. 12)

From attending to the body in this way, follows the ability to regulate more abstract mental sensations such as thoughts, memories, images etc.

Evidence from MBIs supports this notion, if indirectly. The mindful yoga component in MBSR seems particularly potent. The time of yoga homework practice was significantly correlated with a large number of outcome variables: despite being completed on fewer days, and for shorter duration (Carmody & Baer, 2008). It was the only practice

significantly correlated with changes in the “non-judging” component of the five factor mindfulness questionnaire (FFMQ). A predominantly yoga-based mindfulness protocol evaluated in (one of the few) randomised controlled trials (RCTs) was shown to be helpful in binge eating disorder (McIver, O’Halloran, & McGartland, 2009).

Tang and colleagues created an integrative body–mind protocol (based on Chinese medical theory). They showed that after eleven hours of training, healthy participants improved their performance on an attention test. There were also changes in the functional activation and white matter tract integrity of the anterior cingulate cortex (Tang, Lu, Fan, Yang, & Posner, 2012). These studies suggest that body-based practices have a particular potency that may currently be minimised. Worsfold (2009) reminds us that mindfulness of the body as taught in MBIs is more than just a vehicle to effect change in metacognition and highlights the lack of discussion in the mindfulness literature, and clinical theory in general, regarding how the body is conceptualised (Worsfold, 2009).

One speculation is that as many MBIs have been adopted by mental health workers they have migrated into the more known “mental” domain. This may be due to a training that prioritises the mental, lack of confidence in body-based practices, or the prevalence of burnout and “wounded healers” in the profession (Carl Jung and Marsha Linehan being two well-known examples) making it hard for this group to engage with their own bodily experience. Although MBIs are offered to our clients, the suffering and need among staff is significant. Staff in UK mental health teams had the highest rates of depersonalisation and emotional exhaustion in a recent European comparison (Hill et al., 2006).

It seems there is much potential for more body and movement ways of working and this is currently underdeveloped. It is essential to understand this aspect of mindfulness is not just a stage to pass through. In some traditions such as Daoism, mindful movement is taken to the highest degree of spiritual endeavour (Liao, 2000).

### ***Other body-based practices***

A growing number of body psychotherapies and somatic education methods (Fogel, 2013; Totton, 2005) are attracting the attention of mainstream health providers, particularly for clients who struggle to engage with mainstream therapies. These include Feldenkrais, Rolfing, Eutonia, and Continuum Movement to name a few (Totton, 2005). Anecdotal and case study reports are favourable, but an issue with this work is the compartmentalisation of the different traditions making it hard to discern a cohesive underlying mechanism of action. The evidence base, perhaps for this reason, remains sparse (Davis, 2009; Ives, 2003).

Two body-based practices with a long history and theoretical foundation (non-biomedical) are the Eastern mind-body practices of t'ai chi and yoga. These terms broadly describe a range of practices with a growing evidence base for efficacy across a range of physical (Buffart et al., 2012; Lan, Chen, Lai, & Wong, 2013; Liu, Li, & Shnider, 2010) and mental (Cabral, Meyer, & Ames, 2011; Wang et al., 2010) conditions. The predominant explanation for their efficacy rests on the consequences of relaxation response activation (Dusek & Benson, 2009; Jahnke, Larkey, Rogers, Etnier, & Lin, 2010). However, this is only one part of their mechanism and likely selling them far short of their healing potential.

A challenge with appraising these approaches is their mode of action/learning. In movement practices such as t'ai chi, an implicit learning of internal patterns of body and mind occurs over years of practice and repetition of the slow and gentle physical movements. Hayes and Broadbent (1988) have defined implicit learning as "the unselective and passive aggregation of information about the co-occurrence of environmental and features". This type of training makes the ability to report on what has changed (and how) limited as it has entered the "system" in a non-verbal, non-conceptual way (Liao & Masters, 2001). This is supported by Carmody and Baer's (2007) observation that yoga practice in MBSR was correlated with all except the "describing" factor of the FFMQ.

This way of learning is reflected in a pedagogy that uses observation, mirroring, repetition, tactile adjustments, and little overt instruction. The classic texts of t'ai chi (Liao, 2000) can increase confusion as the language describing the concepts makes much use of metaphor. The implicit learning and use of metaphorical language can be difficult for general Western audiences and make it hard for empirical studies to be conducted (Sieh & Ralston, 1993).

### ***Body in mind training***

BMT works in an optimum and still relatively unexplored zone, between the underdeveloped opportunities for mindful movement as a part of MBIs and making more explicit the ancient body expertise from t'ai chi and martial arts. Using mindful attention to the body in an innovative way (Chiesa, Serretti, & Jakobsen, 2013; Kerr, Sacchet, Lazar, Moore, & Jones, 2013), BMT aims to mine the edge between non-conscious (implicit) and conscious (explicit) bodily, cognitive, and emotional experiences. It works from a "bottom-up" body-oriented stance with the bodily sensations (including those associated with emotional states) as the object of the "top-down" attention (Brewer et al., 2011; Chiesa, Serretti, & Jakobsen, 2013; Russell, 2011). The aim was to develop mindful movement exercises for use by anyone who might struggle to

engage with the currently available MBIs, thus widening access to mindfulness. A secondary aim was to help clinicians begin to work in a mindful way using the body, so that they too can benefit (Russell, 2011).

As a foundation—especially for the design and delivery of the exercises—BMT uses the growing neuroscientific knowledge base around how the body is represented in the brain. Additionally, embodied learning principles are inherent in the teaching (Bohannon, 2010; Bresler, 2004) creating a learning experience that is embedded at a deeper level. In the following sections, the developmental process and underlying scientific rationale are detailed, followed by some reflections on the clinical implementation.

### ***What is so important about movement?***

Even the most basic notion of the “self”—the conscious being—depends on the movement of an organism (Damasio, 2012; Dehaene & Naccache, 2001). When we begin to move independently in the world a “psychological revolution” occurs as multiple cognitive and social processing abilities come on-line (Anderson et al., 2013). Functional activity of the growing infant plays a key role in the “formation, construction and development of structure in the nervous system” (Anderson et al., 2013, p. 11). Key structures of the brain that activate the organism to engage with the environment and others, including basal ganglia and cortical motor loops, have a role in cognition (Middleton & Strick, 2002). Wolpert, Diedrichsen, and Flanagan (2011) have even gone so far as to suggest that movement was the real reason brains evolved (see his TED talk entitled “The real reason for brains”). The development of brain regions controlling motoric behaviour may thus underpin the subsequent evolution of “higher-order” regions sub-serving emotion and cognition. Within cognitive science, a growing research field, embodied cognitive neuroscience, considers more deeply the role of the body in cognition (Gallagher, 2006).

### ***Movement and emotion: approaching and avoiding***

Davidson’s (1992) update on early theories of emotion (Ekman, 1992; Tomkins, 2008) highlights the functional role of emotions, driving the organism to either approach or avoid evolutionarily important stimuli. Our movements therefore can provide clues as to our underlying emotional and motivational state. Gray’s neuropsychological theory of anxiety (Gray & McNaughton, 2000), based on extensive animal work, details a behavioural approach system, a fight/flight system, and a behavioural inhibition system. Similarly, Cloninger has proposed a

psychobiological model of temperament and character that captures the fundamental integration of motor, cognitive, and emotional inhibition patterns. These play out in our lived experience and personality, including our propensity for novelty seeking and harm avoidance behaviours (Cloninger, Svrakic, & Przybeck, 1993; Gardini, Cloninger, & Venneri, 2009). Emotional and motivational states are thus intimately linked with movement.

### ***Movement and mood are closely related***

In many psychiatric conditions, disruptions in approach and avoidance movements are evident; reduced activation in depression, physical avoidance in anxiety, agitation in mania and psychosis (Noggle & Dean, 2012). Not moving the body impacts on mood, as seen in neurological conditions that affect mobility (such as Parkinson's) where there is high co-morbidity with depression (Cummings, 1992). Mild and severe mental distress can be modified by movement/exercise (NICE, 2004) and in healthy individuals exercise improves cognitive performance (Chaddock et al., 2012; Hillman, Erickson, & Kramer, 2008) in a way observable in the brain (Chapman et al., 2013; Nithianantharajah & Hannan, 2009). Researchers such as Meijer (1989), Wallbott (1988), and, more recently, App et al. (2011) suggest that movements help us to not only express but also process emotions, with movements providing information that can help us recognise what we are feeling.

### ***Summary***

In summary, movement and the motor system provide an essential foundation for our emotional and cognitive lives. Fundamental movements towards or away from things are enacted by the body, in the living world (Candidi, Aglioti, & Haggard, 2012; Gibbs, 2006; Maiese, 2011). Movement and mood are intimately linked; lack of movement impacts negatively on us, and movement, positively. BMT makes movement the central training tool for these reasons. Body-based practices such as t'ai chi bring a wealth of knowledge about the moving body—when this is made explicit, with mindful intention and attention, possibilities for change in the whole mind–body system occur. In the next section, the development process of the BMT program is described.

## **Part II: the development process of BMT**

BMT arose from the integration of three disciplines: neuroscience, clinical psychology, and martial arts. In the following sections the developmental process to bring these exercises into the mainstream



health setting are briefly detailed. The reader is referred to Russell (2011) and a forthcoming book for more details (Russell, in press).

### **Phase 1—BMT in the acute psychiatric setting**

Working in the adult psychiatric mental health setting and predominantly with those experiencing severe and enduring conditions, a series of mindful movement exercises were piloted across in and outpatient settings (Russell, 2011). Table 1 provides a summary of the activities conducted.

**Table 1: Activities in the BMT class with the links to mindfulness theory and t'ai chi theory**

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*Basic warm up:* slow, intentional, mindful movements of the major joints (neck, wrists, shoulders, elbows, waist, hips, knees, ankles). Exercises completed to the ability of the individual, with modifications suggested as required.

*Mindfulness theory link:* emphasis on focusing and maintaining attention to bodily sensations and listening to the body to find your own pace/limit (compassion). Experiments with pacing to illustrate how slowing down (or pausing) allows us to see more and guidance on tracking intention to move prior to movement.

*T'ai chi theory link:* highlighting transitions from stillness to movement and back to stillness, exploration of effort and ease in the movements, increasing range of motion (stretch) via integration of bodily sensations, mind, and breath.

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*Stationary elements:* working left/right brain with co-ordinated hand and leg movements (e.g., the preparation for the t'ai chi movement "ward off" and static "wave hands like clouds").

*Mindfulness theory link:* mindful awareness of mental reactivity and the habits triggered when challenged with a novel movement sequence. Highlighting differential sensory input from left and right sides of the body to pique curiosity and increase self-directed exploration of the body.

*T'ai chi theory link:* breaking down movements into segments to re-build in a more integrated way, attending with focused and broad attention to the whole body during a movement, working with the principle of *fang sung* (a state of alert relaxation in the body).

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*Dynamic (moving) elements:* working balance, posture, co-ordination, and weight-shifting, for example, "wave hands like clouds" and "repulse the monkey". Waist turning practices and sequences that emphasise the sequential and consequential connections between body parts and movement.

*Mindfulness theory link:* focused and broad attention highlighted throughout the movements attending to proprioceptive and kinaesthetic feedback, awareness of intention and execution phases of the movement, alertness to mental habits and mind-wandering throughout the movement, awareness of the temporal sequence of movements of body (and mind)

*T'ai chi theory link:* using the mind (*yi*) to move the body, more complex breaking down of movement sequences in order to rebuild, *fang sung* while moving.

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*Walking meditation:* controlling weight, posture, and movement. Noting and not reacting to mind wandering during the walking, observing the mental states of restlessness/agitation and dullness/boredom. Emphasis on exploring effort and ease throughout the movement, and *fang sung*.

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*Note:* a more detailed description of these exercises can be found in Russell (in press). Training the BMT is available via [www.mindbodymot.com](http://www.mindbodymot.com) and on line training is forthcoming.



The purpose of these groups was to determine the acceptability and feasibility of the exercises and gain feedback from participants about what they found helpful in the class and what they utilised in daily life. The groups were predominantly offered on male wards to understand whether this approach, based on martial arts and neuroscience might appeal to this group. In the mindfulness literature, females are twice as likely to remain engaged with MBIs (Kabat-Zinn & Chapman-Waldrop, 1988), and there are predominantly female participants in MBCT studies (Piet & Hougaard, 2011; 63–81% of the samples in their meta-analysis were female). Engagement with “meditation” or “yoga” may be a barrier for males.

The t'ai chi exercises were predominantly drawn from the *Shibashi* (Set One) developed by Lin Housheng ([www.linhousheng.com/](http://www.linhousheng.com/)) a leading qigong practitioner. This set combines contemporary yang style t'ai chi movements and qigong exercises. The ten principles of t'ai chi by Chen-fu (Wainapel & Fast, 2003) were embedded in the teaching (see Table 2). Participants are guided to attend to these aspects in an explicit and mindful way. These principles are fundamentally related to developing a deeper awareness of the body and posture during movement and stillness.

Ward staff took part in many of the classes and feedback was obtained about their reactions and how they felt clients had engaged. Primarily they were surprised how engaged participants remained in the one hour class, commented on a better understanding of “psychology in action”, and observed their own need for this type of activity. The qualitative outcomes from this work indicated that for both clients and staff, BMT mindful movements provided a relaxing and engaging experience that increased self-mastery and body awareness (Russell, 2011).

**Table 2: Ten principles of t'ai chi embedded in all BMT exercises**

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(i)	Keep the head and neck straight
(ii)	Upper and lower back kept in a straight line with the pelvis tucked under, softness in the knees.
(iii)	Separation of waist and hips, loosening the hips and groin.
(iv)	Shoulders and elbows are relaxed and down.
(v)	Upper and lower parts of the body move as one unit.
(vi)	Differentiating between a full (solid) and an empty (awareness of weight distribution).
(vii)	Moving with awareness of mind intention and minimal external muscle force.
(viii)	Transition between movements in a smooth, continuous manner.
(ix)	Assure a sense of harmony between the internal and external body feeling.
(x)	Experience a tranquil, meditative state, breathing in a smooth, continuous manner.

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## ***Phase 2—BMT framework for health professionals***

In Phase Two, BMT exercises formed the basis of workshops and short trainings for health care staff. Workshops were delivered nationally (UK) and internationally (Brazil, Barbados, Poland, Turkey) to a variety of health care workers and educators. In the UK, they were predominantly delivered to mental health multi-disciplinary team members (doctors, psychologists, nurses, health care assistance, physiotherapists, social workers, and occupational therapists) providing support for those severe and enduring conditions (Community Mental Health Teams (CMHTs), learning disability services, eating disorders).

The BMT Framework was developed as a way to unpack Kabat-Zinn's definition of mindfulness—"the awareness that arises from paying attention, on purpose, moment by moment and non-judgementally" (Kabat-Zinn, 1982, 2003) and allow those who were curious about mindfulness but without formal training to explain mindfulness to a carer, colleague, or client and begin to experiment with the principles of mindfulness in their lives (Figure 1). Using this definition and the BMT exercises as the experiential component, five key principles are explored; (i) pausing (as a means to access the present moment); (ii) intentionality (capturing the element of "on purpose"); (iii) attention (understanding what captures our attention and how we can train voluntary attention); (iv) observation (capturing the element of a different sort of relationship to experience); and (v) compassion (capturing the element of the non-judgemental attitude) (see Figure 1).

The understanding of the rationale and role of the mindful movement exercises was enhanced by providing conceptual information about the key theoretical principles of mindfulness and the relevant neuroscience findings. This aspect is vital to the BMT approach, directly drawing on what we know about the brain to deliver and explain the training. Working using a neuroscience framework provides an opening to discuss mindfulness in contexts more used to working within the biomedical model (e.g., mainstream health settings). It widens access for both staff and clients, so more people might benefit from this training.

The BMT framework is a means for individuals to begin to explore how they could bring mindfulness into their personal and professional lives. There was an explicit intention that the BMT exercises are as necessary for these staff as they are for clients. The workshop was considered a success if staff members commented "I need this too".

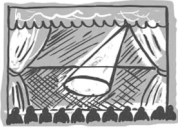
Written feedback was obtained from a number of these workshops and independently audited by a qualitative researcher with experience working in the complementary health sector (Wilkinson, 2013). Using an adapted "framework" methodology (Huberman & Miles, 2002), emergent themes were derived and are shown in Table 3. Further comments can be found in Appendix I.



When can you slow down, or pause?  
 How will you remind yourself to do that?  
 Can you pause during events that are pleasant, unpleasant, or neutral—what do you notice?



What can you do to be more aware of intention?  
 When and where can you check in with your intentions?  
 How can you really take a look at what is occurring right now in your experience?



How can you remind yourself to notice where your attention is?  
 What draws it away?  
 How does it come back?  
 Is the focus narrow or wide?



What would it be like to really observe and study mental and physical phenomena—like a scientist?



How can you be kinder to yourself and/or others and more at ease?

Figure 1: Body in mind training framework.

**Table 3: Key learning outcomes from BMT staff training workshops (N = 140 included in audit)**

Primary Theme:	Mindfulness skill acquisition (using the BMT Framework) and developing an empathic and compassionate approach to the work.
Secondary Themes:	<p>A new perspective for clinical work and improving professional practice.</p> <p>Incremental application of mindfulness within clinical practice.</p> <p>Understanding the need for sustained self-practice in preparation for clinical work.</p> <p>Potential application for specific client groups.</p> <p>Enhancing direct working with clients.</p> <p>BMT as a way of building on previous mindfulness training and clinical applications of mindfulness.</p>

While running these workshops the core training information and exercises continued to be refined, based on the feedback and observation of what worked, what was clear, and where there was confusion. From this emerged a series of exercises and conceptual teaching materials that clearly described the principles of mindfulness using mindful movement as the main training methodology. The materials were optimised to ensure individuals from a variety of professional trainings can work with the BMT framework across a range of clinical and non-clinical settings.

### ***Phase Three—BMT-Five***

From these workshops and the BMT framework (Figure 1) the BMT-Five session group programme emerged. This was an expansion of the principles of the BMT framework into five two and a half hour teaching sessions, exploring pause, intention, attention, observation, and compassion in turn. In order to provide a comprehensive learning experience with the intention of piquing curiosity and encouraging self-motivated engagement with the practices, each theme is explored via (i) physical mindful movements illustrating the main learning points; (ii) discussion of the underlying neuroanatomy; (iii) an explanation of the rationale; and (iv) discussion of real life application. Each theme is associated with a visual image, two of which (pause and free hugs (compassion)) are given as stickers to serve as a prompt in day to day activities (Figure 1).

In BMT, homework is optional and participants invited to implement some aspect of each principle into daily life, in whatever way is helpful or appropriate for them. For example, for some the pause might be a twenty minute body scan every day, while for others it might be taking a moment to be mindful of the soles of the feet before boarding a bus. From small steps and a more detailed conceptual understanding, the possibility for intrinsic motivation arises.

Six pilot groups with healthy individuals (including many health care staff) and individuals with bipolar illness were run in 2013, obtaining qualitative feedback. Two post-graduate dissertations will formally evaluate BMT-Five in 2014 and include measures of body awareness that evaluate mindful engagement with bodily sensations and the felt sense of emotion in the body (Mehling et al., 2012). It is anticipated that BMT-Five could provide an alternative to standard trainings, a pre- or post-MBSR or MBCT option, and/or a way for mindfulness teachers and health care providers to enhance their clinical mindfulness offering and care for themselves in their work.

## **Summary**

In summary, the BMT exercises have evolved from early beginnings as a method to work using mindful movement for those who are very distressed into a structured training protocol based on mindful movement. It has been through the “filter” of a large number of health care staff who recognise both their own need for these practices but also the benefits and different entry point the BMT approach might bring to their clients. This predominantly qualitative data obtained in the development process will be augmented by future studies using quantitative methods.

## **Part III: BMT in action**

Mindful movement (MM) is defined in BMT as any movement conducted with full explicit awareness of intention, attention, and all the physical and mental sensations unfolding over time. Mindful movements are conducted with a stance of compassionate acceptance towards each and every experience including thoughts, feelings, memories, and emotions but especially bodily sensations. The following section provides a description of BMT training principles and how they are applied in the clinical setting. To be clear, although BMT includes certain exercises that form the basis of the current five week protocol, it is also a set of guiding principles (Figure 1), allowing a flexible delivery that can meet the needs of the client group or setting.

### ***Pausing and inhibition***

Pause is the first guiding principle of BMT. Various movements are explored at a progressively detailed level with curiosity in a slow and gentle manner. Not only does this reduce the possibility of injuries, but it also allows many more of the rich sensations from movement to enter awareness. Pacing as a general theme (in our movements, in our lives) is explored. The completion of slow MM activates the motor inhibition system (fronto-basal ganglia networks) to be engaged (Dillon & Pizzagalli, 2007). As many participants state “going slow is hard”. Specific brain regions are linked to motor (fronto-basal ganglia networks), cognitive (orbitofrontal cortex), and top down regulation of emotions (ventromedial prefrontal-amygdala interactions), but a common region (right ventrolateral prefrontal cortex) subserves inhibition in a domain general way (Aron, Robbins, & Poldrack, 2004).

This raises the possibility that by training the motor inhibition area through slow MM, the domain general area is boosted and has a greater resource when called on by other domains. This may explain the emotion regulation benefits of t'ai chi (Hong, 2008) and rate of

development—these practitioners are not overtly training in emotion or cognitive regulation, but they are indirectly supporting these processes working through the motor domain.

Slow movements of any sort illustrate directly how we can see more of our experience by reducing the pace. A whole body or individual body part movement can be used. An example of a stationary large limb movement might be “swimming backwards” (a single arm movement—swimming backwards). Pacing could just as effectively be explored in the seated position by lifting one little finger up and down slowly. The principle rather than the precise movement is important. This makes this approach suitable for a wide range of clinical populations including those with neuro-disabilities who may have difficulties with standing and/or walking.

### ***The sensory consequences of movement***

Moving the body creates psychophysiological changes (Anderson et al., 2013; Damasio, 2012). Depending on the individual, slow MMs may give rise to changes in cardiovascular or respiratory rates (Caldwell, Harrison, Adams, & Travis Triplett, 2009). Movement of the joints will provoke a change in the muscles, usually relaxation. This is important for two reasons. First, these physiological changes provide a concrete object for attention training, and second, they can generate insights. BMT participants comment on increased awareness of stiffness (which can arise from medication and inactivity) and a new experience of relaxation in the neck and shoulders. This generates insights such as “I didn’t realise I was so stiff” or “I need to move more”. Self-efficacy arises from these exercises as participants realise they can do something themselves to alter their physical and mental state.

### ***The moving body is a particularly salient attention object***

Attending to the body generally supports a present moment focus as bodily sensations cannot be experienced in the past or future. The moving body provides a greater wealth of sensations to observe (see paragraph above) and the movement itself can be the object of attention. Movements have a temporal sequence, unfolding over time in a way that supports the ability to keep attention on a constantly updated “now”.

As mindfulness develops, sensitivity to the temporal aspects of the movement increases, and it becomes possible to explore separately the intention to move, the execution of the movement, and the sensory consequences of the movement (Kerr, Sacchet, Lazar, Moore, & Jones, 2013; Tang, 2011). In BMT developing this temporal sensitivity via movement practices provides a scaffold to learning how other experiences,

including mental events (chains of thoughts) and emotions unfold over time.

Movement of the body and the resultant sensations are a strong stimulus for the attention network, making these exercises suitable for those with very busy or disturbed states of mind as mind-wandering is reduced (Tang & Posner, 2009). Additionally, busy clinicians might incorporate MM into their working life. Much can be observed about our underlying approach/avoid tendencies when we become mindful of how we move about the clinical environment.

The movement itself can be variable—a finger, one or both hand(s), a limb, the torso, or head—and adapted to the individual's physical ability. This means that while there are specific movements that really work best to illuminate mindfulness principles, in fact *any* movement can be conducted mindfully following the BMT framework.

MMs also provide the opportunity to explore the experience of transitions between movement and stillness, a central training principle in t'ai chi (La Forge, 2005). Observing how our intention to terminate or create a movement unfolds illuminates how intention underpins all motoric output and indeed all our actions in the world. Learning to detect change in behaviour patterns is helpful when we are seeking to change unhelpful habits (of body or mind).

### ***Which body in mind?***

Neuroscience knowledge informs both the design and delivering of the BMT intervention (Russell, 2011). The neural circuitry for the body and motor system are well mapped relative to the circuits for emotion and cognition (Haggard, 2005; Meltzoff, 1990). Early sensory processing of bodily sensations takes place in the somatosensory cortex, with further refinement of the signal as it passes through sensory and motor association cortices. Sub-cortical nuclei also contribute to the experience of the body in mind (Longo, Azañón, & Haggard, 2010). The "extended body" in the brain is likely mediated by activation in the posterior parietal cortex and the "emotional body in brain" encoded in the region of the insula (Berlucchi & Aglioti, 1997; Longo, Azañón, & Haggard, 2010).

The hierarchical layers of body representation in the brain are exploited in BMT. Exercises explore the difference between somatosensation (raw sensations of the body in primary somatosensory cortex), somatoperception (the conceptual body encoded in various regions including posterior parietal lobe), and somatrepresentation (Longo, Azañón, & Haggard, 2010). Exercises deliberately provoke conceptual and visual images of the body and contrast these to the direct sensations or tactile representations. These exercises illustrate just how much "post



production” the brain does (and how quickly and unquestioningly we believe it to be “real”). Later this is linked with how we process emotional states in the body and a call to remain curious even when we think we “know”.

Thus the brain has a network of regions that progressively create a representation of the body in the brain from the raw primary sensations in somatosensory cortex to the schematic representation of the body in the mind in the parietal lobe (Azañón & Haggard, 2009). In many disorders of body image seen in the clinical setting, it is likely that a reliance on processing from the schematic body underpins some of the observed difficulties (Fuchs & Schlimme, 2009). Similarly, if you are disconnected from the body, or depersonalised it is likely some aspect of this network is operating at a lower metabolic level (Simeon et al., 2000). In the neuro-disability field there may be potential for MM to help those with phantom limb pain.

### ***Maximising learning***

It is easier to pay attention if the stimulus is interesting and the signal is strong. The neuroscience of the body representation in the brain is used to support the learning in two ways. First, we know that there are disproportionately large areas of the brain dedicated to processing signals from the hands and the face in the somatosensory and motor cortices (Kerr, Caputy, & Horwitz, 2005). These are therefore, particularly potent objects for mindfulness training making them suitable starting points for those who have difficulties with attention, those with very chaotic minds, or for use in distracting environments. Mindfulness of the face can also support training in social skills.

Second, most individuals have a hand preference and use-dependent cortical plasticity impacts on sensorimotor cortical representation (Hammond, 2002; Schwenkreis et al., 2007). Thus sensations on the left and right sides (and particularly in the hands) can vary greatly. BMT exercises use these neuroscience facts and the experiential experience of left and right to pique curiosity and help people really take a look at their experience and increase bodily awareness. This might be particularly relevant for those with hemi-paresis or weakness on one side of the body. Using the BMT approach the clinician might guide a mindful exploration of the difference in sensations, the ability to perform a movement, and fatigue points on the left and right side, noting both the bodily sensations and the mental sensations (reactivity, judging, comparing, etc).

Hand movements that activate the left and right motor cortices preferentially activate approach or avoidance behaviours (Brookshire &

Casanto, 2012). This field of research raises interesting questions about how movements might be used to change problematic approaching/avoiding in clinical populations. As described above, these approach/avoid behaviours are often linked to emotional states.

### **Observing emotions**

Engagement with movement and bodily sensations provides the foundation to develop curiosity and confidence in being in the body. This is later developed to support direct engagement with affect in the body. The field of affective neuroscience has uncovered how emotions are represented in the brain and the complex bidirectional nature of top-down and bottom-up processing on our emotional lives and behaviour (LeDoux, 1996; Panksepp, 1998; Vytal, Cornwell, Arkin, Letkiewicz, & Grillon, 2013; Wager, Lindquist, & Kaplan, 2007). Damasio and colleagues (2000) make a distinction between emotions (a physiological response including sensations, autonomic and somatic, muscular changes, movement, etc. mostly implicit) and feelings (a label that describes the summation of body states as experienced by the mind).

In the BMT the MM training intends to help differentiate the mind-body experience of emotions and feelings, learning to detect and engage with emotions as they move through the body. This experience is captured by the phrase “That really moved me” used in response to art or music. These experiences are not quite the same as the sensations experienced in the somatosensory or motor cortices when we move the body, but instead are the moving, throbbing, piercing, spiky sensations often described using metaphor and analogy. They are distinct from feelings that are the summation of the physiological experience of the emotion and additional mental activity (drawing up memories, labelling, etc).

In BMT the critical question “What is the difference between feeling sad and attending to the raw sensations of the body that you have labelled as ‘sad’?” Staying directly with the raw sensations increases emotional intelligence by developing sensitivity to emotional shifts and keeping the attention in the body reduces the engagement of mental avoidance strategies (body sensations are only ever in the present moment) (Fogel, 2013; Kerr, Sacchet, Lazar, Moore, & Jones, 2013; Tang, 2011). Working with individuals with bipolar, they became able to distinguish the subtleties of a sensation bubbling up from the stomach that was a happy feeling, as compared to one that had an underlying anxious edge, perhaps suggesting hypomania.

With practice, and indeed exposure to previously feared emotional states, confidence grows in the ability to tolerate even very strong emotions without trying to alter them or engage with them using the

“thinking” mode. This type of emotional re-education may help to “re-set” maladaptive and toxic processes of coping with emotions (Kashdan, Barrios, Forsyth, & Steger, 2006; Ruths, 2011).

BMT uses predominantly moving practices as the route to the body, which makes it more suitable for those experiencing particularly distressing mental phenomena. The movement provides a moment by moment updated mental target for the attention in the form of a wealth of sensations entering in the body. This provides a safe early engagement with the body that can later be used in the exploration of emotions and emotional reactivity. Training in movement detection also increases sensitivity to how things unfold over time, vital when we then enter the mental and emotional realms. “This too will pass” is a common phrase that supports this understand but working with MM provides an embodied training in this concept (Kerr, Sacchet, Lazar, Moore, & Jones, 2013; Tang & Posner, 2009).

### ***The body and compassion***

If we pay attention, we can notice very clearly the signals from the body telling us it is suffering, and we can do more than we think to be kind to ourselves (Tang, 2011). The mild range sensations of pain and/or discomfort that naturally emerge from the movement training posits us a challenge that provides a real chance to observe how we react in the mental/emotional domains.

BMT exercises explore this, using the concrete signals of the body and alertness to mental reactivity to illustrate what happens when we meet an experience we do not like and want to change or avoid. In a single movement there might be a chance to experience the sensations of (and reaction to) pleasant, unpleasant, or neutral experiences. In those with disabilities, there is an invitation to attempt the movement (or adapted movement) as best as is possible, noting whatever mental or physical sensations arise, including those related to struggle, non-acceptance, and the desire for things to be different (as they were before, like others, or how they might be in some imagined future, etc.).

A key principle of BMT training (and in mindfulness generally) is an invitation to try what is currently possible and mindfully explore the limits of one’s ability. Observing, with curiosity and compassion what arises (in moments of “success” or “failure”) both at the level of physical sensations and mental reactivity. Meeting fatigue (either mental or physical) is part of the training process. Observing mental reactivity and the psychological style when meeting limits is integral to therapeutic work moving clients towards acceptance of injury or illness.

Learning how we cope when things are not as we wish them to be is also highly relevant for staff (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Being compassionate in our work is difficult if we deny, suppress, avoid, or cut off from our own emotional experience and struggle. Training in mindfulness can increase self-compassion (Germer, 2009; Gilbert & Procter, 2006; Pace et al., 2012) and this training is as vital for staff (Shapiro, Brown, & Biegel, 2007) as it is for our clients (Van Dam, Sheppard, Forsyth, & Earleywine, 2011). Some programmes such as the Mindful Self-Compassion Program prioritise this compassion aspect (Neff & Germer, 2013). Appendix II provides some guidelines as to how elements of the BMT Framework can be used by therapists in their work to support this process.

Imaging studies with experienced meditation practitioners have shown that when engaging in compassionate meditation, and provoked by (negative) emotional stimuli, there is greater activity in the insular cortex, amygdala, temporal parietal junction, and posterior parietal cortex relative to controls (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008). This suggests that the experience of the emotion may be enhanced when in a compassionate state. The ability to stay with the experience of strong emotions without reacting may be the signature of true compassion—both for our own or another's pain.

Increases in cortical gyrification have been observed in the right anterior insula (Luders et al., 2012), in a manner related to duration of practice and the right insular cortex becomes thicker (Lazar et al., 2005) and denser (Holzel et al., 2007) after meditation practice. The insular cortex codes interoceptive information related to the felt sense (including in the body) of emotion (Craig, 2005; Longo, Azañón, & Haggard, 2010). It is ideally placed and connected to structures that allow it to monitor the internal state of the organism and co-ordinate other regions to allocate attention, evaluate the context and plan appropriate approach or avoidance actions.

The right insula is a brain region enhanced by mindfulness practice and involved in experiencing and regulating felt emotions in the body. Similar findings have been observed in those who have undergone shorter mindfulness trainings (Farb et al., 2007; Gard et al., 2012). Mindfulness training may therefore serve to enhance our emotion regulation abilities but paradoxically this is by allowing us to feel more, representing increased bottom-up processing of the stimulus (Holzel et al., 2011, p. 542).

Moving the body and mindful engagement with the movement of emotion in/through the body thus provides us with the possibility of developing compassionate states of mind. Compassion is linked to the ability to fully be present and open to all aspects of emotion, including the bodily component of the experience.

## Summary and conclusions

In this paper a preliminary framework for a new MBI has been presented. The BMT approach blends neuroscience with the principles of mindfulness and is presented as a framework that can be used by a range of clinical staff members across a range of clinical populations. Using this brain-based approach, clinicians with experience in their specialist areas and who have tried out the exercise themselves, should be able to create thoughtful adaptations allowing them to work with MM with a range of clients. The choice of movement and the depth of work can be informed by the clinician's experience and collaborative exploration with the client. The development work shows that staff from a variety of backgrounds can work with this approach both for themselves and with clients. Both staff and service users indicated that they found the addition of the basic neuroscience understanding informative and motivating. This is pivotal tool to enhance curiosity and encourage people to explore their experience in this more embodied way. As with all MBIs, the practice and experience of the clinician offering the training is important so those willing to try this way of working are strongly encouraged to engage as much as they can with their own body in mind. Some materials to support this are provided in Appendix II. It is hoped these ideas may stimulate debate and further research into this relatively new and exciting area.

## Appendix I:

### *selected staff comments from participants on the BMT*

#### *Module 1 mindfulness training for health care professionals*

A new perspective for my work.

This training will change my practice.

Now I feel better able to explore different aspects of mindfulness for myself and my clients.

I liked this different approach to the mindfulness training working so much with the body.

This should be mandatory for all staff.

I feel I can bring some "mini" practices into my working day and feel more confident now about using it working with others.

The workshop was very engaging and the exercises were pitched at the right level. A really useful introduction to mindfulness.

I loved the playful and humorous attitude—this made me more confident to experiment with mindfulness for myself.

I was really shocked at how much I could noticed when I slowed down.

## Appendix II: suggestions for using the BMT framework as therapist

This framework can be used on a moment by moment basis within the session in order to ensure, as far as possible, that mindfulness is maintained and embodied by the therapist. Some illustrative applications are provided in Table 4 below. The framework also provides a helpful reflective tool post session or for supervision, checking in with each aspect and reflecting on whether this was apparent in the session and thinking about where it might be enhanced or noticed in future interactions.

**Table 4: BMT framework for therapists in the session**

Pause	<p>Pausing before replying or interpreting a client's comment.</p> <p>Allowing silences and in that time noting any bodily reactions.</p> <p>Transitioning between clients or clinical tasks.</p> <p>Reflected on during times when we notice we want to "do more" both in body and mind for a client—often a signal that we are seeking to reassure our own anxieties rather than theirs.</p>
Intention	<p>Extremely helpful with complex clients, checking in with your intention prior to a session (as a mindfulness therapist the default intention becomes "be in the body").</p> <p>Checking your intention as you report on a client to a colleague (e.g., asking "What is my intention in sharing this information?").</p>
Attention	<p>Could include Freud's suggestion for "evenly hovering attention".</p> <p>Being alert to the ways in which our attention to the client might be enhanced or diminished.</p> <p>Attending to our own mental and physical reactions during the interaction.</p> <p>Noticing any widening or narrowing of attention, moments when vividness becomes dullness.</p>
Observation	<p>Reminds us to keep asking questions and maintain our curiosity.</p> <p>Repeated sampling of the phenomena or interest (don't just take the first answer!).</p> <p>Listen and engage with "beginner's mind or the eyes of a child.</p>
Compassion	<p>Alert to moments when we can connect with our client's at the level of our common humanity—specifically how this unfolds in our body.</p> <p>Compassionate to ourselves in our work—acknowledging and accepting all the feelings our clients and colleagues evoke.</p> <p>Alert to and accepting of moments when compassion is lost.</p>

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