

# Mindfulness and Bodily Distress

PhD dissertation

Lone Overby Fjorback, MD

Faculty of Health  
Aarhus University  
The Research Clinic for Functional Disorders  
and Psychosomatics  
Aarhus University Hospital  
2012

PhD dissertation

**Mindfulness and Bodily Distress**

Lone Overby Fjorback, MD

1<sup>st</sup> edition, 2012

Print: SUN-TRYK, Aarhus University

ISBN 978-87-993721-3-3

This PhD thesis has been accepted for the defense of the medical PhD by the Faculty of Health, Aarhus University, and was defended on June 5 2012.

Opponents:

Professor Richard J. Davidson, MD, Laboratory for Affective Neuroscience, Waisman Laboratory for Brain Imaging & Behavior, Center for Investigating Healthy Minds, University of Wisconsin, USA.

Professor Anne E. M. Speckens, Department of Psychiatry, Radboud University Medical Centre, Nijmegen, the Netherlands.

Professor Povl Munk-Jørgensen, Department M, Research and Development, Aarhus University Hospital, Risskov, Denmark (Chair).

Supervisors:

Professor Per Fink, Director of The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Denmark.

PhD Mikkel Arendt, Unit for Psychiatric Research, Aalborg, Aarhus University Hospital, Denmark.

Professor Harald Walach, Institute for Transcultural Health Studies, European University Viadrina, Frankfurt, Germany.

Funding sources:

The Danish Agency for Science, Technology, and Innovation, Aase and Ejnar Danielsens Fond, TrygFonden, and Lundbeckfonden.

The Research Clinic for Functional Disorders and Psychosomatics  
Aarhus University Hospital  
Noerrebrogade 44  
DK-8000 Aarhus C

Cover illustration: Mai Bagger Olesen McQueen.

All rights reserved. No parts of this publication may be reproduced, stored in retrieval systems, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without indication of source.

# Table of contents

List of figures and tables .....	II
Preface .....	III
The thesis is based on the following papers .....	VII
Outline and aims of the thesis.....	VIII
Abbreviations .....	X
<b>Chapter 1. Introduction .....</b>	<b>1</b>
Towards a mindfulness treatment approach.....	1
<b>Chapter 2. Review of Mindfulness-Based Interventions.....</b>	<b>25</b>
Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy – a systematic review of randomized controlled trials Paper I.....	26
Mindfulness-Based Therapies – a systematic review and some critical observations Paper II .....	57
<b>Chapter 3. The STreSS-2 Trial.....</b>	<b>81</b>
Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes: randomized trial, one year follow-up, active control Paper III .....	81
<b>Chapter 4. Economic evaluation.....</b>	<b>107</b>
Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes: economic evaluation alongside a randomized trial Paper IV .....	107
<b>Chapter 5. General discussion and conclusion .....</b>	<b>133</b>
What is gained by a mindfulness approach?.....	133
<b>Chapter 6. Research perspectives.....</b>	<b>153</b>
<b>English and Danish summaries .....</b>	<b>159</b>
<b>References .....</b>	<b>167</b>
<b>Appendices .....</b>	<b>181</b>

## **List of figures and tables**

### *Figures*

1.1	Perception of symptoms and disease according to Fink	6
1.2	The central sensitization model according to Yunus	7
1.3	Perception-filter model according to Rief	8
1.4	Hypothetical model for the cause of FFS	9
3.1	Timing and treatment elements	86
3.2	Trial profile	92
3.3	Improvement in physical health at 3 months	97
3.4	Improvement in physical health at 9 months	98
3.5	Improvement in physical health at 15 months	99
4.1	Trial profile	117

### *Tables*

1.1	Diagnostic criteria for bodily distress syndrome	3
1.2	A theoretical model for mindfulness therapy	15
2.1	Effect of MBSR in non-clinical populations	42
2.2	Effect of MBSR in clinical populations with somatic conditions	43
2.3	Effect of MBSR in clinical populations with psychiatric disorders	46
2.4	The effect of MBSR and MBCT on selected symptoms	48
2.5	Quality of the included studies	49
2.6	Update of new studies	68
3.1	Overview of treatment modules in mindfulness therapy	88
3.2	Patients characteristics	93
3.3	Raw data: SF-36	94
3.4	Mean of difference from baseline to follow-up	95
3.5	Dichotomized outcome: physical functioning and illness worry	96
4.1	Baseline characteristics	118
4.2	Disability pension at 15-month follow-up	119
4.3	Categorization flow from baseline to 15-month follow-up	120
4.4	Health care costs for BDS patients	123
4.5	Medication	124
4.6	Potential risk factors for BDS	125

## Preface

It's been almost 25 years since I began a daily yoga practice and in 1990 I participated in my first 3-month *Sadhana* course which both mark a starting point for this PhD thesis. As a yoga student, I participated in two research projects from which it has been reported that:

*No matter how much or how little activity one or the other brain half had when the students came to the course, the study of the three months courses clearly shows a positive stabilization of the balance between the two brain halves. Measuring the drop in skin resistance showed that the capacity of the students to relax had been considerably enhanced and their autonomous nervous systems had become more flexible. It can also be concluded that after the course the students were much calmer and less anxious than most people.*

Psychologist Erik Hoffman MA <sup>1</sup>

*The yoga and meditation course prevents cardiovascular diseases, normalizes blood pressure and decreases the blood content of harmful fats dramatically. Also, the students became considerably more capable at handling stress.*

Professor Thomas Schmidt MD, Department of Epidemiology and Social Medicine of the Hanover Medical School <sup>1</sup>

For years, I studied medicine at the university, and at the same time, I studied meditation with my teacher Swami Janakananda. I wanted to combine the intensity in the ashram with a practical life in society.

*In the yoga teacher training one learns to: awaken and train consciousness - to stay aware; devote oneself to the present moment, without demanding firstly that the conditions have to be different; develop a knowledge of body, mind and energy; take responsibility and to be consistent in carrying out a task - whether big or small.*

Swami Janakananda, Scandinavian Yoga and Meditation School <sup>1</sup>

In 2006, I entered a new sangha at the Center for Mindfulness, University of Massachusetts Medical School. A place I keep coming back to in order to connect and to learn.

*The root of the Center for Mindfulness is planted in the soil of spirituality. Since our genesis we have avoided the use of this word. Yet the world has changed since 1979, perhaps it is now time to speak about this more openly and plainly. By “Spirituality” I mean those qualities of mind and heart and human spirit that 1) bring ease and contentment to both self and others and 2) from which we act for the benefit of others. In our experience, ongoing attention to this fundamental ground provides us a pathway for learning to embody ethical action, compassion and wisdom in the world.*

Saki F. Santorelli, Director, Center for Mindfulness, University of Massachusetts Medical School <sup>2</sup>.

This PhD thesis is the fruit of an ongoing education in yoga, meditation, mindfulness, medicine, psychiatry, and research.

Mikkel Arendt, Per Fink, Harald Walach, Andreas Schröder, and Povl Munk Jørgensen are my mentors in research. They are all ambitious and generous persons who have inspired me to take up this work, and they challenge my skills to the limits of my capacity.

In psychiatry, I have been lucky to work with and learn from Hans Adserballe, Axel Bertelsen, Ulla Just, Inger Poulstrup, Kirsten Nitschke, Ulla Bartels, and Jørgen Acton. They are all leaders who are able to make room for a very high quality in psychiatric treatment, humor, and kindness.

Nicole Rosenberg, Birgitte Norrie, Emma Rehfeld, Birgit Bennedsen and Torben Fjor have been my teachers in psychotherapy; they are all truly dedicated persons who have shown me that there are many different ways to reach a similar outcome.

As a very small child, I had an eye for suffering. When I struggled with the dark side of life, my grandmother would show me the presence of God or ‘That’, which is the Sanskrit word for the all-inclusive, unspeakable, or wholeness experience. I have been bathing in love from family and friends. From my mother I learned the joy of giving. From my father I learned the joy of studying.

I love yoga, meditation, mindfulness, medicine, psychiatry, research, and writing. I am surprised and honored to have all these aspects present in my daily work. And to be able to share this work with patients and colleagues fills me with awe.

The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Denmark is a very special place that reminds me of the only one small village of indomitable Gauls which still holds out against the invaders. But how much longer can Per, Emma, and their friends resist the mighty Roman legions of Julius Caesar? Anything is possible, with a little cunning plus the druid Getafix's magic potions! Their effects can be truly hair-raising ...

There is harmony between the inner and outer life of the research clinic. From the outside as well as from the inside it is chaotic; anyway; the money keeps coming in and projects are coming out; I have not seen the druid, but definitely felt the effect of it.

A special thanks to Per Fink and Emma Rehfeld for creating such an environment, thanks to Maiken Back for keeping track with all the logistics, thanks to Eva Ørnbøl for the statistics, thanks to Malene Skjødt for being in charge, thanks to Lena Bering and Morten Pilegaard for the language revision, and thanks to all for your work and friendship.

Thanks to Poul Erik Buchholtz and Peter Møller Andersen, Aarhus University Hospital, Risskov, for making room for the combination of clinical work and research.

I am grateful to all the patients and colleagues who have participated in this work, and to my husband and children for being part of my life.

#### Reference List

- (1) Swami Janakananda. Tremåneders sadhana retreat. <http://www.yoga.dk/Haaaa-Kursuscenter/Feriekurserne/Tremaaneders-sadhana-koerset> 2012 February 1.
- (2) Santorelli SF. Mindfulness-based Stress Reduction Professional Training. Curriculum Guide and Supporting Materials. 2007. Ref Type: Unpublished Work.

To my teacher  
Melissa Blacker,  
and to my teachers in real life:  
my husband Carsten,  
and our children, Sofia, Samuel, and Sigurd.

## **The thesis is based on the following papers**

### Paper I

Fjorback LO, Arendt M, Oernbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatrica Scandinavica* 2011; Aug; 124 (2): 102-19.

### Paper II

Fjorback LO, Walach H. Meditation Based Therapies – A Systematic Review and Some Critical Observations. *Religions and Psychotherapies*. 2012; 3: 1-18.

### Paper III

Fjorback LO, Arendt M, Schröder A, Rehfeld E, Oernbol E, Walach H, Fink P. Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes: randomized trial, one year follow-up, active control. *Submitted*.

### Paper IV

Fjorback LO, Carstensen T, Arendt M, Rehfeld E, Oernbol E, Walach H, Fink P. Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes: economic evaluation alongside a randomized trial. *Submitted*.

## **Outline and aims of the thesis**

### **Setting**

- Paper I offers a systematic review of mindfulness-based stress reduction and mindfulness-based cognitive therapy.
- Paper II is an update of the systematic review of mindfulness-based therapies including a conceptual discussion and some critical observations.
- Paper III provides original data from 119 patients enrolled in a randomized clinical trial, *mindfulness therapy* for somatization disorder and functional somatic syndromes, which was carried out at the Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Denmark, between 2007 and 2009 (This trial is registered with ClinicalTrials.gov, number NCT00497185). The planning, realization, and evaluation of this trial were the primary objectives of this PhD project.
- Paper IV provides original register data from the 119 enrolled patients and a matched control group of 5950 individuals.

### **Outline**

The present thesis proposes that mental health can be improved by mental training, just like physical (and mental) health can be improved by physical training. We added mindfulness training to the treatment of patients who experience multiple, persistent, and disabling physical symptoms that cannot be explained by a well-defined medical or surgical condition. We term illnesses that are characterized by such symptoms ‘bodily distress syndrome’ (BDS). We acknowledge that emotions are involved in any serious illness, but the stress response may be functioning abnormally in patients suffering from BDS. The mind is closely connected with the body, in particular with the immune system and the automatic nervous system, which means that emotional regulation and stress regulation may be improved by such training<sup>1</sup>.

Chapter 1 discusses a theory-driven approach to *mindfulness therapy*.

Chapter 2 describes the current evidence for mindfulness-based interventions.

Chapter 3 presents the study design and the results of *mindfulness therapy*.

Chapter 4 addresses the economic effects of *mindfulness therapy*.

Chapter 5 offers a general discussion and discusses the clinical implications.

Chapter 6 presents perspectives on further research.

A Danish and an English summary of the thesis are placed after chapter VI. The treatment manual has been rewritten into a self-help book, which is published in the Danish language. This book has been translated into the English language and is presented in the appendix. Additionally, the two published papers, paper I and II, can be found in the appendix.

## **Aims**

The overall aim of this PhD thesis was to develop a mindfulness treatment approach for BDS by:

- I. Developing a theoretical model for including mindfulness into the treatment of BDS
- II. Reviewing mindfulness-based interventions (Papers I & II)
- III. Testing the acceptability and feasibility of *mindfulness therapy* (Paper III)
- IV. Evaluating the effect of *mindfulness therapy* (Paper III)
- V. Evaluating the economic effects of *mindfulness therapy* (Paper IV)
- VI. Analyzing the social and economic consequences of BDS (Paper IV).

## Reference List

- (1) Davidson RJ. Toward a biology of personality and emotion. *Ann N Y Acad Sci* 2001; 935:191-207.

## Abbreviations

BDS	Bodily Distress Syndrome (a novel unifying diagnostic category)
BDS, single-organ type	BDS type characterized by symptoms primarily from one bodily system
BDS, multi-organ type	The most severe form of BDS, characterized by symptoms from at least three bodily systems
CI	Confidence Interval
CTB	Cognitive Behavioural Therapy
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICD-11	International Classification Diseases and Health Related Problems
MBCT	Mindfulness Based Cognitive Therapy
MBSR	Mindfulness Based Stress Reduction
SCAN	Schedules for Clinical Assessment in Neuropsychiatry
SD	Standard Deviation
SF-36	Medical outcomes study short form 36 questionnaire
SF-36 MCS	SF-36 Mental Component Summary
SF-36 PCS	SF-36 Physical Component Summary
SF-36 PPH	SF-36 Perceived Physical Health (an alternative to the SF-36 PCS)
STreSS	Specialized Treatment for Severe Bodily Distress Syndromes
STreSS-1	The first clinical trial assessing the efficacy of STreSS
STreSS-2	The second clinical trial assessing <i>Mindfulness therapy</i>
TAU	Treatment as usual

# Chapter 1.

## Introduction

**Towards a mindfulness treatment approach**

## Aim of this chapter

This chapter provides a brief overview of the concept of BDS and discusses why from a theoretical point of view mindfulness may be helpful. In the recent years, we have seen encouraging evidence that psychological treatments can improve the health-related quality of life of patients suffering from medical and psychiatric conditions such as fibromyalgia, irritable bowel syndrome, chronic fatigue syndrome, and somatization disorder. Even so, the need for approaches that can be deployed to further the development of self-regulatory and self-care skills remains strong. The theoretical model for including mindfulness training in the treatment of BDS is based on identified neurobiological impairments in these patients and the neurobiological improvements that mindfulness training may offer. The overall goal is to improve the care for patients suffering from these conditions. The chapter raises the following topics: mental health, BDS, stigmatization, epidemiology, etiopathogenesis, the biology of emotions, treatment, and the potential of mindfulness, and presents a theoretical model for including mindfulness in the treatment of BDS.

## Mental health

Mental health per se, unlike physical health, has only recently become a subject of medical research; until the late nineties <sup>1</sup>, research was confined to the study of mental disorders, and mental health was defined, largely by default, as the absence of a psychiatric illness <sup>1</sup>. We do not define physical health only as the absence of illness; rather, it is common sense that many things influence psychical health, e.g. exercise, nutrition, and other aspects of daily living. It is beyond question that physical training has an impact on the brain, immune, and endocrine functions <sup>2</sup>. The same mechanisms may hold true for mental training, and this thesis explores whether patients suffering from BDS may be committed to such mental training in the form of *mindfulness therapy*, which is a mindfulness program specifically targeted patients suffering from BDS.

## Bodily distress syndrome

There is an ongoing debate about the classification and the diagnostic criteria for medically unexplained symptoms, functional somatic syndromes, somatization, somatization disorder, and other somatoform disorders, which are about to change in the revision of the 11<sup>th</sup> International Classification of Diseases (ICD-11) and the American Psychiatric Association's Diagnostic and Statistical Manual of mental Disorders (DSM-V). The diagnostic issues have been discussed intensely and described in detail elsewhere <sup>3, 4</sup>. The present thesis uses the term BDS because it is developed from empirical research, and it covers the most important functional somatic syndromes

<sup>4, 5</sup>. Thus, BDS is a classification that may unite functional somatic syndromes and somatization disorder. The BDS concept is based on specific symptom clusters, and it includes most patients with somatoform disorders, despite psychological symptoms or behavioral characteristics not being part of the diagnostic criteria <sup>6</sup>. Also, BDS is a neutral label which is easier to communicate across specialties. In this study, we included the multi-organ type BDS that requires functional somatic symptoms from at least three out of four bodily systems: the cardiopulmonary, gastrointestinal, musculoskeletal, or general symptoms, and moderate to severe impairment in daily living, and at least six months of duration (Table 1.1). For the randomized controlled trial, we only included chronic cases defined as cases whose symptoms had lasted at least two years.

**Table 1.1 Diagnostic criteria for bodily distress syndrome. Fink et al (2007) <sup>4</sup>**

Symptom groups	
<b>Musculoskeletal</b> Muscular ache or pain Pain in the joints Feelings of paresis or localized weakness Back ache Pain moving from one place to another Unpleasant numbness or tingling sensations Pain in arms or legs	<b>Gastrointestinal</b> Abdominal pain Nausea Frequent loose bowel movements, diarrhea Feeling bloated/full of gas/distended Regurgitations, burning sensation in chest Constipation Vomiting
<b>General symptoms</b> Concentration difficulties Impairment of memory Excessive fatigue Headache Dizziness	<b>Heart and lung</b> Palpitations/heart pounding Hot or cold sweats Breathlessness without exertion Hyperventilation, dry mouth Trembling/shaking, churning in stomach, flushing or blushing
<ul style="list-style-type: none"> <li>• Symptoms from at least three out of the four different symptom groups, and at least three symptoms from each of the three symptom groups</li> <li>• Duration: a minimum of six months</li> <li>• Impairments in daily life</li> </ul>	

## Stigmatization

Somatization has been known in medicine since ancient times and has almost always caused stigmatization as evidenced by such concepts as ‘hysteria’, which dates back to about 1900 BC and was described in Egyptian papyruses <sup>7</sup>. Although the medical profession has gained much ground since ancient times, somatization remains a puzzle. Medical professionals may find somatization difficult, and patients may be told that ‘it’s all in their mind’ or ‘they just have to live with it, and if they coped better they would not experience all these symptoms, and use time and money in the health care system’ <sup>8-11</sup>. The ‘understanding’ of the concept of somatization disclosed by such utterances may be rooted in the mind/body dualism deeply embedded in modern medicine, which tends to classify symptoms and diseases as either physical or mental. Chronic illnesses without organ pathology are a source of confusion for physicians often taught that ‘if it is not organic, it must be psychiatric’; the prevailing paradigm simply makes it difficult to believe in the reality of an illness without organ pathology <sup>12</sup>. The physicians may think that the patients are faking and are untreatable, especially if they decline psychosocial treatment. The patients, on their part, may also believe that they may be helped only by means of medication prescribed to treat a biomedical problem. Furthermore, psychological or psychiatric treatment may seem inappropriate to a person with somatic complaints, and it may be perceived as unnecessarily stigmatizing <sup>6</sup>. Thus, the sharp division of a health care system into ‘mental’ and ‘physical’ domains is problematic in the light of current research which argues that the problem of BDS is one that encompasses both the body and the mind <sup>6</sup>.

## Epidemiology

BDS is common and costly, although only the bodily symptoms which are persistent and lead to impairment or distress are diagnosed as disorders <sup>6</sup>. It is estimated that these disorders occur in approximately 6% of the population, 16% of primary care attenders, and up to 33% of patients in secondary care clinics <sup>6, 13-17</sup>. BDS correlates with female sex, fewer years of education, low socioeconomic status, other psychiatric disorders (especially anxiety and depressive disorders), and recent stressful life events <sup>18, 19</sup>. There is some evidence for genetic predisposition <sup>20</sup>. Also, having a parent with poor health or high neuroticism, persistent abdominal pain as a child, childhood abuse, physical illness, a negative illness belief, and unemployment may be associated with BDS <sup>21-24</sup>. When the disorders occur concurrently with a physical illness and anxiety/depression, the impairment seems to have an additive effect. A high number of symptoms is associated with a high level of disability <sup>6</sup>. In addition, functional somatic syndromes are associated with physical illnesses <sup>6, 25-27</sup>.

The onset of functional somatic syndromes may be associated with prior gastrointestinal infection, anxiety, depression, neuroticism, recent stressful life event, and health anxiety<sup>28, 29</sup>. Predictors of the onset and the persistence of functional somatic syndromes include female gender, older age, fewer years of education, lower socioeconomic status, unemployment, a reported history of sexual abuse/other childhood adversities, multiple symptoms, concurrent chronic physical illness or psychiatric disorder, social stress, and reinforcing social factors such as illness benefits<sup>19, 22, 30-32</sup>.

For patients suffering from irritable bowel syndrome, a successful contact with a gastroenterologist that is followed by improvement in symptoms of irritable bowel syndrome is associated with reduced anxiety, reduced fear of cancer, greater likelihood of attributing symptoms to stress and less catastrophizing in relation to bodily symptoms<sup>6</sup>.

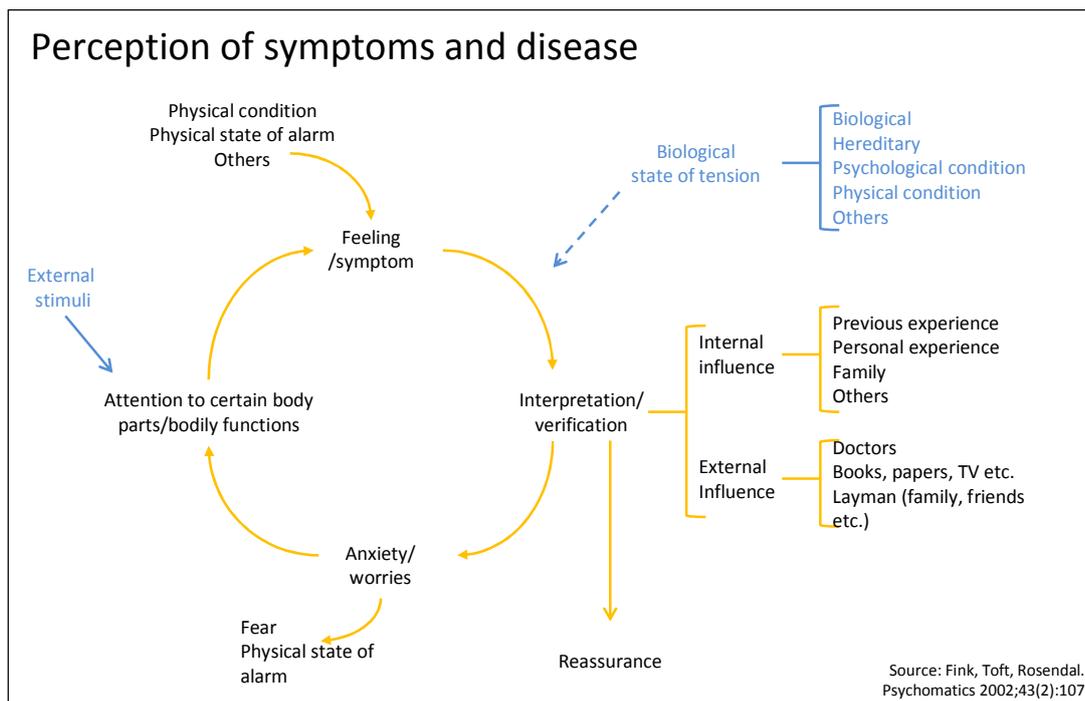
The impairments of BDS are comparable with those of depressive disorders or a general medical disease. Due to these impairments and the numerous investigations made to rule out any medical conditions, BDS is expensive in terms of health care use and time missed from work<sup>4, 6, 15, 33-46</sup>. In the Netherlands, medically unexplained symptoms and somatoform disorders form the fifth most expensive diagnostic category<sup>28, 47</sup>. The costs appear to be higher than those incurred by stroke and cancer. The high health care costs do not include time lost from work and the reduced productivity, or the time of carers. The money is spent on medical consultations and expensive investigations, which lead to little or no health gain<sup>6</sup>. The greater societal costs are evident by the fact that these diagnoses account for 6-10% of early retirement pensions in Denmark<sup>4, 48</sup>.

### **Etiopathogenesis**

The causes of BDS are complex and involve both pathophysiological, psychological, and social mechanisms. The complex interface of biological, psychological, and behavioral mechanisms is not unique to BDS; indeed, it plays an important role in the symptom expression of all chronic medical and psychiatric illnesses<sup>49</sup>. In the search for a pathophysiological basis, research has focused more and more on the central nervous system<sup>50</sup>. It has been suggested that the pathology of the hypothalamic pituitary-adrenal axis and the autonomic regulation of physiological arousal may play a role<sup>51</sup>. This suggestion finds support in the growing body of evidence for one or more of the following pathophysiological manifestations once BDS has developed: sensory amplification, attenuated hypothalamic-pituitary function, lability of the autonomic nervous system, and psychological and behavioral factors<sup>52</sup>. The etiopathogenetic models of BDS are multifactorial, but they differ in their emphasis on biological vs. cognitive/behavioral or cultural factors.

The perception of symptoms and disease model <sup>53</sup> (Figure 1.1) emphasizes cognitive/behavioral factors and describes the risk of health anxiety, excessive medical consultations, and expensive investigations. Yet, the model also acknowledges that symptoms are initiated by a physical state that may be similar to what is suggested in patients suffering from asthma.

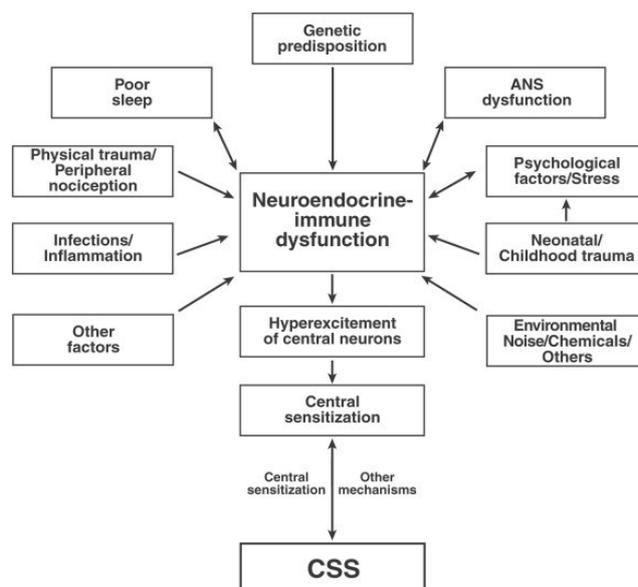
**Figure 1.1 Perception of symptoms and disease model. Fink (2002)**



The central sensitization model (Figure 1.2) emphasizes the role of biological factors <sup>54, 55</sup>, a similar model is used to describe the relationship between emotions and asthma <sup>56</sup>. Research directed toward understanding the pathophysiology of asthma has previously ignored the role of the brain. But research now suggests that the insula and anterior cingulate cortex are major components of circuitry through which emotional and cognitive processes and peripheral inflammation are mutually influential. Substance P, a neuropeptide involved in inflammation and the signaling of noxious stimulation to the brain, is one factor through which stress and emotions may promote inflammation and vice versa <sup>57</sup>. Several groups have demonstrated that patients with fibromyalgia have cerebrospinal fluid concentrations of Substance P that are approximately threefold higher than those of normal controls <sup>52, 58, 59</sup>. Also, Substance P dysregulation may be involved in irritable bowel

syndrome<sup>57</sup>. These observations may challenge the dichotomous view that classifies illness as either organic or nonorganic<sup>49</sup>. Brain imaging studies have compared measures of brain activity between patients suffering from different functional somatic syndromes or somatoform disorders and controls, and reported differences in regional cerebral blood flow in subcortical structures: thalamus<sup>60-62</sup>, basal ganglia<sup>61-65</sup> and brainstem<sup>66</sup>, and in the cortical regions<sup>63-70</sup>, but the descriptions are too inconsistent to be of any help<sup>71</sup>. However, one study using patients diagnosed with BDS with no co-morbidity described impairments of sensory processing<sup>50</sup>. Contrary to expectations, the patients had a pain threshold that was higher than that of the controls. Yet, the patients and controls reached unbearable pain at the same temperature. In addition, the patients had a significantly lower response to painful stimulation in the contralateral secondary somatosensory cortex and bilateral prefrontal cortex than the healthy controls. The patients demonstrated a lower increase in regional cerebral blood flow in the inferior parietal lobule, which is involved in sensory-discriminative and semantic judgmental processing. Therefore, it is suggested that these patients have an impaired ability to evaluate and categorize their painful sensations. This claim is further supported by different activations of the prefrontal cortex; which is thought to play a regulatory role in the processing of pain, especially in emotional and cognitive modulation of pain experiences. This may indicate a deficiency in the cognitive regulation of pain perception in patients suffering from BDS<sup>50</sup>.

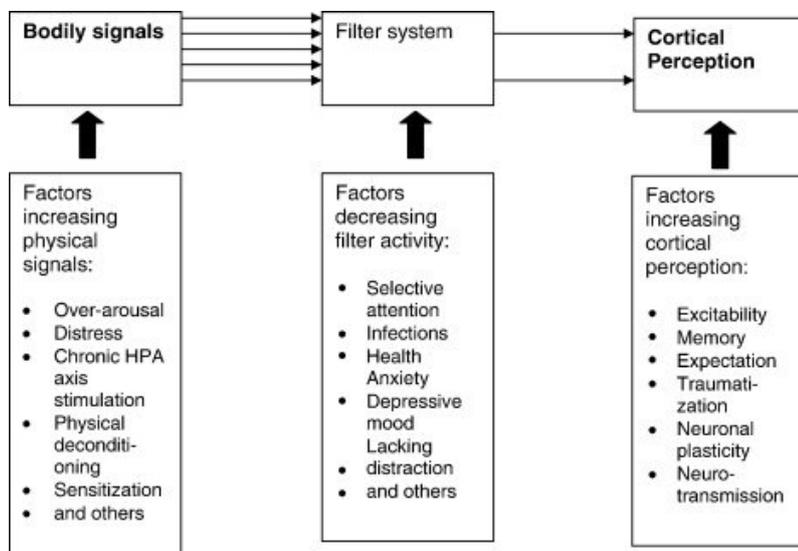
**Figure 1.2 The central sensitization model, Yunus (2007)<sup>55</sup>**



CSS= central sensitivity syndromes (covers BDS); ANS= autonomic nervous system

The perception-filter model <sup>72</sup> (Figure 1.3) suggests that due to an impaired filter system, more bodily sensations reach cortical perception in patients suffering from BDS. It was formerly believed that sensory processing was a passive, stimulus-driven device, but now perception is viewed as an active and highly selective process <sup>73, 74</sup>. This model includes depression as a factor that can decrease the filter activity, which is also relevant for other disorders. Research has demonstrated that chronic diseases characterized by dysregulation of inflammation are particularly susceptible to exacerbation by stress and emotions. Likewise, rates of depression and anxiety are overrepresented in individuals suffering from chronic inflammatory diseases <sup>57, 75, 76</sup>.

Figure 1.3 Perception-filter model, Rief (2007) <sup>72</sup>



HPA= hypothalamic pituitary-adrenal.

In addition, a hypothetical model (Figure 1.4) for the cause of BDS has been offered <sup>77</sup>. This model is global and emphasizes a developmental perspective that involves predisposing, precipitating, and perpetuating factors.

Figure 1.4 Hypothetical model explaining the cause of functional somatic syndromes (covers BDS)<sup>77</sup>

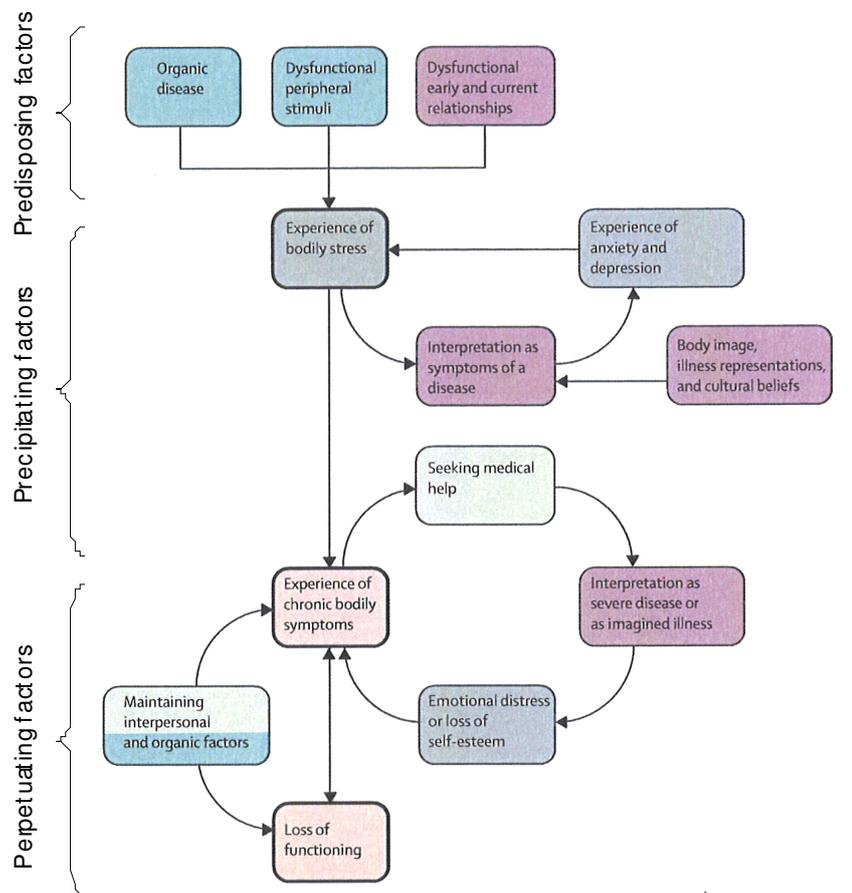


Figure: Hypothetical model for the cause of FSS  
 Pink=core symptoms of FSS. Grey=accompanying symptoms. Purple=psychological and sociocultural factors.  
 Green=behavioural and interpersonal factors. Blue=organic factors.

### The biology of emotions

Any kind of complex behavior, such as the regulation of emotions and of illness perception and illness behavior, is the result of complex interactions of different functional systems in the brain. The frontal lobe is a critical zone for regulating emotions, and the parietal lobe is an area where representations from the senses come together, whereas the amygdala is critical for automatic, negative, but also for positive emotions, and for fear in particular. The hippocampus plays an important role in emotions, because it is essential for our appreciation of the contexts of events and for recruiting routines that assist in the regulation and inhibition of automatic emotional responses<sup>78</sup>. Some emotional disorders involve abnormalities in the hippocampus, particularly depression and posttraumatic stress disorder, likely due to the comparative density of cortisol receptors in the

hippocampus<sup>79-81</sup>. Destructive emotions are an expression of an emotion whose expression is not constructive in a particular situation although the emotion itself may be adequate in the situation. For instance, it is natural for a person to experience sadness when a loved one dies. But a depressed person experiences sadness in contexts that are not appropriate<sup>1</sup>. Similarly, it is natural to experience bodily symptoms when the body is ill or stressed, but a person suffering from BDS experiences bodily symptoms even though no pathology can be found, and the person might not even experience stress. In neuroscience, it is now hypothesized that the frontal lobes, the amygdalae, and the hippocampus change in response to experience<sup>82</sup>. They are parts of the brain that are affected by the emotional environment in which we are raised and which are shaped by repeated experience. This phenomenon – ‘neural plasticity’- has been traced down to the level of gene expression<sup>1</sup>, and new neurons have been shown to grow throughout man’s entire life span. The amygdala plays a key role in the circuitry that activates emotion, while the prefrontal cortex does much of the regulation, especially inhibition<sup>83</sup>. The frontal lobes, the amygdalae, and the hippocampus are extensively connected to the body, in particular the immune system, and the autonomous nervous system. This implies that emotional regulation and the stress regulation in the body and the mind are highly connected<sup>84, 85</sup>. When we think, feel, and act, we may actually change our brain and body as modern neuroscience suggests<sup>1</sup>.

Emotional regulation is relevant to BDS patients because emotion regulation and pain or symptom regulation are associated; the comorbidity of mood disorders and pain syndromes has been shown to be high<sup>86</sup>. Among chronic pain patients and healthy individuals, a heightened experience of negative affect has been shown to be associated with poorer pain outcomes<sup>87, 88</sup>. Moreover, integrative neuroimaging, behavioral, and physiological methods may have provided novel evidence that emotion regulation and pain regulation skills are a shared ability that is reflected in the functioning of the amygdala<sup>88</sup>.

## Treatment

Psychosocial interventions may alter a raised physical symptom perception threshold, neuro-endocrine-immune dysfunction, and maladaptive perception. Moreover, an increase in the prefrontal cortical volume following individual cognitive behavioral therapy (CBT) has been found in patients with chronic fatigue syndrome<sup>89</sup>. The rehabilitative approach combined a graded increase in physical activity with a psychological approach that addressed thoughts and beliefs<sup>89</sup>. Reviews have concluded that graded exercises and CBT may have a therapeutic potential for BDS patients<sup>77 90 91</sup>

<sup>92</sup>. A large study on chronic fatigue syndrome confirmed the beneficial effect of CBT and graded exercises. The three-arm study found that individual CBT and individual graded exercise therapy were associated with less fatigue and a better physical function, and it was recommended that patients attending secondary care with chronic fatigue syndrome should be offered individual CBT or individual graded exercise therapy alongside specialist medical care <sup>93</sup>. Yet, it should be observed that 3158 patients were screened for eligibility in order to include 641 patients. Moreover, the treatment was comprehensive: at least three sessions of specialist medical care were offered and provided by doctors with specialist experience in chronic fatigue syndrome, plus up to 14 individual therapy sessions, and an additional booster session. The effects of CBT on somatization disorder are tested in two studies. Allen <sup>94</sup> found that individual CBT added to psychiatric consultation improved physical function compared with psychiatric consultation alone. Whereas a CBT intervention by the family physicians was unable to facilitate improvement of physical function <sup>95</sup>.

A Cochrane review on exercise for treating fibromyalgia found that supervised aerobic exercise training had beneficial effects on physical capacity and fibromyalgic symptoms. However, adherence to many of the interventions was poor <sup>90</sup>. A Cochrane review on psychological therapies for the management of irritable bowel syndrome concluded that CBT and interpersonal psychotherapy may be effective immediately after finishing treatment, but the quality of the studies was sub-optimal <sup>91</sup>. A review of the treatment for somatoform disorders concluded that CBT is the best established treatment for a variety of somatoform disorders; that a consultation letter to the primary care physician was associated with some benefit; and that there was preliminary but non-conclusive evidence for an effect of antidepressants <sup>96</sup>.

However, among the most severe disorders in this area randomized controlled trials are few. Also, research in functional somatic syndromes and somatization disorder is even more limited as these disorders are heterogeneous and lack a clear definition. Recently, a new intervention entitled Specialized Treatment for Severe Bodily Distress Syndromes (STreSS) <sup>97, 98</sup> was developed at a general hospital by our group of psychiatrists specialized in functional somatic syndromes. The STreSS model is based on a CBT approach and aimed at overcoming shortcomings in the classification and the organization of care by treating patients with various functional somatic syndromes under one unifying diagnostic label, BDS. The STreSS model has been tested in a

randomized controlled trial, and it was found effective in improving self-reported physical health when compared with enhanced usual care <sup>97,99</sup>.

A literature search for mindfulness and functional somatic syndromes identified only randomized controlled trials of patients diagnosed with fibromyalgia. Three studies have been conducted and none of them showed convincing results, but they gave some indications as to possible avenues for therapeutic improvement. Sephton et al. showed that the mindfulness program Mindfulness-Based Stress Reduction (MBSR) alleviated depressive symptoms in one study <sup>100</sup>. In this self-selected sample, a high proportion of the respondents who initially scheduled did not attend the intake interview, and 282 individuals were screened for eligibility in order to include 91 participants. Functional impairment, pain, and sleep quality were measured prior to randomization, but the results of these outcomes were not reported. Demographic characteristics of the patients were as follows: the mean age was 48.4 (SD 8.9) years, 66.7% had >14 years of education, and 60.7% had an income >\$40,000. In another study, Astin et al. <sup>101</sup> were unable to show a difference between a treatment combining MBSR and Qi Gong and an educational program. Also, the demographic characteristics of their population showed a high social status among participants, as over 80% had taken at least some college courses, their average age was 47.7 (SD 10.6) years. A high drop-out rate of up to 49% made it difficult to draw any final conclusions. While both groups improved, they showed no differences between groups. A similar finding was observed in a recent study <sup>102</sup>. Being the largest and one of the few actively controlled studies, it shows a small difference between MBSR and the active control in fibromyalgia patients. The subjects had a higher mean age (53.4 years; SD 8.7) than the subjects in the two previous studies; in the MBSR intervention arm, 35.5% of the participants were working and 37.7% retired. Thus, participants showed a similarly high social status.

### **The potential of mindfulness**

Mindfulness practice is the practice of a non-judgmental awareness that aims at the experience of nonduality. Nonduality in this context means that reality is ultimately neither physical nor mental. From a traditional Buddhist point of view, we all have destructive emotions. This is reflected in the first and second of the four noble truths that life is suffering and that the source of suffering is greed, which is the basis of all destructive emotions. But if we really investigate our emotions, analyze them, and look at their effects, we can attenuate negative emotions and cultivate positive emotions as reported in a recent study <sup>103</sup>. According to research, mindfulness training may be a practice that promotes neural plasticity <sup>84,104-106</sup>. Mindfulness can be defined as a moment to moment

non-judgmental awareness<sup>107</sup>. It correlates with a meditative state called ‘open awareness’ where one is very fresh, the senses are very alert, but one consciously chooses not to mentally engage, judge, identify with whatever is coming to the senses<sup>1</sup>. The neural process that might correspond to this state of awareness has been investigated by Richard Davidson et al. Their investigations demonstrated a shift of brain function to left frontal dominance in response to emotional triggers that were associated with an approach state of mind with more positive emotion. And the left shift in emotion-regulation circuits was correlated with improved immune function<sup>108</sup>. An increased thickness in the prefrontal area, insula, and hippocampus has also been found; the degree of thickness correlated with the length of time practicing mindfulness meditation<sup>109-112</sup>. The insula transmits data from the body to the brain and is especially thought to be important for a physiological kind of awareness<sup>113</sup>. Neural integration is the linkage of anatomically or functionally differentiated neural regions into an interconnection of widely distributed areas of the brain and body proper. One example would be the balance of such functions as brakes and accelerator branches of the automatic nervous system. The middle prefrontal regions may monitor the sympathetic and parasympathetic activity and then be able to alter it, a mechanism of ‘bodily regulation’<sup>114</sup>.

Mindfulness practice starts by observing the body and holding the awareness of the body with a friendly non-judgmental attitude. Daniel Siegel has proposed that the ability to observe the body is a sixth sense that may enhance stress regulation or ‘bodily regulation’<sup>114</sup>. The next step is to observe the mind, notice when thoughts and emotions arise. The Tibetan word for meditation means ‘familiarization’. The point is not to try to block arising thoughts, but to not let them invade the mind. What people do in meditation is to familiarize themselves with a new way of dealing with thoughts that come to their minds<sup>1</sup>. When a powerful thought of strong attraction or anger arises, you recognize it: ‘Oh, that thought is coming’. An example often given is that of a thief coming into an empty house. There is nothing to lose for the owner and nothing to gain for the thief. This is an experience of freedom. You do not become apathetic, but you gain mastery over your thoughts. This can only happen through sustained training and genuine experience<sup>1</sup>. Daniel Siegel has proposed that the ability to observe the mind is a seventh sense that may enhance attention and emotion regulation<sup>114</sup>. The last step is to move toward acceptance and to observe relationships; the relationship toward yourself, the situation you are in, and the connection with others<sup>114</sup>. Daniel Siegel has proposed that the ability to observe relationships is an eighth sense that may enhance

communication skills. This eighth relational sense enables one to be ‘feeling felt’ by another and to feel being a part of a larger whole. Also, it enables one to become friends with oneself.

A brain perspective on a mindful way of being may reflect a primary neural circuitry in which we (1) perceive the outside world through our first five senses, (2) have interoception of our bodily sixth sense, (3) achieve mindsight for the mental processes of our own and others` minds in our seventh sense, and (4) have a direct sensation of our resonance with something larger than our day-to-day adaptive self in our eighth sense. Living within the directness of these eight senses may enable us to be grounded in the physical world, the body, our mind and our relationships <sup>114</sup>.

### **A theoretical model for mindfulness therapy**

The co-occurrence of negative affect and pain is well recognized <sup>87, 115</sup>, and an impaired ability to evaluate and categorize painful sensations could indicate a deficiency in the cognitive regulation of pain perception in patients suffering from BDS. This may be due to changes in the parietal and prefrontal cortex, which are the areas that sustained training of mindfulness may improve. Impairments of sensory processing may also lead to repetitive overloading, which may in turn lead to fear of movement and unhealthy coping strategies. Patients often describe that they shift between ignoring and being totally overwhelmed by somatic symptoms. A patient described this inability to detect and react to bodily sensations as a state of stress in the body that he is not aware of.

In contrast, mindfulness training may improve stress and emotion regulation, and it may train patients’ in the ability to notice when bodily sensations, thoughts, and emotions arise and help them embrace these sensations in a friendly, non-judgmental awareness. Mindfulness training may enable one to notice the selective process or the automatic filters that regulate the flow of energy and information in what may be considered the mind. By investigating healthy minds, modern neuroscience suggests that mental health can be improved by mindfulness training <sup>78, 116</sup>. The mind is extensively connected with the body, in particular with the immuno-endocrine system and the autonomous nervous system. Hence emotional regulation and stress regulation may be improved by such training.

In summary, BDS is a major public health issue possibly associated with the pathology of the immuno-endocrine and autonomic nervous system. BDS patients are often stigmatized, and effective treatment is rarely delivered, leaving these patients isolated, left by themselves, vulnerable to potentially harming medical and/or alternative treatments. There is accordingly a need for non-harming practical tools that patients can learn to master so that they can improve the ability to take responsibility for their own health and wellbeing. Planning this PhD project, I therefore aspired to design a project that could develop and evaluate a mindfulness treatment approach for those most severely disabled patients who suffer from multi-organ BDS.

**Table 1.2 A theoretical model for *mindfulness therapy***

<div style="background-color: #cccccc; padding: 10px; text-align: center; margin-bottom: 10px;"> <p><b>Bodily distress syndrome</b></p> <p>↓</p> </div> <p style="text-align: center;">Central nervous system dysfunction Immune dysfunction → Psychological dysfunction</p>	<ul style="list-style-type: none"> <li>▪ Pathology of the hypothalamic pituitary-adrenal axis and autonomic regulation of physiological arousal</li> <li>▪ Deficiency in the cognitive regulation of pain perception</li> <li>▪ Maladaptive illness behaviors, including isolation, cessation of pleasurable activities and reduced activity and exercise</li> </ul>
<div style="background-color: #cccccc; padding: 10px; text-align: center; margin-bottom: 10px;"> <p><b>Mindfulness</b></p> <p>↓</p> </div> <p style="text-align: center;">Body awareness training Mind awareness training → Relation awareness training</p> <p style="text-align: center;">↓</p>	<ul style="list-style-type: none"> <li>▪ An increase in gray matter in insula, hippocampus, prefrontal cortex <sup>109, 111, 112</sup></li> <li>▪ An improved psychological function associated with attention and compassion <sup>117-119</sup></li> <li>▪ Increased activation of left frontal regions, which lifts mood <sup>116</sup></li> <li>▪ A strengthening of the immune system <sup>108, 118</sup></li> </ul>
<div style="background-color: #cccccc; padding: 10px; text-align: center; margin-bottom: 10px;"> <p><b>Body/ Mind/ Relations are connected</b></p> </div> <p>Among other factors, bodily symptoms may be experienced due to destructive emotions as a result of distress and/or impaired regulation of emotions, symptoms, and pain.</p>	

Mindfulness practice is often explained as a state of being in the now, but it also includes knowing the past, knowing what has lead to this moment, and moreover it includes the future, because this moment has already gone. Therefore, it is important to know in which direction one is going: is it a helpful or hurtful direction? A constructive or destructive direction? In mindfulness practice, yoga is used for body awareness training, meditation for mind awareness training, and compassion for mindfulness training, which is described as the heart of mindfulness practice <sup>120</sup>.

### Reference List

- (1) Goleman D. *Destructive Emotions. How can we overcome them? A scientific Dialogue with the Dalai Lama*. New York: Bantam Dell. A division of Random House, Inc.; 2003.
- (2) Walsh NP, Gleeson M, Shephard RJ et al. Position statement. Part one: Immune function and exercise. *Exerc Immunol Rev* 2011;17:6-63.
- (3) Schröder A, Fink P. The proposed diagnosis of somatic symptom disorders in DSM-V: two steps forward and one step backward? *J Psychosom Res* 2010 January;68(1):95-6.
- (4) Fink P, Toft T, Hansen MS, Ørnboel E, Olesen F. Symptoms and syndromes of bodily distress: an exploratory study of 978 internal medical, neurological, and primary care patients. *Psychosom Med* 2007 January;69(1):30-9.
- (5) Fink P, Schröder A. One single diagnosis, Bodily distress syndrome, succeeded to capture ten diagnostic categories of functional somatic syndromes and somatoform disorders. *Journal of Psychosomatic Research* 2010;68:415-26.
- (6) Creed F, Henningsen P, Fink P. *Medically Unexplained Symptoms, Somatisation and Bodily Distress. Developing Better Clinical Services*. Cambridge: Cambridge University Press; 2011.
- (7) Fink P. Somatization from a historical perspective. *Nord J Psychiatry* 1996;50:353-63.
- (8) Carson AJ, Stone J, Warlow C, Sharpe M. Patients whom neurologists find difficult to help. *J Neurol Neurosurg Psychiatry* 2004 December;75(12):1776-8.
- (9) Sharpe M, Mayou R, Seagroatt V et al. Why do doctors find some patients difficult to help? *QJM* 1994;87:187-93.
- (10) Chew-Graham C, May C. Chronic Low Back Pain in General Practice: The Challenge of the Consultation. *Fam Pract* 1999 January 2;16(1):47-9.
- (11) Wileman L, May C, Chew-Graham CA. Medically unexplained symptoms and the problem of power in the primary care consultation: a qualitative study. *Fam Pract* 2002 April;19(2):178-82.
- (12) McWhinney IR, Epstein RM, Freeman TR. Rethinking somatization. *Adv Mind Body Med* 2001;17(4):232-9.
- (13) Kirmayer LJ, Robbins JM. Three forms of somatization in primary care: prevalence, co-occurrence, and sociodemographic characteristics. *J Nerv Ment Dis* 1991 November;179(11):647-55.
- (14) Kroenke K, Price RK. Symptoms in the community. Prevalence, classification, and psychiatric comorbidity. *Arch Intern Med* 1993 November 8;153(21):2474-80.
- (15) Fink P, Sorensen L, Engberg M, Holm M, Munk-Jorgensen P. Somatization in primary care. Prevalence, health care utilization, and general practitioner recognition. *Psychosomatics* 1999 July;40(4):330-8.
- (16) De Waal MW, Arnold IA, Eekhof JA, van Hemert AM. Somatoform disorders in general practice: Prevalence, functional impairment and comorbidity with anxiety and depressive disorders. *Br J Psychiatry* 2004 June;184:470-6.
- (17) Kringlen E, Torgersen S, Cramer V. Mental illness in a rural area: a Norwegian psychiatric epidemiological study. *Soc Psychiatry Psychiatr Epidemiol* 2006 September;41(9):713-9.
- (18) Creed F, Barsky A. A systematic review of the epidemiology of somatisation disorder and hypochondriasis. *J Psychosom Res* 2004 April;56(4):391-408.
- (19) Deary V, Chalder T, Sharpe M. The cognitive behavioural model of medically unexplained symptoms: A theoretical and empirical review. *Clin Psychol Rev* 2007 July 17.

- (20) Lembo AJ, Zaman M, Krueger RF, Tomenson BM, Creed FH. Psychiatric disorder, irritable bowel syndrome, and extra-intestinal symptoms in a population-based sample of twins. *Am J Gastroenterol* 2009 March;104(3):686-94.
- (21) Fiddler M, Jackson J, Kapur N, Wells A, Creed F. Childhood adversity and frequent medical consultations. *Gen Hosp Psychiatry* 2004 September;26(5):367-77.
- (22) Katon W, Sullivan M, Walker E. Medical symptoms without identified pathology: relationship to psychiatric disorders, childhood and adult trauma, and personality traits. *Ann Intern Med* 2001 May 1;134(9 Pt 2):917-25.
- (23) Hotopf M, Mayou R, Wadsworth M, Wessely S. Childhood risk factors for adults with medically unexplained symptoms: results from a national birth cohort study. *Am J Psychiatry* 1999 November;156(11):1796-800.
- (24) Hotopf M, Wilson-Jones C, Mayou R, Wadsworth M, Wessely S. Childhood predictors of adult medically unexplained hospitalisations. Results from a national birth cohort study. *Br J Psychiatry* 2000 March;176:273-80.
- (25) Walker EA, Katon WJ, Jemelka RP. Psychiatric disorders and medical care utilization among people in the general population who report fatigue. *J Gen Intern Med* 1993 August;8(8):436-40.
- (26) Watanabe N, Stewart R, Jenkins R, Bhugra DK, Furukawa TA. The epidemiology of chronic fatigue, physical illness, and symptoms of common mental disorders: a cross-sectional survey from the second British National Survey of Psychiatric Morbidity. *J Psychosom Res* 2008 April;64(4):357-62.
- (27) Lerdal A, Wahl A, Rustoen T, Hanestad BR, Moum T. Fatigue in the general population: a translation and test of the psychometric properties of the Norwegian version of the fatigue severity scale. *Scand J Public Health* 2005;33(2):123-30.
- (28) Dunlop SP, Jenkins D, Spiller RC. Distinctive clinical, psychological, and histological features of postinfective irritable bowel syndrome. *Am J Gastroenterol* 2003 July;98(7):1578-83.
- (29) Gwee KA, Leong YL, Graham C et al. The role of psychological and biological factors in postinfective gut dysfunction. *Gut* 1999 March;44(3):400-6.
- (30) Joyce J, Hotopf M, Wessely S. The prognosis of chronic fatigue and chronic fatigue syndrome: a systematic review [see comments]. *QJM* 1997 March;90(3):223-33.
- (31) Barsky AJ, Borus JF. Functional somatic syndromes. *Ann Intern Med* 1999 June 1;130(11):910-21.
- (32) Nijrolder I, van der Windt DA, van der Horst HE. Prognosis of fatigue and functioning in primary care: a 1-year follow-up study. *Ann Fam Med* 2008 November;6(6):519-27.
- (33) Barsky AJ, Orav EJ, Bates DW. Somatization increases medical utilization and costs independent of psychiatric and medical comorbidity. *Arch Gen Psychiatry* 2005 August;62(8):903-10.
- (34) Kolk AM, Schagen S, Hanewald GJ. Multiple medically unexplained physical symptoms and health care utilization: outcome of psychological intervention and patient-related predictors of change. *J Psychosom Res* 2004 October;57(4):379-89.
- (35) Cherry DK, Woodwell DA, Rechtsteiner EA. National Ambulatory Medical Care Survey: 2005 summary. *Adv Data* 2007 June 29;(387):1-39.
- (36) Jackson J, Fiddler M, Kapur N, Wells A, Tomenson B, Creed F. Number of bodily symptoms predicts outcome more accurately than health anxiety in patients attending neurology, cardiology, and gastroenterology clinics. *J Psychosom Res* 2006 April;60(4):357-63.
- (37) Barsky AJ, Ettner SL, Horsky J, Bates DW. Resource utilization of patients with hypochondriacal health anxiety and somatization. *Med Care* 2001 July;39(7):705-15.

- (38) Robinson RL, Birnbaum HG, Morley MA, Sisitsky T, Greenberg PE, Claxton AJ. Economic cost and epidemiological characteristics of patients with fibromyalgia claims. *J Rheumatol* 2003 June;30(6):1318-25.
- (39) Robinson RL, Birnbaum HG, Morley MA, Sisitsky T, Greenberg PE, Wolfe F. Depression and fibromyalgia: treatment and cost when diagnosed separately or concurrently. *J Rheumatol* 2004 August;31(8):1621-9.
- (40) Silverman S, Dukes EM, Johnston SS, Brandenburg NA, Sadosky A, Huse DM. The economic burden of fibromyalgia: comparative analysis with rheumatoid arthritis. *Curr Med Res Opin* 2009 April;25(4):829-40.
- (41) Akehurst RL, Brazier JE, Mathers N et al. Health-related quality of life and cost impact of irritable bowel syndrome in a UK primary care setting. *Pharmacoeconomics* 2002;20(7):455-62.
- (42) Levy RL, Von KM, Whitehead WE et al. Costs of care for irritable bowel syndrome patients in a health maintenance organization. *Am J Gastroenterol* 2001 November;96(11):3122-9.
- (43) Johansson PA, Farup PG, Bracco A, Vandvik PO. How does comorbidity affect cost of health care in patients with irritable bowel syndrome? A cohort study in general practice. *BMC Gastroenterol* 2010;10:31.
- (44) Brandt LJ, Chey WD, Foxx-Orenstein AE et al. An evidence-based position statement on the management of irritable bowel syndrome. *Am J Gastroenterol* 2009 January;104 Suppl 1:S1-35.
- (45) Reynolds KJ, Vernon SD, Bouchery E, Reeves WC. The economic impact of chronic fatigue syndrome. *Cost Eff Resour Alloc* 2004 June 21;2(1):4.
- (46) Stenager EN, Svendsen MA, Stenager E. Førtidspension til patienter med syndromsygdomme. *Ugeskr læger* 2003;5(165):469-74.
- (47) Meerding WJ, Bonneux L, Polder JJ, Koopmanschap MA, van der Maas PJ. Demographic and epidemiological determinants of healthcare costs in Netherlands: cost of illness study. *BMJ* 1998 July 11;317(7151):111-5.
- (48) Kjølner M, Rasmussen NK, Keiding L, Petersen HC, Nielsen GA. *Sundhed og sygelighed i Danmark 1994 - og udviklingen siden 1987*. København: DIKE; 1995.
- (49) Schmidt-Wilcke T, Clauw DJ. Fibromyalgia: from pathophysiology to therapy. *Nat Rev Rheumatol* 2011;7(9):518-27.
- (50) Kuzminskyyte R, Kupers R, Videbech P, Gjedde A, Fink P. Increased sensitivity to supra-threshold painful stimuli in patients with multiple functional somatic symptoms (MFS). *Brain Res Bull* 2010 April 29;82(1-2):135-40.
- (51) Rief W, Barsky AJ. Psychobiological perspectives on somatoform disorders. *Psychoneuroendocrinology* 2005 June 13;30(10):996-1002.
- (52) Clauw DJ. Potential mechanisms in chemical intolerance and related conditions. *Ann N Y Acad Sci* 2001 March;933:235-53.
- (53) Fink P, Rosendal M, Toft T. Assessment and Treatment of Functional Disorders in General Practice: The Extended Reattribution and Management Model - An Advanced Educational Program for Nonpsychiatric Doctors. *Psychosomatics* 2002;43(2):93-131.
- (54) Yunus MB. Central Sensitivity Syndromes: A New Paradigm and Group Nosology for Fibromyalgia and Overlapping Conditions, and the Related Issue of Disease versus Illness. *Semin Arthritis Rheum* 2008 January 11.
- (55) Yunus MB. Fibromyalgia and Overlapping Disorders: The Unifying Concept of Central Sensitivity Syndromes. *Semin Arthritis Rheum* 2007 March 10.

- (56) Rosenkranz MA, Davidson RJ. Affective neural circuitry and mind-body influences in asthma. *Neuroimage* 2009 September;47(3):972-80.
- (57) Rosenkranz MA. Substance P at the nexus of mind and body in chronic inflammation and affective disorders. *Psychol Bull* 2007 November;133(6):1007-37.
- (58) Vaeroy H, Helle R, Forre O, Kass E, Terenius L. Elevated CSF levels of substance P and high incidence of Raynaud phenomenon in patients with fibromyalgia: new features for diagnosis. *Pain* 1988 January;32(1):21-6.
- (59) Russell IJ, Orr MD, Littman B et al. Elevated cerebrospinal fluid levels of substance P in patients with the fibromyalgia syndrome. *Arthritis Rheum* 1994 November;37(11):1593-601.
- (60) Kwiatek R, Barnden L, Tedman R et al. Regional cerebral blood flow in fibromyalgia: single-photon-emission computed tomography evidence of reduction in the pontine tegmentum and thalami. *Arthritis Rheum* 2000 December;43(12):2823-33.
- (61) MacHale SM, Lawrie SM, Cavanagh JT et al. Cerebral perfusion in chronic fatigue syndrome and depression. *Br J Psychiatry* 2000 June;176:550-6.
- (62) Vuilleumier P, Chicherio C, Assal F, Schwartz S, Slosman D, Landis T. Functional neuroanatomical correlates of hysterical sensorimotor loss. *Brain* 2001 June;124(Pt 6):1077-90.
- (63) Hakala M, Karlsson H, Ruotsalainen U et al. Severe somatization in women is associated with altered cerebral glucose metabolism. *Psychological med* 2002;32:1379-85.
- (64) Ichise M, Salit IE, Abbey SE et al. Assessment of regional cerebral perfusion by 99Tcm-HMPAO SPECT in chronic fatigue syndrome. *Nucl Med Commun* 1992 October;13(10):767-72.
- (65) Schwartz RB, Garada BM, Komaroff AL et al. Detection of intracranial abnormalities in patients with chronic fatigue syndrome: comparison of MR imaging and SPECT. *AJR Am J Roentgenol* 1994 April;162(4):935-41.
- (66) Tirelli U, Chierichetti F, Tavio M et al. Brain positron emission tomography (PET) in chronic fatigue syndrome: preliminary data. *Am J Med* 1998 September 28;105(3A):54S-8S.
- (67) Fischler B, D'Haenen H, Cluydts R et al. Comparison of 99m Tc HMPAO SPECT scan between chronic fatigue syndrome, major depression and healthy controls: an exploratory study of clinical correlates of regional cerebral blood flow. *Neuropsychobiology* 1996;34(4):175-83.
- (68) Yazici KM, Kostakoglu L. Cerebral blood flow changes in patients with conversion disorder. *Psychiatry Res* 1998 September 28;83(3):163-8.
- (69) Garcia-Campayo JJ, Sanz-Carrillo C, Baringo T, Ceballos C. SPECT scan in somatization disorder patients: an exploratory study of eleven cases. *Aust N Z J Psychiatry* 2001 June;35(3):359-63.
- (70) Wik G, Fischer H, Bragee B, Kristianson M, Fredrikson M. Retrosplenial cortical activation in the fibromyalgia syndrome. *Neuroreport* 2003 March 24;14(4):619-21.
- (71) Wood PB. Neuroimaging in functional somatic syndromes. *Int Rev Neurobiol* 2005;67:119-63.
- (72) Rief W, Broadbent E. Explaining medically unexplained symptoms-models and mechanisms. *Clin Psychol Rev* 2007 July 17.
- (73) Pessoa L, Ungerleider LG. Neuroimaging studies of attention and the processing of emotion-laden stimuli. *Prog Brain Res* 2004;144:171-82.
- (74) Engel AK, Fries P, Singer W. Dynamic predictions: oscillations and synchrony in top-down processing. *Nat Rev Neurosci* 2001 October;2(10):704-16.

- (75) van WD, Maes M. Activation of the inflammatory response system: A new look at the etiopathogenesis of major depression. *Neuro Endocrinol Lett* 1999;20(1-2):11-7.
- (76) Schins A, Tulner D, Lousberg R et al. Inflammatory markers in depressed post-myocardial infarction patients. *J Psychiatr Res* 2005 March;39(2):137-44.
- (77) Henningsen P, Zipfel S, Herzog W. Management of functional somatic syndromes. *Lancet* 2007 March 17;369(9565):946-55.
- (78) Davidson RJ. Affective style, psychopathology, and resilience: brain mechanisms and plasticity. *Am Psychol* 2000 November;55(11):1196-214.
- (79) Davidson RJ, Pizzagalli D, Nitschke JB, Putnam K. Depression: perspectives from affective neuroscience. *Annu Rev Psychol* 2002;53:545-74.
- (80) Bremner JD, Vythilingam M, Vermetten E, Anderson G, Newcomer JW, Charney DS. Effects of glucocorticoids on declarative memory function in major depression. *Biol Psychiatry* 2004 April 15;55(8):811-5.
- (81) Pütz P. *Hypercortisolemic disorders*. Basel:Karger; 2008. p. 39-59.
- (82) Davidson RJ, Jackson DC, Kalin NH. Emotion, plasticity, context, and regulation: perspectives from affective neuroscience. *Psychol Bull* 2000 November;126(6):890-909.
- (83) Davidson RJ. Toward a biology of personality and emotion. *Ann N Y Acad Sci* 2001 May;935:191-207.
- (84) Davidson RJ. Affective neuroscience and psychophysiology: toward a synthesis. *Psychophysiology* 2003 September;40(5):655-65.
- (85) Rosenkranz MA, Jackson DC, Dalton KM et al. Affective style and in vivo immune response: neurobehavioral mechanisms. *Proc Natl Acad Sci U S A* 2003 September 16;100(19):11148-52.
- (86) Wiech K, Tracey I. The influence of negative emotions on pain: behavioral effects and neural mechanisms. *Neuroimage* 2009 September;47(3):987-94.
- (87) Price DD. Psychological and neural mechanisms of the affective dimension of pain. *Science* 2000 June 9;288(5472):1769-72.
- (88) Strigo IA, Simmons AN, Matthews SC, Craig AD, Paulus MP. Association of major depressive disorder with altered functional brain response during anticipation and processing of heat pain. *Arch Gen Psychiatry* 2008 November;65(11):1275-84.
- (89) De Lange FP, Koers A, Kalkman JS et al. Increase in prefrontal cortical volume following cognitive behavioural therapy in patients with chronic fatigue syndrome. *Brain* 2008 August;131(Pt 8):2172-80.
- (90) Busch AJ, Schachter CL, Overend TJ, Peloso PM, Barber KA. Exercise for fibromyalgia: a systematic review. *J Rheumatol* 2008 June;35(6):1130-44.
- (91) Zijdenbos IL, de Wit NJ, van der Heijden GJ, Rubin G, Quartero AO. Psychological treatments for the management of irritable bowel syndrome. *Cochrane Database Syst Rev* 2009;(1):CD006442.
- (92) Kroenke K. Efficacy of treatment for somatoform disorders: a review of randomized controlled trials. *Psychosomatic Med* 2007 December;69(9):881-8.
- (93) White PD, Goldsmith KA, Johnson AL et al. Comparison of adaptive pacing therapy, cognitive behaviour therapy, graded exercise therapy, and specialist medical care for chronic fatigue syndrome (PACE): a randomised trial. *Lancet* 2011 March 5;377(9768):823-36.
- (94) Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-behavioral therapy for somatization disorder: a randomized controlled trial. *Arch Intern Med* 2006 July 24;166(14):1512-8.

- (95) Arnold IA, De Waal MW, Eekhof JA, Assendelft WJ, Spinhoven P, van Hemert AM. Medically unexplained physical symptoms in primary care: a controlled study on the effectiveness of cognitive-behavioral treatment by the family physician. *Psychosomatics* 2009 September;50(5):515-24.
- (96) Kroenke K, Swindle R. Cognitive-Behavioural Therapy for Somatization and Symptom Syndromes: A Critical Review of Controlled Clinical Trials. *Psychother Psychosom* 2000 July;69(4):205-15.
- (97) Schröder A, Rehfeld E, Ørnboel E, Sharpe M, Licht R, Fink P. A novel treatment approach for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Submitted* 2010.
- (98) Schroder A, Fink P. Functional somatic syndromes and somatoform disorders in special psychosomatic units: organizational aspects and evidence-based treatment. *Psychiatr Clin North Am* 2011 September;34(3):673-87.
- (99) Schröder A, Rehfeld E, Oernboel E, Sharpe M, Licht R, Fink P. A novel group CBT based unified treatment for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Br J Psychiatry* 2012;In Press.
- (100) Sephton SE, Salmon P, Weissbecker I et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum* 2007 February 15;57(1):77-85.
- (101) Astin JA, Berman BM, Bausell B, Lee WL, Hochberg M, Forys KL. The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: a randomized controlled trial. *J Rheumatol* 2003 October;30(10):2257-62.
- (102) Schmidt S, Grossman P, Schwarzer B, Jena S, Naumann J, Walach H. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. *Pain* 2011 February;152(2):361-9.
- (103) Sauer S, Walach H, Kohls N. Gray's Behavioural Inhibition System as a mediator of mindfulness towards well-being. *Pers and Individual Diff* 2011;50:506-11.
- (104) Ott U, Hölzel BK, Vaitl D. Brain Structure and Meditation: How Spiritual Practice Shapes the Brain. 1 ed. 2011.
- (105) Pagnoni G, Cekic M. Age effects on gray matter volume and attentional performance in Zen meditation. *Neurobiol Aging* 2007 October;28(10):1623-7.
- (106) Pagnoni G, Cekic M, Guo Y. "Thinking about not-thinking": neural correlates of conceptual processing during Zen meditation. *PLoS ONE* 2008;3(9):e3083.
- (107) Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to face Stress, Pain, and Illness*. New York: Delacourte; 1990.
- (108) Davidson RJ, Kabat-Zinn J, Schumacher J et al. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Med* 2003 July;65(4):564-70.
- (109) Holzel BK, Carmody J, Vangel M et al. Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Res* 2011 January 30;191(1):36-43.
- (110) Holzel BK, Ott U, Gard T et al. Investigation of mindfulness meditation practitioners with voxel-based morphometry. *Soc Cogn Affect Neurosci* 2008 March;3(1):55-61.
- (111) Lazar SW, Kerr CE, Wasserman RH et al. Meditation experience is associated with increased cortical thickness. *Neuroreport* 2005 November 28;16(17):1893-7.
- (112) Luders E, Toga AW, Lepore N, Gaser C. The underlying anatomical correlates of long-term meditation: larger hippocampal and frontal volumes of gray matter. *Neuroimage* 2009 April 15;45(3):672-8.

- (113) Carr L, Iacoboni M, Dubeau MC, Mazziotta JC, Lenzi GL. Neural mechanisms of empathy in humans: a relay from neural systems for imitation to limbic areas. *Proc Natl Acad Sci U S A* 2003 April 29;100(9):5497-502.
- (114) Siegel DJ. *The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being*. 2007.
- (115) Lapate RC, Lee H, Salomons TV, van Reekum CM, Greischar LL, Davidson RJ. Amygdalar Function Reflects Common Individual Differences in Emotion and Pain Regulation Success. *J Cogn Neurosci* 2011 August 23.
- (116) Davidson RJ. Well-being and affective style: neural substrates and biobehavioural correlates. *Philos Trans R Soc Lond B Biol Sci* 2004 September 29;359(1449):1395-411.
- (117) Lutz A, Brefczynski-Lewis J, Johnstone T, Davidson RJ. Regulation of the neural circuitry of emotion by compassion meditation: effects of meditative expertise. *PLoS ONE* 2008;3(3):e1897.
- (118) Tang YY, Ma Y, Wang J et al. Short-term meditation training improves attention and self-regulation. *Proc Natl Acad Sci U S A* 2007 October 23;104(43):17152-6.
- (119) Carter OL, Presti DE, Callistemon C, Ungerer Y, Liu GB, Pettigrew JD. Meditation alters perceptual rivalry in Tibetan Buddhist monks. *Curr Biol* 2005 June 7;15(11):R412-R413.
- (120) Richard M. *A guide to developing life's most important skill:Happiness*. 2010.



## Chapter 2.

# Review of Mindfulness-Based Interventions

This chapter consists of the following two papers:

- Paper I  
Fjorback LO, Arendt M, Oernbol E, Fink P, & Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy – a systematic review of randomized controlled trials. *Acta Psychiatrica Scandinavica*. 2011; Aug; 124 (2): 102-19.
- Paper II  
Fjorback LO and Walach H. Meditation-Based Therapies – A Systematic Review and Some Critical Observations. *Religions and Psychotherapies*. 2012, 3, 1-18.

**Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy – a systematic review of randomized controlled trials**

**Paper I**

Fjorback LO, Arendt M, Oernbol E, Fink P, & Walach H.

*Acta Psychiatrica Scandinavica. 2011; Aug; 124 (2): 102-19.*

## **Abstract**

### **Objective**

To systematically review the evidence for Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT).

### **Method**

Systematic searches of Medline, PsycInfo, and Embase were performed in October 2010. MBSR, MBCT and Mindfulness Meditation were key words. Only randomized controlled trials (RCT) using the standard MBSR/MBCT program with a minimum of 33 participants were included.

### **Results**

The search produced 72 articles of which 21 were included. MBSR improved mental health in 11 studies compared to waitlist control or treatment as usual (TAU), and was as efficacious as active control group in three studies. MBCT reduced the risk of depressive relapse in two studies compared to TAU, and was equally efficacious to TAU or an active control group in two studies. Overall, studies showed medium effect sizes. Among other limitations are lack of active control group and long-term follow-up in several studies.

### **Conclusion**

Evidence supports that MBSR improves mental health and MBCT prevents depressive relapse. Future RCTs should apply optimal design including active treatment for comparison, properly trained instructors and at least one-year follow-up. Future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments.

### **Clinical recommendations**

1. MBSR is recommended as a useful method for improving mental health and reducing symptoms of stress, anxiety, and depression.
2. MBSR is recommended in medical disease management to improve health-related quality of life.
3. MBCT is recommended for recovered recurrently depressed patients to prevent depressive relapse.

### **Additional comments**

1. Results are generalizable only to individuals who have the interest and ability to participate in an MBSR/MBCT program.
2. Lack of long term follow-up and active control groups are limitations in most MBSR studies.
3. MBCT may increase the risk of relapse in patients with only two previous episodes of depression.

## Introduction

The literature on mindfulness is constantly expanding requiring updated reviews regularly. Mindfulness, defined as moment-to-moment non-judgmental awareness, is a skill that can be learned through practice, and it is believed to promote well-being<sup>1</sup>. Mindfulness has received interest from clinicians and researchers because it seems to improve acceptance of symptoms that are difficult or impossible to change, install a cognitive meta-reflective capacity that enhances the degree of freedom of patients, and help patients change their focus by emphasizing experience of the present moment. These potential mechanisms are not part and parcel of the established therapy programs, and hence mindfulness promises to offer something new to patients<sup>2-4</sup>. Mindfulness-Based Stress Reduction<sup>5</sup> (MBSR) is a structured group program that employs mindfulness meditation to alleviate suffering associated with physical, psychosomatic, and psychiatric disorders. Participants are invited to focus with an interested, accepting and non-judgmental attitude on their pain, difficult sensations, emotions, cognitions, and behavior. This practice may lead to change in thoughts and behavioral patterns or in the attitudes towards thoughts, sensations, and emotions. The improved self-observation may promote use of better coping skills<sup>6</sup>. Mindfulness-Based Cognitive Therapy (MBCT)<sup>7</sup> is an adaptation of the MBSR program. It incorporates elements of cognitive therapy facilitating a detached or decentred view of one's thoughts and is designed to prevent depressive relapse<sup>6</sup>.

Since a first review in 2002, the interest in mindfulness-based interventions has increased<sup>8</sup>. Baer<sup>6</sup> concludes that although the empirical literature includes many methodological flaws, mindfulness-based interventions may be helpful in the treatment of several disorders. A meta-analysis performed in 2004 shows effect sizes of approximately 0.5 on standardized measures of physical and mental well-being<sup>9</sup>. The meta-analysis reviews both published and unpublished studies, and only three of the included controlled studies are actually published. Another review<sup>10</sup> concludes that MBSR is effective in reducing stress and anxiety whether it stems from chronic illness or other factors. However, the review is not systematic as there is no information on the number of included studies or inclusion criteria. An effect size analysis in clinical samples performed in 2010<sup>11</sup> suggests that mindfulness-based therapy is moderately effective in improving anxiety and mood symptoms from pre- to post-treatment. However, the effect sizes for controlled studies are concluded to be unreliable and preliminary. All five reviews assess controlled and uncontrolled studies and do not exclude studies with few participants. A review by Tonneato et al. from 2007 assesses the impact of MBSR and MBCT on symptoms of anxiety and depression in clinical populations using a control group<sup>12</sup>. They conclude that methodological variability in the reviewed studies precludes strong

conclusions and that depression and anxiety do not reliably improve following MBSR. A meta-analysis of controlled studies performed in 2010 reports an overall small effect size of MBSR on mental health in adults with a chronic medical disease<sup>13</sup>. In sum, the mindfulness literature is unclear about the evidence for MBSR/MBCT.

### **Aim of the study**

The aim of the present study is to perform a systematic literature review only of randomized controlled trials (RCT) on MBSR and MBCT with an adequate sample size and only little variability from the original MBSR or MBCT programs to give recommendations for research, health care professionals, and participants.

## **Methods**

### **Description of mindfulness interventions**

MBSR<sup>5</sup> consists of eight weekly 2-2½-hours sessions and a whole-day retreat between week 6 and 7. The program focuses on cultivating mindfulness through formal practices (sitting meditation, body scan, and mindful yoga) and on integrating this capacity into everyday life as a coping resource for dealing with intensive physical symptoms and difficult emotional situations. It also includes group interactions concerning the challenges and achievements that the participants experience upon integrating mindfulness into their lives and stressful situations. Participants are asked to practice daily home assignments for 45-60 minutes a day<sup>14</sup>.

MBSR is developed by Jon Kabat-Zinn, who emphasizes that MBSR is a complement to medical treatment, not a substitute of it<sup>15</sup>.

MBCT<sup>16</sup> combines training in mindfulness (MBSR) with cognitive therapy and consists of eight weekly 2-hour sessions. MBCT is similar to the MBSR program, but it focuses more on thoughts. The participants learn to notice when they are ruminating and to identify specific thought patterns<sup>7</sup>. MBSR is intended to be delivered in heterogeneous groups while MBCT is designed to target homogenous group, but as the aim of the present review is to summarize the evidence lumping in chosen for inclusion and splitting in the conclusion.

## Identification and selection

This present review focuses on MBSR and MBCT because both treatments are well-defined and mindfulness training is the key element. Mindfulness techniques are also used in other treatments<sup>17, 18</sup>, but these interventions are not included as mindfulness training is not considered the main part of the treatment.

The studies were identified by systematic searches of Medline, PsychInfo, and Embase in October 2010. Titles, abstracts and full-texts of the identified papers were screened for eligibility by one reviewer. The references of the selected papers were checked for additional eligible papers. The following criteria were applied for selection:

*Inclusion criteria:* RCT, adults, published in English, MBSR or MBCT. Slightly modified MBSR interventions with reduced treatment time (seven to eight weekly 1½ to 2½-hours sessions) for cancer patients, older adults with chronic low back pain and medical students are included)<sup>19-22</sup>.

*Exclusion criteria:* Exploratory studies and studies with 32 or less participants. We chose a minimum of 33 patients to reduce the risk of a type 2 error. According to Cohen<sup>23</sup>, an 80% change of detecting a medium-to-large treatment effect with a two-tailed t test at  $\alpha=.05$  requires 33 participants per sample.

## Data extraction

The data were extracted from eligible papers on study population, design, intervention, duration of follow-up, and measurement and outcomes of physical and mental health.

## Analysis

To examine the effects on physical and mental health, the studies were grouped according to study population in non-clinical populations (Table 2.1) and clinical populations with physical illness (Table 2.2) or psychiatric disorders (Table 2.3). Then the possible effect of mindfulness interventions was studied for different outcomes such as stress, anxiety, and depression (Table 2.4). Finally, the quality of the RCTs was evaluated (Table 2.5).

## Results

The search produced 72 non-duplicate articles of which 17 MBSR and 4 MBCT studies were included. The main reasons for exclusion were too few participants and the intervention not being the standard MBSR or MBCT program. The excluded studies and the reason for exclusion are listed after the reference list in this chapter.

### Non-clinical populations (Table 2.1)

Nyklicek et al.<sup>24</sup> concluded that increased mindfulness may mediate the positive effects of MBSR intervention. The aim was to compare the effects of MBSR to a waitlist control condition while examining potentially mediating effects of mindfulness.

Davidson et al.<sup>25</sup> suggested that MBSR may produce demonstrable effects on brain and immune function. The aim was to measure the effects of MBSR on brain and immune function. We do not know whether the EEG-observed significant increases in the left-sided anterior activation - a pattern previously associated with positive affect - are of any practical or clinical relevance, and not all brain scientists agree that increases in left-sided anterior activation are associated with positive affect<sup>26</sup>.

Williams et al.<sup>27</sup> concluded that self-selected community residents can improve their mental and physical health by participating in an MBSR program. The purpose was to determine if the participants in an MBSR intervention experienced decreases in the effect of daily hassles, psychological distress and medical symptoms. The results were based only on completers defined as subjects who completed the control or intervention program and completed all the questionnaires, but the actual number of completers is unclear.

Shapiro et al.<sup>21</sup> suggested that the short-term results give strength to the hypothesis that mindfulness can be thought of as 'preventive medicine' for future doctors, helping them to cultivate a way of being that fosters healing and growth in their own lives as well as skills to help others. The aims of the study were to assess the efficacy of MBSR.

Table 2.1 presents the results of the four included MBSR studies in non-clinical populations. Mental health improved in all four studies, and MBSR improved the outcomes of physical health in the two studies measuring physical health.

### **Clinical populations with physical illness (Table 2.2)**

Grossman et al.<sup>28</sup> examined effects of MBSR among individuals with multiple sclerosis and found evidence of improved health-related quality of life and well-being compared to usual care and suggested that the results may also have treatment implications for other chronic disorders that diminish health-related quality of life.

Foley et al.<sup>29</sup> evaluated the effectiveness of MBCT for individuals with a diagnosis of cancer and concluded that the observed improvements represent clinically meaningful change and provide evidence for the provision of MBCT within oncology settings. The program is an MBCT/MBSR program, but in the present review it is grouped as MBSR since it contains the same elements including a daylong retreat session.

Mularski et al.<sup>30</sup> suggested that Mindfulness Breathing Therapy in patients with chronic obstructive lung disease (COPD) is unlikely to be an important therapeutic option for patients with COPD. The aim was to test the efficacy of Mindfulness Breathing Therapy on improving symptoms and health-related quality of life in patients with COPD. A high dropout (40 %) is a limitation in this study.

Wong et al.<sup>31</sup> aimed to compare the effectiveness of MBSR with an education program. And concluded that MBSR was not effective per se for improving quality of life or mood symptoms as significant improvements were observed in both groups. The high dropout rate, a low proportion of subjects who completed all 10 sessions, and practiced daily for the recommended amount of time might have contributed to the negative results.

Monti et al.<sup>32</sup> tested the efficacy of Mindfulness Based Art Therapy in women with cancer. After an observed reduction in symptoms of distress and improved health-related quality of life, they concluded that the data support a possible future role for a psychosocial treatment option for cancer patients.

Creswell et al.<sup>33</sup> provided initial evidence that MBSR can buffer CD4+T lymphocyte declines in an ethnically diverse sample of HIV-1 infected adults. The aim was to test whether MBSR could do that. Additional analyses suggested that the MBSR treatment effects on CD4-T lymphocytes are independent of antiretroviral medication use.

Morone et al.<sup>20</sup> conducted a pilot study to assess the feasibility of recruitment and adherence to an MBSR program for older adults with chronic low back pain and to develop initial estimates of treatment effects. The completion rate for the intervention group was 68 % and 78 % for the control group after they crossed over to the MBSR program. Because it was a pilot study, they explored participant outcome on a variety of outcome measures. As a result, they did not consider any one of the measures as primary.

Pradhan<sup>34</sup> suggested that MBSR may complement medical disease management by improving psychological distress and strengthening well-being in patients with rheumatoid arthritis. The objective was to assess the effect of MBSR on depressive psychological status and disease activity.

Sephton et al.<sup>35</sup> showed that MBSR alleviated depressive symptoms in patients with fibromyalgia. The aim was to test the effects of MBSR on depressive symptoms in patients with a physician-verified fibromyalgia diagnosis. All findings persisted when pain, sleep, and antidepressant medication use were controlled for. Functional impairment, pain, and sleep quality were measured prior to randomization. The results of these outcomes were not reported.

Specia et al.<sup>19, 36</sup> concluded that the modified MBSR program was effective in decreasing mood disturbance and stress symptoms in both male and female patients with a wide variety of cancer diagnoses, stages of illness and ages. The objective of this study was to assess the effects of participation in MBSR on mood disturbance and symptoms of stress in cancer outpatients. All patients were assessed six months after program completion in a pre- and post-intervention design, and these improvements were maintained at six-month follow-up.

Hebert et al.<sup>37</sup> compared the effectiveness of an intensive dietary intervention on diet and body mass in women with breast cancer to an MBSR program or usual supportive care. The results indicated that MBSR did not make women with breast cancer consume less fat. Psychosocial variables included measures of self-reported emotional well-being, and data on anxiety, depression, self-esteem, and psychological distress were also obtained. None of these results were reported.

Table 2.2 shows the results of the 11 included MBSR studies in clinical populations with physical illnesses. Nine studies reported changes in mental health, and six showed significant improvements compared to the control group. Six reported changes in physical health and two demonstrated significant improvements. The disease activity was assessed in three studies, and no effect was found

in rheumatoid arthritis and COPD patients, whereas a positive effect was found in patients with HIV.

### **Clinical populations with psychiatric disorders (Table 2.3)**

Koszycki et al.<sup>38</sup> concluded that Cognitive Behavioral Group Therapy (CBGT) is the treatment of choice for generalized social anxiety disorders and suggested that MBSR may have some benefit in the treatment of these disorders. The aim was to evaluate the efficacy of MBSR compared to a first-line psychological intervention for social anxiety disorder. Both treatment groups improved, but the patients receiving CBGT had lower scores on measures of social anxiety. Both interventions were comparable in improving mood, functionality, and quality of life (these results are not displayed in the table).

Moritz et al.<sup>22</sup> suggested that a home study-based spirituality educational program can affect mental health by improving mood and quality of life within the same range as reported by other mood intervention programs such as cognitive behavioral therapy and MBSR. The objective was to evaluate the efficacy of a home study-based spirituality educational program on mood disturbance in emotionally distressed patients. The mindfulness intervention followed the modified program developed for cancer patients<sup>19</sup>, which is modeled on the MBSR program<sup>5</sup>. Only 57% of the participants in the MBSR group completed the treatment, which is (20-40%) lower than the figures reported by the other included MBSR/MBCT studies.

Teasdale et al.<sup>39</sup> suggested that MBCT offers a promising cost-efficient psychological approach to preventing relapse in recovered, recurrently depressed patients. The aim was to evaluate MBCT. The patients were stratified according to recency of recovery from the last episode of depression and number of previous episodes (two vs. more than two).

Ma et al.<sup>40</sup> concluded that MBCT is an effective and efficient way to prevent depressive relapse in recovered depressed patients with three or more previous episodes. One aim was to see whether the relapse prevention effects of MBCT observed by Teasdale could be replicated. To determine whether the patients with only two previous episodes were from the same base population as those with three or more episodes, they also compared these two groups according to age at onset of their first episode of major depression and, along with a group of never-depressed controls, according to measures of childhood experience. MBCT was most effective in preventing relapses that were not preceded by life events. Relapses were more often associated with significant life events in the two-

episode group. This group also reported less childhood adversity and later first depression onset than the three-or-more-episode group, which suggests that these groups represented distinct populations.

Bondolfi et al.<sup>41</sup> concluded that further studies are required to determine which patient characteristics, beyond the number of past depressive episodes, may predict differential benefits from this MBCT therapeutic approach. The study tested the hypothesis that MBCT would reduce the risk of depressive relapse in an independent replication trial across both language and culture. The trial was conducted in Switzerland, where there is high availability of mental health care and patients have direct access to psychiatrists, which may impact on the global management of recurrent depression.

Kuyken et al.<sup>42</sup> suggested that MBCT produces comparable outcomes in people using antidepressant medication in terms of relapse/cost-effectiveness and superior outcomes concerning residual depressive symptoms, psychiatric comorbidity, and the physical and psychological domains of quality of life. The aim was to examine whether MBCT provided an alternative approach to antidepressant medication in preventing depressive relapse. The participants had a history of three or more previous episodes of depression, had been treated with a therapeutic dose of antidepressant medication over the last six months, and were either in full or partial remission. The patients were randomized to traditional antidepressant medication or MBCT that included support to taper/discontinue antidepressant medication.

The results of the six included MBSR/MBCT studies in clinical populations with psychiatric disorders are presented in Table 2.3. When compared to active control conditions, the improvements were significantly higher in the mindfulness condition in one study and significantly higher in active control conditions in two studies at the end of treatment, but when four-week follow-up was assessed, mindfulness and active control conditions were equal.

#### **MBSR and MBCT on selected outcomes (Table 2.4)**

When compared to a control group, MBSR significantly reduced perceived stress and/or psychological distress in seven studies<sup>19, 21, 24, 27, 29, 32, 34</sup>. MBSR did not reduce stress in one study<sup>30</sup>. MBSR/MBCT alleviated depressive symptoms in ten studies<sup>19, 21, 28, 29, 32, 35, 39-42</sup>. Depressive symptoms were not alleviated significantly more than control group in four studies<sup>22, 31, 34, 38</sup>. MBSR

improved anxiety in six studies<sup>19, 21, 25, 28, 29, 32</sup>. And anxiety was not improved more than the active control condition in two studies<sup>22, 38</sup>.

### Quality of the included RCT studies (Table 2.5)

The Psychotherapy Outcome Study Methodology Rating Scale consists of 22 items of which some are chosen along with the Consort guidelines to evaluate the quality of the RCTs<sup>43, 44</sup>. A waitlist control group is the weakest possible control and the design used in most of the included MBSR studies. MBCT/MBSR was compared to TAU in four studies. It is difficult to clearly define TAU as it can change over time, and TAU patients usually get markedly less hours of treatment than participants. A treatment method that in previous research has been found effective for a specific disorder is the most stringent comparison condition to use, but this design is only used in two studies<sup>38, 42</sup>.

In order to avoid a confounding therapist and treatment condition, the treatment should be delivered by more than one therapist; four included studies reported a use of two or more therapists. To conclusively determine if authors actually apply the treatment they describe, independent assessors should rate recorded sessions for adherence to the treatment manual and competence of the therapists. This is reported only in the MBCT studies<sup>39-42</sup>. Authors should indicate how the sample size was determined. If a formal power calculation was used, the authors should identify the primary outcome on which the calculation was based. The APA Division 12 Task Force<sup>45</sup> has defined an adequate sample size as ‘about 30 per group’, and 14 of the 21 included studies met that recommendation. Only about half of the included studies reported power calculation, primary outcome, and effect sizes. The quality was also assessed by the Jadad score that depends on the description of randomization, blinding, and dropouts. A Jadad score of 3 was reached in 12 studies.

Overall, the studies provided evidence supporting that:

- MBSR is superior to waitlist in improving mental health in self-selected clinical and non-clinical populations and
- MBCT can reduce the risk of depressive relapse among referred and self-selected recovered, recurrently depressed patients with three or more previous episodes.

The sum of mindfulness homework practice was not related to outcome change in four studies<sup>24, 25, 34, 41</sup>, while the patients who meditated more had better outcomes than those who did not in two studies<sup>19, 35</sup>. One study found no association between number of sessions attended and outcome<sup>33</sup>, while another<sup>19</sup> found better outcomes for the patients attending more sessions. Mindfulness questionnaires were used in three studies. The increase in mindfulness correlated significantly with improvements in mental health in two studies<sup>24, 29</sup>, whereas the effects of mindfulness were in the predicted direction, but failed to reach significance in another study<sup>34</sup>. So, overall, the literature shows an effect, but we do not know if this is a result of specific skills taught by the programs, meditation practice, or increases in mindfulness measured by mindfulness questionnaires.

### **Compliance**

The review showed that most patients randomized to the mindfulness interventions (75%-97%) did complete treatment, which was defined as attending at least four or five sessions.

### **Limitations**

Most studies did not include active control groups. The stress-reducing effect of mindfulness treatment may not have come out as strong if the treatments were compared with other stress-reducing interventions. Among MBSR studies, nine studies only assessed end of treatment results, and six studies reported one- to six-month post-treatment results. The lack of active control groups and long-term follow-up periods constitutes a limitation of many of the assessed studies. Publication bias cannot be ruled out because most studies have shown positive results.

### **Risks**

The popularity of mindfulness interventions involves the risk that the techniques may be misunderstood or inappropriately applied. The developers behind both MBSR and MBCT address this issue and state that several years of practice is required before teaching which might have economical implications. If the interventions are delivered by teachers without adequate experience or qualifications, this could explain a poor outcome. The instructors' different levels of experience may explain some of the variation between studies and even between teachers within the same study. Experience in MBSR (one teacher having over 20 years of meditation practice and 10 years of teaching experience) was found to be the only predictive variable in one study<sup>34</sup>. For patients with only two recent episodes of depression, relapse non-significantly increased following MBCT, which

could be due to motivation factors, but also a result of a real risk. The patients with three or more former episodes might be more marginalized and may benefit from unspecific group factors, whereas the two-episode patients may be better off using their own network. None of the studies reported any side effects to MBSR/MBCT, but it is well known that participants can experience an increase in symptoms because of the awareness training. And according to the mindfulness literature, mindfulness has to be integrated in the teacher in order for the teacher to provide sufficient support <sup>46</sup>.

## Discussion

Based on a systematic review of RCTs on MBSR/MBCT, the following can be concluded: Evidence supports that MBSR improves mental health in non-clinical <sup>21, 24, 25, 27</sup> and clinical populations <sup>19, 20, 22, 28, 29, 32-35, 38</sup>, but it remains unclear whether it can also improve physical health. In clinical populations with physical illness, MBSR complements medical disease management by relieving psychological distress and strengthening well-being <sup>19, 28, 29, 32, 35, 36, 47</sup>. In clinical populations with psychiatric disorders, MBSR has some benefit as it reduces symptoms of distress, anxiety, and depression, or teaches patients coping skills to handle these symptoms<sup>22, 38</sup>. MBCT is an effective and efficient way to prevent relapse in recovered, depressed patients with three or more previous episodes <sup>39-42</sup>. Overall, the studies showed medium effect sizes, and improvement fell within the range reported in other psychosocial interventions.

The APA Division 12 Task Force has developed criteria that therapies must fulfill in order to be considered well-established and empirically supported <sup>45</sup>. MBSR meets these criteria in the following way: 15 included MBSR studies reported mental health outcomes and 13 studies found MBSR to be more effective than a waitlist or educational materials and equivalent to a home-based spirituality program, educational group, and CBT. Experiments are conducted with treatment manuals and effects have been demonstrated by different investigators in large and clearly specified samples. MBSR thus meets criteria for the ‘well-established’ designation.

MBCT also approached the ‘well-established’ designation regarding prevention of depressive relapse. Methodologically, the reviewed studies are strong, and they show MBCT to be superior to TAU and equivalent to continuing antidepressant medication when compared to MBCT plus support to discontinue antidepressants in preventing relapse. Treatment manuals and large and clearly specified samples of formerly depressed patients are used, and the studies are conducted by independent investigators. MBCT did not prevent depressive relapse in patients with only two previous episodes,

and the number of past episodes of depression is a determined characteristic that may predict differential benefit from MBCT.

Thus, we now know that the two manuals MBSR and MBCT are effective for some people, but the literature does not clarify the mechanisms whereby they are efficacious. If mindfulness training is specifically responsive to the effects of treatment, the mechanisms by which MBSR/MBCT achieve these benefits remain unclear. Enhancement of sense of control and accuracy of perception, or increased tolerance, acceptance, patience, and courage to deal with unpredictable life events may play a role <sup>28</sup>. Unlike many health promoting and cognitive-behavioral approaches <sup>6</sup>, mindfulness training focuses solely on cultivating inner resources, rather than changing what is wrong with the person. This is shown in the study comparing MBSR with CBT for patients with DSM-IV generalized social anxiety disorders <sup>38</sup>. Both treatment groups improved, but the patients receiving CBT had lower scores on measures of social anxiety. The interventions were comparable in improving mood, functionality, and quality of life. Thus, patients in the mindfulness group may still have symptoms, but experience less impairment. As the mechanisms in mindfulness are cognitive decentering and acceptance, mindfulness can possibly be reached through other activities than meditation, such as being in the nature, through art, talking to a friend etc. Mindfulness is indeed important, but other elements, such as learning to concentrate, taking half an hour off each day, group support etc. are also important. Future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments.

Generalizations can be made to individuals who choose mindfulness as an intervention, and for them it seems to work. Due to the need for active participation, it is desirable that mindfulness is actively chosen. Bias is inherent in self-selected samples, and the results can be extrapolated only to patients or participants who are interested in and able to participate in the intervention. The inconsistent association between home practice and outcomes may be due to relatively small numbers of participating subjects and a lack of long-term follow-up periods.

A limitation was that we did not include unpublished studies and we included studies with Jadad scores lower than three. In a systematic review, all papers on the topic in question with a Jadad score of three or less can be excluded to avoid that the meta-analysis itself suffers under the limitations of the included studies <sup>48</sup>. As the mindfulness studies are not double-blinded, a Jadad score of maximum three can be achieved, which was the case in 11 of the 21 included studies.

### **Recommendations for future research**

Future RCTs of MBSR and MBCT should use an optimal design including the use of an active treatment as comparison and properly trained instructors, and they should include follow-up of at least one year and describe attrition. In clinical populations, it is recommended to test the combination of mindfulness treatment and specialized treatment for the specific medical disorder in question. It is recommended to explore the effect of longer treatment times as several of the strong studies reviewed included 3-4 reinforcement classes.

### **Recommendations for health care professionals and participants**

Individuals who have the interest and ability to participate in an MBSR/MBCT program learn how to actively participate in their health and well-being. MBSR is a useful method for improving mental health and reducing symptoms of stress, anxiety and depression, or help individuals to better cope with these symptoms. MBSR complements medical disease management by improving psychological distress and well-being, and MBCT reduces the risk of depressive relapse.

**Table 2.1 Effect of MBSR in non-clinical populations**

Effect sizes refer to: Cohen's *d* an effect size of 0.2 to 0.3 might be a "small" effect, around 0.5 a "medium" effect and 0.8 to infinity, a "large" effect.  
Williams and Shapiro: Mean effect sizes of all mental and physical health were calculated in meta-analysis. Grossman et al <sup>9</sup>

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Nyklíček I et al., 2008 <sup>24</sup>	<b>Self-selected community residents reporting symptoms of distress</b> Recruited in local papers. <b>N=60</b> mean age 46, 63% females	MBSR: 8 weekly, 2.5-3- hour classes along with a silent 7-hour retreat in week 6 <b>N=29</b>	Waitlist <b>N=31</b>	End of treatment	<b>Perceived Stress Scale</b>  <b>Maastricht Questionnaire</b>  <b>WHOQoL-bref</b>  <b>Global Mood Scale</b>	<b>Group x time effect</b> Psychological well-being d-difference 6.17 p=.016 MBSR: preM=32.44, SD=6.46; postM=25.39, SD=7.54 Control: preM=31.37, SD=6.46; postM=28.1, SD=7.51 Vital exhaustion d-difference 13.72 p=.001 MBSR preM=27.74, SD=8.02; postM=18.51, SD=9.75 Control preM=27.27, SD=7.99; postM=25.34, SD=9.79 Quality of life d-difference 2.77 p=.009 MBSR preM=2.98, SD=.69; postM=3.37, SD=.63 Control preM=2.97, SD=.69; postM=3.07, SD=.63 Positive affect d-difference 8.23 p=.006 MBSR preM=14.18, SD=7.05; postM=18.76, SD=6.84 Control preM=16.38, SD=7.04; postM=16.9, SD=6.83 <b>No significant group x time effect</b> Negative affect d-difference 1.77 p=.189 MBSR preM=20.49, SD=8.67; postM=14.68, SD=9.21 Control preM=20.39, SD=8.69; postM=17.13, SD=9.21	Only within group effect sizes
Davidson RJ et al., 2003 <sup>25</sup>	<b>Healthy employees</b> Recruited from a biotechnology corporation. 48 were randomized, <b>N=41</b> completed some of the measures for at least 2 assessments, mean age 36, 70% females	MBSR: 8 weekly, 2.5-3- hour classes along with a silent 7-hour retreat in week 6 <b>N=25</b>	Waitlist <b>N=16</b>	End of treatment and 4 months	<b>EEG</b>  <b>Antibody titers</b>  <b>State trait anxiety</b>  <b>Positive and negative affect</b>	<b>Group x time effect</b> MBSR had greater left-sided activation (C3/C4) end of treatment p<.05 and 4-month follow-up p<.01 MBSR had greater rise in antibody titers p<.05  MBSR had greater reduction in anxiety p<.01 MBSR preM=40, SE=1.7; postM=35, SE=1.3 Control preM=39, SE=3; postM=40, SE=2.5 <b>No significant group x time effect</b>	Not possible to calculate, no SE for change scores
Williams KA et al., 2001 <sup>27</sup>	<b>Self-selected community residents</b> Recruited via local papers. 103 were randomized, <b>N=62</b> completed all questionnaires, mean age 42, 72% females	MBSR: 8 weekly, 2.5-hour classes along with a silent 8-hour retreat in week 6 plus 1-hour pre-program and post-program interviews <b>N=35</b>	Educational Materials <b>N=27</b>	End of treatment and 3 months	<b>Daily Stress Inventory</b>  <b>Symptom checklist (SCL90)</b>  <b>(MSCL)</b>	<b>Group x time effect</b> Daily hassles p=.045 MBSR preM=2.77, SE=.3; postM=2.25, SE=.27 Control preM=3, SE=.35; postM=2.85, SE=.35 Psychological distress p=.049 MBSR preM=.57, SE=.15; postM=.28, SE=.07 Control preM=.67, SE=.2; postM=.61, SE=.2 Medical symptoms p=.01 MBSR preM=17, SE= 3; postM=10, SE=2.5 Control preM=18, SE=4; postM=17, SE=4	Mean effect size all mental health scales .56 Mean effect size all physical health scales 1.01
Shapiro SL et al., 1998 <sup>21</sup>	<b>Medical and premedical students</b> Were actively recruited. <b>N=78</b> 53% females, mean age?	MBSR: 7 weekly, 2.5-hour sessions or waitlist <b>N=37</b>	Waitlist <b>N=41</b>	End of treatment	<b>Symptom checklist (SCL90)</b>  <b>State trait anxiety</b>    <b>Index of Core Spiritual Experiences</b> <b>Empathy construct rating scale</b>	<b>Group x time effect</b> MBSR group had Less depression p<.006 MBSR preM=.85, SD=.58; postM=.57, SD=.58 Control preM=.76, SD=.63; postM=.89, SD=.71 MBSR group had less State Anxiety p<.05 MBSR preM=39.8, SD=11; postM=37.2, SD=12.4 Control preM=39.1, SD=9.4; postM=42.8, SD=11.6 MBSR group had less trait anxiety p<.002 MBSR preM=40.9, SD=8.9 postM=35, SD=8.8 Control preM=41, SD=9.9 postM=40.5, SD=10.1 MBSR group had increases in spirituality p<.02 MBSR preM=2.57, SD=.64 postM=2.8, SD=.57 Control preM=2.6, SD=.76, postM=2.6, SD=.68 MBSR group had increases in empathy p<.05 MBSR preM=77, SD=27.6 postM=83.5, SD=24.4 Control preM=76, SD=22.7 postM=73, SD=21.6	Mean effect size all mental health scales .62

**Table 2.2 Effect of MBSR in clinical populations with somatic conditions**

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Grossman P et al., 2010 <sup>28</sup>	<p><b>Patients with multiple sclerosis</b>                      Referred themselves after having received information via the outpatient neurology clinic at the University Hospital Basel  <b>N=150</b>                      mean age 47                      79% females</p>	<p>MBSR:                      8 weekly, 2 hour classes along with a silent 7-hour retreat in week 7,    <b>N=76</b></p>	<p>Treatment as usual (TAU)  <b>N=74</b></p>	<p>End of treatment and 6 months</p>	<p><b>Health related quality of life</b>                      HAQUAMS</p> <p><b>Quality of life in chronic disorders</b>                      PQOLC</p> <p><b>Depression</b>                      CES-D</p> <p><b>Fatigue</b>                      MFIS</p> <p><b>Anxiety</b>                      STAI</p>	<p><b>Group x time effect</b>                      MBSR change end of treatment .18(.09-.27) p=.0002                      TAU change end of treatment -.09(-.2-.01)                      MBSR change 6 months follow-up .13(.00-.25) p=.04                      TAU change end of treatment -.05(-.16-.07)                      MBSR change end of treatment 2.54 (1.91-3.17) p=.00000                      TAU change end of treatment -.57 (-1.29-.015)                      MBSR change 6 months follow-up 1.77 (.97-2.58) p=.003                      TAU change end of treatment -.1 (-.83-.64)                      MBSR change end of treatment 5.29(3.5-7.07) p=.00000                      TAU change end of treatment -1.43(-3.47-.61)                      MBSR change 6 months follow-up 4.63(2.51-6.75) p=.03                      TAU change end of treatment .86(-1.07-2.78)                      MBSR change end of treatment 6.65(4.14-9.16) p=.0001                      TAU change end of treatment -1(-2.26-2.05)                      MBSR change 6 months follow-up 6.58 (3.63-9.53)                      TAU change end of treatment -10(-2.26-2.05)                      MBSR change end of treatment 3.95(2.31-5.59) p=.001                      TAU change end of treatment -.22(-1.89-1.46)                      MBSR change 6 months follow-up 3.68(1.84-5.52)                      TAU change end of treatment .13(-1.62-1.88)</p>	<p>.86</p> <p>.51</p> <p>.43</p> <p>.28</p> <p>.65</p> <p>.36</p> <p>.41 adjusted</p> <p>.38 adjusted</p> <p>.39</p> <p>.33</p>
Foley E et al., 2010 <sup>29</sup>	<p><b>Cancer patients</b>                      Recruited through local media and clinical staff at the Sydney Cancer Center.  <b>N=115</b>                      mean age 55,                      77% females</p>	<p>MBCT:                      8 weekly, 2 hour classes along with a silent 7-hour retreat in week 7  <b>N=55</b></p>	<p>Waitlist  <b>N=60</b></p>	<p>End of treatment</p>	<p><b>Current levels of depression</b>                      HAM-D</p> <p><b>Current levels of anxiety</b>                      HAM-A</p> <p><b>Distress</b> DASS-21</p> <p><b>Quality of life</b>                      FACT-G</p> <p><b>Mindfulness</b>                      FMI</p>	<p><b>Group x time effect</b> p≤.001                      MBCT preM=16.02, SD=7.28; postM=6.26, SD=5.43                      Control preM=14.38, SD=8.12; postM=10.27, SD=6.93</p> <p><b>Group x time effect</b> p=.002                      MBCT preM=15.58, SD=9.79; postM=5.58, SD=5.13                      Control preM=14.37, SD=9.932; postM=8.90, SD=8.39</p> <p><b>Group x time effect</b> p≤.001                      MBCT preM=16.98, SD=10.57; postM=10.67, SD=6.98                      Control preM=16.13, SD=10.88; postM=15.52, SD=10.71</p> <p><b>No significant group x time effect</b>                      MBCT preM=71.62, SD=14.81; postM=78.80, SD=14.87                      Control preM=71.38, SD=14.67; postM=74.18, SD=13.30</p> <p><b>Group x time effect</b> p≤.001                      MBCT preM=18.31, SD=7.65; postM=23.29, SD=7.17                      Control preM=17.98, SD=6.81; postM=18.65, SD=6.44</p>	<p>Only within group effect sizes</p>

<b>Mularski RA et al., 2009</b> <sup>30</sup>	<b>Patients with chronic obstructive lung disease</b> Recruited from two medical center sites using posted advertisement or clinical referral <b>N=86</b> mean age 67 50% females	Mindfulness-based breathing therapy: standard MBSR plus with supplemental relaxation response training during the first two weeks. <b>N=44</b> mean age 70.6	Support group designed to match time spent and attention by a team of professional facilitator <b>N=42</b> mean age 64	End of treatment	<b>Self-reported dyspnea</b> <b>Changes in functional limitation (6 minute walk test)</b> <b>Mindfulness</b> <b>Perceived stress</b>	36 did not complete the study, most dropouts never attended a single session. <b>No differences in major outcomes between the MBBT intervention and the support group by either intention to treat analysis (n=49) or within the subset completed at least 75 % of the sessions (n=36)</b>	
<b>Wong SY et al., 2009</b> <sup>31</sup>	<b>Patients with chronic pain for at least 3 months</b> <b>N=100</b>	MBSR: 8 weekly, 2 hour classes along with a silent 7-hour retreat in week 7	Education programme groups	End of treatment 3 and 6 months	<b>Self-reported pain</b> <b>Amount of sick leave</b> <b>Mood status</b> (POMS, Depression scale, STAI) <b>Health related quality of life</b> (SF-12)	<b>No group x time effect</b> After intervention patients in both groups had significant improvements in pain intensity, anxiety and quality of life which was sustained until 6 months postintervention	
<b>Creswell JD et al., 2009</b> <sup>33</sup>	<b>HIV infected adults reporting symptoms of psychological distress</b> Recruited through HIV/AIDS community agencies. N=67 were randomized <b>N=48</b> attended at least one class, mean age 41, 10% females	MBSR: 8 weekly, 2 hour classes along with a silent 7-hour retreat in week 7 <b>N=41</b> (Intention to treat) <b>N=33</b> (Attended at least one study class)	1-day stress reduction MBSR program <b>N=26</b> (Intention to treat) <b>N=15</b> (Attended class)	End of treatment	<b>Disease activity</b> CD4 + Lymphocytes (Log 10)	<b>Group x time effect</b> p=.02 MBSR preM=618, SE=47; postM=628, SE=52 Control preM=757, SE=70; postM=572, SE=71  ITT analyses showed the same pattern P=.08	.64
<b>Morone NE et al., 2008</b> <sup>20</sup>	<b>Older adults with chronic low back pain</b> Recruited via adult pain clinics, flyers and newspapers. <b>N=37</b> mean age 75, 57% females	MBSR: 8 weekly 1½-hour sessions <b>N=19</b>	Waitlist <b>N=18</b>	End of treatment	<b>Pain</b> SF-36 Pain Scale  <b>Physical function</b> SF-36 Physical Function Scale <b>Pain acceptance</b> Questionnaire Total Score  <b>Quality of life</b> SF-36 Global Health Composite	<b>No significant group x time effect</b> p=.31 MBSR preM=35.5, SD=6; postM=39.9, SD=7.7 Control preM=35.7, SD=7.2; postM=38.8, SD=8.3 <b>Group x time effect</b> p=.03 MBSR preM=42, SD=10.9; postM=45.7, SD=9.2 Control preM=35.7, SD=7.2; postM=38.8, SD=8.3 <b>Group x time effect</b> p=.008 MBSR preM=72.2, SD=13.4; postM=75.5, SD=16 Control preM=68.1,SD=20.3; postM=64.8, SD=23.0 <b>No significant group x time effect</b> p=.27 MBSR preM=40.4, SD=9.0; postM=44.7, SD=8.9 Control preM=40.3, SD=10.4; postM=42.9, SD=10.7	Only within group effect sizes
<b>Pradhan EK et al., 2007</b> <sup>32</sup>	<b>Rheumatoid arthritis patients</b> Recruited via newspaper, health fairs and	MBSR: 8 weekly, 2.5-3-hour classes along with a silent 7-hour retreat in week 6 + 3 refresher	Waitlist <b>N=32</b>	End of treatment and 6 months	<b>Depressive symptoms</b> (SCL-90-R) <b>Psychological distress</b> (SCL-90-R)	No significant differences between groups at two months. <b>No significant group x time effect</b> p<.08 (at 6 months) MBSR Change M=-.26, SE=.08; Control -.06, SE=.08 <b>Group x time effect</b> p<.04 (at 6 months) MBSR Change M=-.17, SE=.05; Control -.03, SE=.05	.5

	rheumatologists. <b>N=63</b> mean age 54, 86% females	classes over the following 4 months <b>N=31</b>			<b>Well-being</b> Psychological Well-Being Scale <b>Disease activity</b> Score in 28 joints <b>Mindfulness</b> Attention Awareness scale	<b>Group x time effect</b> $p<.03$ (at 6 months) MBSR Change M=-5.55, SE=3.44; Control -5.47, SE=3.38 <b>No effect on disease activity</b> $p=.45$ MBSR Change M=-.3, SE=.17; Control -.12, SE=.16 <b>Group x time effect</b> $p<.09$ MBSR Change M=.45, SE=.15; Control.09, SE=.14	
<b>Sephton SE et al., 2007</b> <sup>35</sup>	<b>Women with fibromyalgia</b> Recruited via news-papers, TV. <b>N=91</b> mean age 48	MBSR: 8 weekly, 2.5-3-hour classes along with a silent 7-hour retreat in week 6 <b>N=51</b>	Waitlist <b>N=40</b>	End of treatment and 2 months	<b>Depressive Symptoms</b> (BDI: Beck Depression Inventory)	<b>Group x time effect</b> $p=.002$ MBSR preM=15.7, SE=7.1; postM=12.4, SE=7.4; 2-month follow-up M=13.3, SE=7.5 Control preM=14.7, SE=6.9; postM=15.1, SE=8.1; 2-month follow-up M=14.8, SE 8.1	.64
<b>Monti DA et al., 2006</b> <sup>30</sup>	<b>Woman with cancer</b> Referred from cancer centers and hospitals <b>N=111</b> mean age 53	Mindfulness-based art therapy: MBSR and aspects of art therapy <b>N=56</b>	Waitlist <b>N=55</b>	End of treatment	<b>Symptoms of distress</b> (SCL-90-R) Overall Anxiety Depression <b>Quality of life</b> (SF-36) Physical composite score	<b>Group x time effect</b> Change in means (control-MBAT) .16 (.08,.24) $p<.001$ .16 (.02,.29) $p<.022$ .19 (.07,.30) $p<.001$ <b>No Group x time effect</b> $p<.19$ -2.23(-5.6, 1.15) MBSR preM=37.78, SD=9.56; postM=40.06 Control preM=39.64, SD=11.3; postM=39.71	.3 .23 .26
<b>Hebert JR et al., 2001</b> <sup>37</sup>	<b>Women with breast cancer</b> Enrolled from hospitals <b>N=172</b> mean age 50	MBSR <b>N=50</b>	Nutrition education <b>N=51</b> or TAU <b>N=56</b>	4 and 12 months	<b>Total energy</b> Kcal/d	<b>Group x time effect</b> $p<.0002$ 4-month follow-up nutrition education M= -74.8, SE= 74.1 vs no change in other groups 12-month follow-up M=-33.9, SE=79.2	
<b>Specia M et al., 2000</b> <sup>19</sup>	<b>Cancer patients</b> Referred from clinical staff or leaflets in clinic. <b>N=90</b> mean age 51 (27-75), 79% female	MBSR: 7 weekly, 90-minute sessions <b>N=53</b>	Waitlist <b>N=37</b>	End of treatment	<b>Profile Of Mood States</b> Anxiety Depression Anger Vigour Confusion Total POMS <b>Symptoms of Stress</b> Inventory SOSI	<b>Group x time effect</b> MBSR M=-4.8, SE=5.6; Control M=-.4, SE=5.2 $p<.01$ MBSR M=-6.2, SE=8.3; Control M=-.4, SE=9.5 $p<.05$ MBSR M=-3.9, SE=4.8; Control M=-.1, SE=7.1 $p<.05$ MBSR M=4.1, SE=6.8; Control M=.4, SE=4.6 $p<.05$ MBSR M=-2.5, SE=4.2; Control M=.3, SE=3.9 $p<.05$ MBSR M=-24.1, SE=25.1; Control M=-2.1,SE=28.6 $p<.01$ <b>Group x time effect</b> $p<.05$ MBSR M =-31.3, SE=32.4; Control M=-12.3, SE=30.26	Mean effect size all: mental health scales .54

Sephton and Pradhan effect sizes were calculated in meta-analysis, Bolhmeijer et al<sup>13</sup>.

Specia Effect size=0.54 Mean effect sizes of all mental and physical health were calculated in meta-analysis. Grossman et al<sup>28</sup>.

**Table 2.3 Effect of MBSR in clinical populations with psychiatric disorders**

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Koszycki D et al., 2007 <sup>38</sup>	Patients with <b>DSM-IV generalised social anxiety disorders</b> Recruited via media. <b>N=53</b> mean age 37-38, 72% females	MBSR: 8 weekly, 2.5-hour classes along with a silent 7-hour retreat in week 6 <b>N=26</b>	12 weekly 2.5 hour sessions of cognitive behavioral therapy (CBT) <b>N=27</b>	End of treatment	<b>Social interacting (SIAS)</b> <b>Social phobia scale (SPS)</b> <b>CGI- Illness severity</b> <b>Liebowitz Social Anxiety Scale</b>	<b>Group x time interaction CBT had greater improvement in decreasing social anxiety symptoms.</b> Equally efficacious in improving function, mood, well-being. CBT preM=46.1, SE=8.9; postM=30.2, SE=10.8 p=.057 MBSR preM=44.6, SE=10.6; postM=34.1, SE=14.9 CBT preM=33.3, SE=13.2; postM=15.4, SE=8 p=.006 MBSR preM=34.0, SE=14; postM=24.6, SE=16.4 CBT preM=4.7, SE=.7; postM=3 SE=1, p=.005 MBSR preM=5, SE=.8; postM=3.9, SE=.8 CBT preM=34.3, SE=8.6; postM=17.4, SE=8.3 p=.009 MBSR preM=39.1, SE=8.9; postM=25.3, SE=9	Only within group effect sizes
Moritz S et al., 2006 <sup>22</sup>	<b>Emotionally distressed patients</b> (>40 POMS) Recruited from primary care clinics. <b>N=165</b> mean age 44, 84% females	MBSR: 8-weekly, 1.5-hour classes <b>N=56</b> 76% female	An 8-week audio-taped spirituality home-study program <b>N=54</b> 95% females, or a waitlist control group <b>N=55</b> 80% females	End of treatment and 4 weeks	<b>Profile of Mood Scale (POMS)</b>  <b>Health survey, Mental component (SF-36, MCS)</b>	<b>Group x time interaction. Greatest improvement in the spirituality group at the end of treatment.</b> MBSR equally efficacious at 4 weeks follow-up P values refer to comparison to spirituality group Control Mean change scores = -10.3, SE=4.0 p<.001 MBSR Mean change scores = -22.6, SE=4.0 p=.034 Spirituality Mean change scores = -43.1, SE= 3.9 <b>Group x time interaction. Greatest improvement in the spirituality group at the end of treatment</b> MBSR equally efficacious at 4 weeks follow-up Control Mean change scores =4.7, SE=1.6 p<.001 (baseline MCS= 29.2) MBSR Mean change scores =7.1, SE=1.6 p=.029 (baseline MCS= 31.7) Spirituality Mean change scores =14.4, SE=1.6 (baseline MCS= 29.6)	Only within group effect sizes
Teasdale JD et al., 2000 <sup>39</sup>	<b>Recovered recurrently depressed patients</b> Recruited from community health care facilities and media. <b>N=145</b> mean age 41-44, 73-78% females	MBCT: 8 weekly, 2-hour sessions + 4 follow-up meetings <b>N=76</b> Patients with 3 or more past episodes <b>N=49</b>	TAU <b>N=69</b> Patients with 3 or more past episodes <b>N=50</b>	1 year	<b>Time to onset of relapse of depression</b> , over the 60-week study period	<b>Group x time interaction</b> MBCT reduced relapse from 66% to 37% in patients with 3 or more previous episodes p<.01 but in patients with only 2 recent episodes, relapse non-significantly increased from 31% to 56% at 1-year follow-up p>.1	.59
Ma HS et al., 2004 <sup>40</sup>	<b>Recovered recurrently depressed patients</b> Recruited from general practice and newspapers.	MBCT: 8 weekly, 2-hour sessions + 2 follow-up meetings <b>N=38</b> Patients with 3	TAU <b>N=37</b> 79% female Mean age 46 Patients with 3 or more past episodes	1 year	<b>Time to onset of relapse of depression</b> , over the 60-week study period	<b>Group x time interaction</b> MBCT significantly reduced relapse from 78% to 36% in patients with 3 or more previous episodes p=.002 but in patients with only 2 recent episodes, relapse non-significantly increased from 20% to 50% at 1-year follow-up p=.321	.88

	N=75 mean age 43-46, 73-79% females	or more past episodes N=28	N=27				
<b>Bondolfi G et al., 2009</b> <sup>41</sup>	<b>Unmedicated patients in remission from recurrent depression (≥3 episodes)</b> Recruited via general practice, psychiatrists and media. N=60 mean age 46-49, 69-74% females	MBCT: 8 weekly, 2-hour sessions + 4 follow-up meetings N=31	TAU N=29	14 months	<b>Time to onset of relapse of depression</b> , over the 60-week study period  <b>Among those who relapsed (n=19)</b>	<b>No Group x time interaction p=.78</b> MBCT relapse rate 29 % TAU relapse rate 34 %  <b>Group x time interaction p=.006</b> MBCT Time to relapse mean 204 days [35-330] TAU Time to relapse mean 69 days [15-191]	Not possible to calculate  .77
<b>Kuyken W et al., 2008</b> <sup>42</sup>	<b>Medicated patients in full or partial remission from recurrent depression (≥3 episodes)</b> Recruited from general practice. N=123 mean age 49, 47% females	MBCT: 8 weekly, 2-hour sessions + 4 follow-up meetings and support to discontinue antidepressant medication N=61	Antidepressant medication N=62	15 month	<b>Time to onset of relapse of depression</b>  <b>Residual depressive symptoms</b> Hamilton  <b>Quality of life</b> WHO brief <b>Physical</b> <b>Psychological</b>	<b>No Group x time interaction p=.07 ITT (p=.05 PPT)</b> MBCT relapse rate 47 % Active control relapse rate 60 %  <b>Group x time interaction p=.02</b> MBCT Mean 5.83 [4.49-7.3] 1 month post-treatment to 7.05 [5.53-8.74] at 15 Active control 7.75 [5.86-9.34] 1 month post-treatment to 8.69 [6.64-10.5] at 15  <b>Group x time interaction p=.04 physical and p=.01 psychological</b> MBCT Mean 24.08[22.62-25.53] 1month follow-up to 23.97[22.63-25.3] at 15 Active control 22.86[21.34-24.39] 1month follow-up to 22.93[21.18-24.69] at 15 MBCT Mean 18.88 [17.88-19.89] 1 month follow-up to 18.61 [17.65-19.57] at 15 Active control 17.47 [16.24-18.7]1 month follow-up to 17.36 [15.93-18.78] at 15	Not possible to calculate

**Table 2.4 The effect of MBSR and MBCT on selected symptoms**

Outcome	Participants	Control group	Measures	Significant group x time interaction	Pre-post effect size
Perceived stress and/ or psychological distress	103 Community residents	Educational materials	DSI, SCL-90-R	+	.56
	78 Medical/ premedical students	Waitlist	GSI	+	.62
	60 Residents reporting distress	Waitlist	PSS	+	.64
	63 Patients with rheumatoid arthritis	Waitlist	SCL-90-R	+	.5
	90 Cancer patients	Waitlist	SOSI	+	.51
	115 Cancer patients	Waitlist	DASS-21	+	.6
	111 Cancer patients (women)	Waitlist	SCL-90-R	+	.3
Depressive symptoms	86 Chronic obstructive lung disease patients	Support group	PSS	-	
	78 Medical/premedical students	Waitlist	SCL-90-R	+	.62
	63 Patients with rheumatoid arthritis	Waitlist	SCL-90-R	-	.48
	91 Females with fibromyalgia	Waitlist	BDI	+	.64
	90 Cancer patients	Waitlist	POMS	+	.71
	115 Cancer patients	Waitlist	HAM-D	+	1.34
	111 Cancer patients (women)	Waitlist	SCL-90-R	+	.26
	150 Patients with multiple sclerosis	TAU	CES-D	+	.65
	100 Chronic pain patients	Education group	POMS	-	?
	165 Emotionally distressed patients	Spirituality, Waitlist	POMS	-	.85
	53 Patients with social anxiety	CBT	BDI	-	.67
	145 Recurrently depressed patients - 3 or more previous episodes - up to 2 previous episodes	TAU	Relapse of depression	+	.59
	75 Recurrently depressed patients - 3 or more previous episodes - up to 2 previous episodes	TAU	Relapse of depression	-	.88
	60 Recurrently depressed patients	TAU	Relapse of depression	-	?
	123 Recurrently depressed patients	Antidepressant medication	Time to relapse	+	.77
Anxiety symptoms	78 Medical/premedical students	Waitlist	Relapse of depression	-	?
	41 Healthy employees	Waitlist	Hamilton (residual symptoms)	+	?
	90 Cancer patients	Waitlist	STA	+	.62
	115 Cancer patients	Waitlist	STA	+	?
	111 Women with cancer	Waitlist	POMS	+	.82
	150 Patients with multiple sclerosis	Waitlist	HAM-A	+	1.14
	100 Chronic pain patients	Waitlist	SCL-90-R	+	.23
	53 Patients with social anxiety	TAU	STAI	+	.39
		Education group	STAI	-	?
	CBT	LSAS-Fear	-	1.44	
		LSAS-Avoidance	-	1.54	

TAU: Treatment as usual  
GSI: General Severity Index  
SCL-90-R: The Symptom Checklist-90-Revised  
PSS: Perceived Stress Scale  
SOSI: Symptoms of Stress Inventory  
DSI: Daily Stress Inventory  
BDI: Beck's Depression Inventory  
POMS: Profile of Mood States  
STA: State Trait Anxiety Inventory  
LSAS: Liebowitz Anxiety Scale  
DASS-21: Depression, anxiety stress scale, short form  
CES-D: Center for epidemiologic studies depression scale

**Table 2.5 Quality of the included studies**

	Jadad score	ITT	Primary outcome / power calculation	Study provided evidence to support the aim/ effect size	Therapist competence and number of therapist	Number of therapist	Description of concomitant treatment	Adherence to the treatment manual	Description of homework practice	Total score
Nyklicek et.al <sup>24</sup>	3	+	-, +	+, +	?	?	-	-	+	6
Davidson et.al <sup>25</sup>	2	-	-	+	+	-	-	+	-	3
Williams et.al <sup>27</sup>	2	-	-, +	+	?	-	-	-	+	3
Shapiro et.al <sup>21</sup>	3	?	-	+	?	-	-	-	-	2
Grossman et.al <sup>28</sup>	3	+	+, +	+, +	+	-	+	-	+	9
Foley et.al <sup>29</sup>	3	+	-, +	+, +	+	-	-	-	+	7
Wong et.al <sup>31</sup>	2	+	+	-	?	?	-	-	+	3
Mularski et.al <sup>30</sup>	3	+	+, +	-	+, ≥2	+	-	-	+	8
Creswell et.al <sup>33</sup>	3	+	+	+	+	?	-	-	-	5
Morone et.al <sup>20</sup>	2	+	-	+, +	+	-	-	-	+	6
Pradhan et.al <sup>34</sup>	2	+	-, +	+	+, ≥2	+	-	-	+	7
Monti et.al <sup>32</sup>	3	+	-, +	+	+	-	-	-	-	6
Sephton et.al <sup>35</sup>	2	+	+, +	+, +	+	-	-	-	+	6
Specia et.al <sup>19</sup>	3	-	+	+	?	?	-	-	+	4
Hebert et.al <sup>37</sup>	2	?	+	?	+	?	-	-	-	2
Koszycki et.al <sup>38</sup>	2	+	+	+, +	+	-	-	-	-	5
Moritz et.al <sup>22</sup>	3	+	+, +	+	?	?	-	-	+	6
Teasdale et.al <sup>39</sup>	3	+	+, +	+, +	+, ≥2	+	+	+	-	11
Ma et.al <sup>40</sup>	3	+	+, +	+, +	+	?	+	+	-	9
Kuyken et.al <sup>42</sup>	2	+	+, +	+	+	-	+	+	-	7
Bondolfi et al <sup>41</sup>	3	+	+, +	-	+, ≥2	+	+	+	+	10

Reference List

- (1) Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003 April;84(4):822-48.
- (2) Teasdale JD, Segal Z, Williams JM. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behav Res Ther* 1995 January;33(1):25-39.
- (3) Wallace BA, Shapiro SL. Mental balance and well-being: building bridges between Buddhism and Western psychology. *Am Psychol* 2006 October;61(7):690-701.
- (4) Kohls NSS&WH. Facets of mindfulness. An online study investigating the Freiburg Mindfulness Inventory. *Personality and Individual Differences* 2009;46:224-30.
- (5) Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to face Stress, Pain, and Illness*. New York: Delacourte; 1990.
- (6) Baer RA. Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review. *Clinical Psychology: Science & Practice* 2003;10(2):125-43.
- (7) Segal ZV, Williams JM, Teasdale JD. *Mindfulness-Based Cognitive Therapy for Depression*. 2002.
- (8) Bishop SR. What do we really know about mindfulness-based stress reduction? *Psychosomatic Med* 2002 January;64(1):71-83.
- (9) Grossman P, Niemann L, Schmidt S, Walach H. Mindfulness-based stress reduction and health benefits. A meta-analysis. *J Psychosom Res* 2004 July;57(1):35-43.
- (10) Praissman S. Mindfulness-based stress reduction: a literature review and clinician's guide. *J Am Acad Nurse Pract* 2008 April;20(4):212-6.
- (11) Hofmann SG, Sawyer AT, Witt AA, Oh D. The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *J Consult Clin Psychol* 2010 April;78(2):169-83.
- (12) Toneatto T, Nguyen L. Does mindfulness meditation improve anxiety and mood symptoms? A review of the controlled research. *Can J Psychiatry* 2007 April;52(4):260-6.
- (13) Bohlmeijer E, Prenger R, Taal E, Cuijpers P. The effects of mindfulness-based stress reduction therapy on mental health of adults with a chronic medical disease: a meta-analysis. *J Psychosom Res* 2010 June;68(6):539-44.
- (14) Kabat-Zinn J. *Wherever you go, there you are: Mindfulness Meditation i everyday life*. New York: Hyperion; 1994.
- (15) Kabat-Zinn J. Indra's Net at Work: The mainstreaming of Dharma Practice in Society. In: Watson G, Batchelor S, Claxton G, editors. *The Psychology of Awakening: Buddhism, Science, and Our Day to Day Lives*. London: Rider; 1999. p. 226-49.
- (16) Williams JM, Teasdale JD, Segal ZV, Kabat-Zinn J. *The Mindful Way through Depression*. 2007.
- (17) Linehan MM. *Skills Training Manual for Treating Borderline Personality Disorder*. New York: Guilford Press; 1993.
- (18) Hayes SC, Smith S. *Get Out of Your Mind & Into Your Life: The New Acceptance & Commitment Therapy*. Oakland: New Harbinger Publications; 2005.
- (19) Speca M, Carlson LE, Goodey E, Angen M. A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Med* 2000 September;62(5):613-22.

- (20) Morone NE, Greco CM, Weiner DK. Mindfulness meditation for the treatment of chronic low back pain in older adults: a randomized controlled pilot study. *Pain* 2008 February;134(3):310-9.
- (21) Shapiro SL, Schwartz GE, Bonner G. Effects of mindfulness-based stress reduction on medical and premedical students. *J Behav Med* 1998 December;21(6):581-99.
- (22) Moritz S, Quan H, Rickhi B et al. A home study-based spirituality education program decreases emotional distress and increases quality of life--a randomized, controlled trial. *Altern Ther Health Med* 2006 November;12(6):26-35.
- (23) Cohen J. *Statistical power analysis for the behavioral sciences*. Rev. edition ed. Academic Press (New York); 1977.
- (24) Nyklicek I, Kuijpers KF. Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: is increased mindfulness indeed the mechanism? *Ann Behav Med* 2008 June;35(3):331-40.
- (25) Davidson RJ, Kabat-Zinn J, Schumacher J et al. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Med* 2003 July;65(4):564-70.
- (26) Travis F, Arenander A. EEG asymmetry and mindfulness meditation. *Psychosomatic Med* 2004 January;66(1):147-8.
- (27) Williams KA, Kolar MM, Reger BE, Pearson JC. Evaluation of a Wellness-Based Mindfulness Stress Reduction intervention: a controlled trial. *Am J Health Promot* 2001 July;15(6):422-32.
- (28) Grossman P, Kappos L, Gensicke H et al. MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology* 2010 September 28;75(13):1141-9.
- (29) Foley E, Baillie A, Huxter M, Price M, Sinclair E. Mindfulness-based cognitive therapy for individuals whose lives have been affected by cancer: a randomized controlled trial. *J Consult Clin Psychol* 2010 February;78(1):72-9.
- (30) Mularski RA, Munjas BA, Lorenz KA et al. Randomized controlled trial of mindfulness-based therapy for dyspnea in chronic obstructive lung disease. *J Altern Complement Med* 2009 October;15(10):1083-90.
- (31) Wong SY. Effect of mindfulness-based stress reduction programme on pain and quality of life in chronic pain patients: a randomised controlled clinical trial. *Hong Kong Med J* 2009 October;15 Suppl 6:13-4.
- (32) Monti DA, Peterson C, Kunkel EJ et al. A randomized, controlled trial of mindfulness-based art therapy (MBAT) for women with cancer. *Psychooncology* 2006 May;15(5):363-73.
- (33) Creswell JD, Myers HF, Cole SW, Irwin MR. Mindfulness meditation training effects on CD4+ T lymphocytes in HIV-1 infected adults: a small randomized controlled trial. *Brain Behav Immun* 2009 February;23(2):184-8.
- (34) Pradhan EK, Baumgarten M, Langenberg P et al. Effect of Mindfulness-Based Stress Reduction in rheumatoid arthritis patients. *Arthritis Rheum* 2007 October 15;57(7):1134-42.
- (35) Sephton SE, Salmon P, Weissbecker I et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum* 2007 February 15;57(1):77-85.
- (36) Carlson LE, Ursuliak Z, Goodey E, Angen M, Specia M. The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up. *Support Care Cancer* 2001 March;9(2):112-23.
- (37) Hebert JR, Ebbeling CB, Olendzki BC et al. Change in women's diet and body mass following intensive intervention for early-stage breast cancer. *J Am Diet Assoc* 2001 April;101(4):421-31.

- (38) Koszycki D, Benger M, Shlik J, Bradwejn J. Randomized trial of a meditation-based stress reduction program and cognitive behavior therapy in generalized social anxiety disorder. *Behav Res Ther* 2007 October;45(10):2518-26.
- (39) Teasdale JD, Segal ZV, Williams JM, Ridgeway VA, Soulsby JM, Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J Consult Clin Psychol* 2000 August;68(4):615-23.
- (40) Ma SH, Teasdale JD. Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *J Consult Clin Psychol* 2004 February;72(1):31-40.
- (41) Bondolfi G, Jermann F, der Linden MV et al. Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: Replication and extension in the Swiss health care system. *J Affect Disord* 2009 August 8.
- (42) Kuyken W, Byford S, Taylor RS et al. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *J Consult Clin Psychol* 2008 December;76(6):966-78.
- (43) Ost LG. Efficacy of the third wave of behavioral therapies: a systematic review and meta-analysis. *Behav Res Ther* 2008 March;46(3):296-321.
- (44) Moher D, Schulz KF, Altman D. The CONSORT Statement: revised recommendations for improving the quality of reports of parallel-group randomized trials 2001. *Explore (NY)* 2005 January;1(1):40-5.
- (45) Chambless DL, Ollendick TH. Empirically supported psychological interventions: controversies and evidence. *Annu Rev Psychol* 2001;52:685-716.
- (46) McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- (47) Zautra AJ, Davis MC, Reich JW et al. Comparison of cognitive behavioral and mindfulness meditation interventions on adaptation to rheumatoid arthritis for patients with and without history of recurrent depression. *J Consult Clin Psychol* 2008 June;76(3):408-21.
- (48) Simon SD. *Statistical Evidence in Medical Trials: What Do the Data Really Tell Us?* Oxford: Oxford University Press; 2006.

### Excluded studies

- 1: Gaylord SA, Whitehead WE, Coble RS, Faurot KR, Palsson OS, Garland EL, Frey W, Mann JD. Mindfulness for irritable bowel syndrome: protocol development for a controlled clinical trial. *BMC Complement Altern Med*. 2009 Jul 28;9:24. PubMed PMID: 19638214; PubMed Central PMCID: PMC2729728. No results
- 2: Agee JD, Danoff-Burg S, Grant CA. Comparing brief stress management courses in a community sample: mindfulness skills and progressive muscle relaxation. *Explore (NY)*. 2009 Mar-Apr;5(2):104-9. PubMed PMID: 19272581. Not standard MBSR/MBCT
- 3: Hepburn SR, Crane C, Barnhofer T, Duggan DS, Fennell MJ, Williams JM. Mindfulness-based cognitive therapy may reduce thought suppression in previously suicidal participants: findings from a preliminary study. *Br J Clin Psychol*. 2009 Jun;48(Pt 2):209-15. Epub 2009 Feb 27. PubMed PMID: 19254446. Exploratory
- 4: Tanner MA, Travis F, Gaylord-King C, Haaga DA, Grosswald S, Schneider RH. The effects of the transcendental meditation program on mindfulness. *J Clin Psychol*. 2009 Jun;65(6):574-89. PubMed PMID: 19241401. Not standard MBSR/MBCT
- 5: Kang YS, Choi SY, Ryu E. The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. *Nurse Educ Today*. 2009 Jul;29(5):538-43. Epub 2009 Jan 13. PubMed PMID: 19141364. N<33
- 6: Bormann JE, Carrico AW. Increases in positive reappraisal coping during a group-based mantram intervention mediate sustained reductions in anger in HIV-positive persons. *Int J Behav Med*. 2009;16(1):74-80. Epub 2009 Jan 6. PubMed PMID: 19127438; PubMed Central PMCID: PMC2739878. Not standard MBSR/MBCT
- 7: Fredrickson BL, Cohn MA, Coffey KA, Pek J, Finkel SM. Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *J Pers Soc Psychol*. 2008 Nov;95(5):1045-62. PubMed PMID: 18954193. Not standard MBSR/MBCT
- 8: Hanstede M, Gidron Y, Nyklíček I. The effects of a mindfulness intervention on obsessive-compulsive symptoms in a non-clinical student population. *J Nerv Ment Dis*. 2008 Oct;196(10):776-9. PubMed PMID: 18852623. N<33
- 9: Pace TW, Negi LT, Adame DD, Cole SP, Sivilli TI, Brown TD, Issa MJ, Raison CL. Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*. 2009 Jan;34(1):87-98. Epub 2008 Oct 4. PubMed PMID: 18835662; PubMed Central PMCID: PMC2695992. Not standard MBSR/MBCT
- 10: Tekur P, Singphow C, Nagendra HR, Raghuram N. Effect of short-term intensive yoga program on pain, functional disability and spinal flexibility in chronic low back pain: a randomized control study. *J Altern Complement Med*. 2008 Jul;14(6):637-44. PubMed PMID: 18673078. Not standard MBSR/MBCT
- 11: Zautra AJ, Davis MC, Reich JW, Nicassario P, Tennen H, Finan P, Kratz A, Parrish B, Irwin MR. Comparison of cognitive behavioral and mindfulness meditation interventions on adaptation to rheumatoid arthritis for patients with and without history of recurrent depression. *J Consult Clin Psychol*. 2008 Jun;76(3):408-21. PubMed PMID: 18540734. Not standard MBSR/MBCT
- 12: Chattha R, Nagarathna R, Padmalatha V, Nagendra HR. Effect of yoga on cognitive functions in climacteric syndrome: a randomised control study. *BJOG*. 2008 Jul;115(8):991-1000. Epub 2008 May 22. PubMed PMID: 18503578. Not standard MBSR/MBCT

- 13: Ernst S, Welke J, Heintze C, Gabriel R, Zöllner A, Kiehne S, Schwantes U, Esch T. Effects of mindfulness-based stress reduction on quality of life in nursing home residents: a feasibility study. *Forsch Komplementmed*. 2008 Apr;15(2):74-81. Epub 2008 Apr 7. PubMed PMID: 18496020. Not RCT
- 14: Shapiro SL, Oman D, Thoresen CE, Plante TG, Flinders T. Cultivating mindfulness: effects on well-being. *J Clin Psychol*. 2008 Jul;64(7):840-62. PubMed PMID: 18484600. N<33
- 15: Klatt MD, Buckworth J, Malarkey WB. Effects of low-dose mindfulness-based stress reduction (MBSR-ld) on working adults. *Health Educ Behav*. 2009 Jun;36(3):601-14. Epub 2008 May 9. PubMed PMID: 18469160. Not standard MBSR/MBCT
- 16: Oman D, Shapiro SL, Thoresen CE, Plante TG, Flinders T. Meditation lowers stress and supports forgiveness among college students: a randomized controlled trial. *J Am Coll Health*. 2008 Mar-Apr;56(5):569-78. PubMed PMID: 18400671. N<33
- 17: Carmody J, Olendzki B, Reed G, Andersen V, Rosenzweig P. A dietary intervention for recurrent prostate cancer after definitive primary treatment: results of a randomized pilot trial. *Urology*. 2008 Dec;72(6):1324-8. Epub 2008 Apr 8. PubMed PMID: 18400281. Not standard MBSR/MBCT
- 18: Grepmaier L, Mitterlehner F, Nickel M. Promotion of mindfulness in psychotherapists in training. *Psychiatry Res*. 2008 Mar 15;158(2):265. Epub 2008 Jan 24. PubMed PMID: 18221793. Not standard MBSR/MBCT
- 19: Chan AS, Han YM, Cheung MC. Electroencephalographic (EEG) measurements of mindfulness-based Triarchic body-pathway relaxation technique: a pilot study. *Appl Psychophysiol Biofeedback*. 2008 Mar;33(1):39-47. Epub 2008 Jan 24. PubMed PMID: 18214668. N<33
- 20: Tang YY, Ma Y, Wang J, Fan Y, Feng S, Lu Q, Yu Q, Sui D, Rothbart MK, Fan M, Posner MI. Short-term meditation training improves attention and self-regulation. *Proc Natl Acad Sci U S A*. 2007 Oct 23;104(43):17152-6. Epub 2007 Oct 11. PubMed PMID: 17940025; PubMed Central PMCID: PMC2040428. Not standard MBSR/MBCT
- 21: Grepmaier L, Mitterlehner F, Loew T, Bachler E, Rother W, Nickel M. Promoting mindfulness in psychotherapists in training influences the treatment results of their patients: a randomized, double-blind, controlled study. *Psychother Psychosom*. 2007;76(6):332-8. PubMed PMID: 17917468. Not standard MBSR/MBCT
- 22: Williams JM, Alatiq Y, Crane C, Barnhofer T, Fennell MJ, Duggan DS, Hepburn S, Goodwin GM. Mindfulness-based Cognitive Therapy (MBCT) in bipolar disorder: preliminary evaluation of immediate effects on between-episode functioning. *J Affect Disord*. 2008 Apr;107(1-3):275-9. Epub 2007 Sep 19. PubMed PMID: 17884176. Exploratory
- 23: Barnhofer T, Duggan D, Crane C, Hepburn S, Fennell MJ, Williams JM. Effects of meditation on frontal alpha-asymmetry in previously suicidal individuals. *Neuroreport*. 2007 May 7;18(7):709-12. PubMed PMID: 17426604. N<33
- 24: Sharma VK, Das S, Mondal S, Goswami U, Gandhi A. Effect of Sahaj Yoga on neuro-cognitive functions in patients suffering from major depression. *Indian J Physiol Pharmacol*. 2006 Oct-Dec;50(4):375-83. PubMed PMID: 17402267. Not standard MBSR/MBCT
- 25: Kingston J, Chadwick P, Meron D, Skinner TC. A pilot randomized control trial investigating the effect of mindfulness practice on pain tolerance, psychological well-being, and physiological activity. *J Psychosom Res*. 2007 Mar;62(3):297-300. PubMed PMID: 17324679. Not standard MBSR/MBCT

- 26: Jain S, Shapiro SL, Swanick S, Roesch SC, Mills PJ, Bell I, Schwartz GE. A randomized controlled trial of mindfulness meditation versus relaxation training: effects on distress, positive states of mind, rumination, and distraction. *Ann Behav Med.* 2007 Feb;33(1):11-21. PubMed PMID: 17291166. Not standard MBSR/MBCT
- 27: Bormann JE, Gifford AL, Shively M, Smith TL, Redwine L, Kelly A, Becker S, Gershwin M, Bone P, Belding W. Effects of spiritual mantram repetition on HIV outcomes: a randomized controlled trial. *J Behav Med.* 2006 Aug;29(4):359-76. Epub 2006 Jul 18. Erratum in: *J Behav Med.* 2006 Oct;29(5):499. PubMed PMID: 16847590. Not standard MBSR/MBCT
- 28: Edelman D, Oddone EZ, Liebowitz RS, Yancy WS Jr, Olsen MK, Jeffreys AS, Moon SD, Harris AC, Smith LL, Quillian-Wolever RE, Gaudet TW. A multidimensional integrative medicine intervention to improve cardiovascular risk. *J Gen Intern Med.* 2006 Jul;21(7):728-34. PubMed PMID: 16808774; PubMed Central PMCID: PMC1924710. Not standard MBSR/MBCT
- 29: Mackenzie CS, Poulin PA, Seidman-Carlson R. A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Appl Nurs Res.* 2006 May;19(2):105-9. PubMed PMID: 16728295. Not standard MBSR/MBCT
- 30: Plews-Ogan M, Owens JE, Goodman M, Wolfe P, Schorling J. A pilot study evaluating mindfulness-based stress reduction and massage for the management of chronic pain. *J Gen Intern Med.* 2005 Dec;20(12):1136-8. PubMed PMID: 16423104; PubMed Central PMCID: PMC1490272. N<33
- 31: Gaudio BA, Herbert JD. Acute treatment of inpatients with psychotic symptoms using Acceptance and Commitment Therapy: pilot results. *Behav Res Ther.* 2006 Mar;44(3):415-37. PubMed PMID: 15893293. Not standard MBSR/MBCT
- 32: Cohen-Katz J, Wiley S, Capuano T, Baker DM, Deitrick L, Shapiro S. The effects of mindfulness-based stress reduction on nurse stress and burnout: a qualitative and quantitative study, part III. *Holist Nurs Pract.* 2005 Mar-Apr;19(2):78-86. PubMed PMID: 15871591. Not standard MBSR/MBCT
- 33: Wenk-Sormaz H. Meditation can reduce habitual responding. *Altern Ther Health Med.* 2005 Mar-Apr;11(2):42-58. PubMed PMID: 15819448. Exploratory
- 34: Cohen-Katz J, Wiley SD, Capuano T, Baker DM, Kimmel S, Shapiro S. The effects of mindfulness-based stress reduction on nurse stress and burnout, Part II: A quantitative and qualitative study. *Holist Nurs Pract.* 2005 Jan-Feb;19(1):26-35. Erratum in: *Holist Nurs Pract.* 2005 Mar-Apr;19(2):78. Kimmel, Sharon [added]. PubMed PMID: 15736727. Not standard MBSR/MBCT
- 35: Robert McComb JJ, Tacon A, Randolph P, Caldera Y. A pilot study to examine the effects of a mindfulness-based stress-reduction and relaxation program on levels of stress hormones, physical functioning, and submaximal exercise responses. *J Altern Complement Med.* 2004 Oct;10(5):819-27. PubMed PMID: 15650471. N<33
- 36: Cohen L, Warneke C, Fouladi RT, Rodriguez MA, Chaoul-Reich A. Psychological adjustment and sleep quality in a randomized trial of the effects of a Tibetan yoga intervention in patients with lymphoma. *Cancer.* 2004 May 15;100(10):2253-60. PubMed PMID: 15139072. Not standard MBSR/MBCT
- 37: Tacón AM, McComb J, Caldera Y, Randolph P. Mindfulness meditation, anxiety reduction, and heart disease: a pilot study. *Fam Community Health.* 2003 Jan-Mar;26(1):25-33. PubMed PMID: 12802125. N<33
- 38: Shapiro SL, Bootzin RR, Figueredo AJ, Lopez AM, Schwartz GE. The efficacy of mindfulness-based stress reduction in the treatment of sleep disturbance in women with breast cancer: an exploratory study. *J Psychosom Res.* 2003 Jan;54(1):85-91.

PubMed PMID: 12505559. Not RCT (turned out quasi-experimental)

39: Teasdale JD, Moore RG, Hayhurst H, Pope M, Williams S, Segal ZV. Metacognitive awareness and prevention of relapse in depression: empirical evidence. *J Consult Clin Psychol*. 2002 Apr;70(2):275-87. PubMed PMID: 11952186. Exploratory

40: Carlson LE, Ursuliak Z, Goodey E, Angen M, Speca M. The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up. *Support Care Cancer*. 2001 Mar;9(2):112-23. PubMed PMID: 11305069. Not RCT

41: Williams JM, Teasdale JD, Segal ZV, Soulsby J. Mindfulness-based cognitive therapy reduces overgeneral autobiographical memory in formerly depressed patients. *J Abnorm Psychol*. 2000 Feb;109(1):150-5. PubMed PMID: 10740947. Exploratory

42: Kabat-Zinn J, Wheeler E, Light T, Skillings A, Scharf MJ, Cropley TG, Hosmer D, Bernhard JD. Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosom Med*. 1998 Sep-Oct;60(5):625-32. PubMed PMID: 9773769. Not standard MBSR/MBCT (only part of the MBSR program)

43: Astin JA. Stress reduction through mindfulness meditation. Effects on psychological symptomatology, sense of control, and spiritual experiences. *Psychother Psychosom*. 1997;66(2):97-106. PubMed PMID: 9097338. N<33

44: Blanchard EB, Appelbaum KA, Radnitz CL, Morrill B, Michultka D, Kirsch C, Guarnieri P, Hillhouse J, Evans DD, Jaccard J, et al. A controlled evaluation of thermal biofeedback and thermal biofeedback combined with cognitive therapy in the treatment of vascular headache. *J Consult Clin Psychol*. 1990 Apr;58(2):216-24. PubMed PMID: 2186067. Not standard MBSR/MBCT

45: Alexander CN, Langer EJ, Newman RI, Chandler HM, Davies JL. Transcendental meditation, mindfulness, and longevity: an experimental study with the elderly. *J Pers Soc Psychol*. 1989 Dec;57(6):950-64. PubMed PMID: 2693686. Not standard MBSR/MBCT

46: Puryear HB, Cayce CT, Thurston MA. Anxiety reduction associated with meditation: home study. *Percept Mot Skills*. 1976 Oct;42(43):527-31. PubMed PMID: 790294. Not standard MBSR/MBCT.

**Mindfulness-Based Therapies – a systematic review and  
some critical observations**

Paper II

Fjorback LO and Walach H.

*Religions and Psychotherapies. 2012, 3, 1-18.*

## **Abstract**

This article systematically reviews the evidence for Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) and analyses the conditions around their rising popularity. MBSR, MBCT, and Mindfulness Meditation were used as key words. The inclusion criteria were randomized controlled trials using the standard MBSR/MBCT program with a minimum of 33 participants. Twenty four studies were included. MBSR improved mental health in ten studies compared to waitlist control or treatment as usual. Moreover, MBSR was as efficacious as active control group in four studies, and showed a tendency over active control in one study. MBCT reduced the risk of depressive relapse in all five included studies. Evidence supports that MBSR improves mental health and MBCT prevents depressive relapse. It is interesting to observe that meditation based therapy programs are rapidly enjoying popularity. We discuss the cultural and theoretical implications.

## Introduction

In recent years, literature on meditation based therapy programs has been rapidly growing. During the 1970s and 1980s, there was the first spike of interest with the transcendental meditation (TM) program being studied widely and showing promising effects compared to other relaxation or therapeutic techniques in anxiety <sup>1</sup>, psychological health <sup>2</sup>, and various other issues such as drug addiction and behavioral problems <sup>3</sup>, blood pressure and cardiovascular risk factors <sup>4, 5</sup>. The TM program is a mantra-based concentration technique derived from the Vedic tradition and is heavily dependent on the whole TM-system with especially installed and approved teachers and a strong in-group with close relationships that have sometimes been likened to those of religious sects. Interest in this specific type of meditation program seems to have decreased following the death of its founder Maharishi Mahesh Yogi several years ago.

Meanwhile a new wave of interest in meditation based programs has swept across academic and medical culture. This time it is based on the concept of mindfulness. It was popularized by Jon Kabat-Zinn who, starting in the eighties, developed a secularized meditation program founded on the old Theravada-Buddhist practice of mindfulness meditation <sup>6-8</sup>.

Mindfulness holds a special place within Buddhist teaching <sup>9-11</sup>. According to this teaching, the suffering humans experience in this world exists from the beginning. It happens due to our own shortcomings, mainly greed and other mental toxins or destructive emotions <sup>12</sup>. It can, however, and this is the good news, be overcome <sup>13</sup>. The path towards this liberation is known as the eightfold path. This can be separated into three main domains: some concern ethical conduct (right speech, right action, right livelihood), some refer to the culture of the mind (right intention, right concentration, right mindfulness), and from these, finally, grow wisdom and insight (vipassana) <sup>12</sup>. From this goal of the whole path, insight, vipassana, the whole meditation tradition takes its name, Vipassana-Meditation. This is the old Buddhist tradition that is reputed to go back to Gautama Buddha himself. It is mainly taught in South-East Asia in countries such as Sri Lanka, Myanmar, Thailand, Laos, and Vietnam, while other countries have adopted different teachings or have developed their own traditions and see themselves as the 'larger vessel—Mahayana'. Within the older or Theravada Buddhist tradition, insight—into the non-substantiality of the ego and the fact that we create our suffering through clinging and greed—is the prime goal of all actions and meditation, since it means the end of all suffering. To reach it, ethical conduct is a prerequisite, and cultivation of the mind through good intention, practice of concentration and mindfulness is the

prime method. Hence the importance placed on meditation as a spiritual practice<sup>12, 13</sup>. In the Vipassana tradition, concentration types of meditation are practiced to strengthen the mind. This happens through mindfulness of breathing, where the diligent observation of the breath predominates, or mindfulness of the body, where attention is directed towards physical sensations in the body. Only after the mind has become used to steadying attention on objects, are further techniques employed, such as observation and mindfulness of mental objects or mental activity. It is only after a lengthy practice in Buddhist teaching often over many reincarnations, that wisdom and insight are reached, which finally leads to enlightenment and complete freedom. In this concept, concentration and mindfulness are interconnected: Concentration enables mindfulness, and the practice of mindfulness even outside meditation enhances concentrative power and thus makes mindfulness possible. Observe, further, that this whole edifice rests on ethical conduct as a prerequisite<sup>13</sup>.

Out of this tradition, the new interest in meditation based techniques arose with Kabat-Zinn's training, which he called a 'Mindfulness-Based Stress Reduction Program' (MBSR). Kabat-Zinn was a long-term meditator and a student of Jack Kornfield, one of the first Vipassana teachers in the West<sup>14</sup>. His professed goal was to make this tradition available to Westerners without any religious context, to secularize it. From this, MBSR emerged as an eight week group program<sup>15-18</sup>. Participants have to be committed to practice meditation for at least half an hour a day, preferably 45–60 minutes, for at least the eight weeks of the program. Afterwards, they may decide for themselves whether they want to continue or not. Once a week they meet for 2.5 hours in groups of 12 to 20, sometimes up to 40 people. They have the support of the group and their leader; they learn formal types of meditation such as sitting in mindful presence attending to the breath, or the body scan—a particular type of mindfulness of the body. They also learn mindful hatha yoga. They hear lectures about the connection between mind and body, how stress impacts physical systems and our immunity, and how mindfulness and meditation may combat these. This is in strict analogy to so called 'Dharma Talks' in the Vipassana tradition or 'Teishos' in the Zen tradition. These talks are intended to give a theoretical background, but even more importantly motivate the disciple to increase his efforts and keep on meditating. The lectures within MBSR programs are, of course, secular and also of a motivating nature, using obvious and well-established knowledge about the importance of attention, the mind-body connection, and the psycho-neuro-immunological consequences of mental habits<sup>15, 17, 18</sup>.

Kabat-Zinn developed the program from his own rich meditation experience<sup>7</sup> and offered it first to patients of pain clinics and other outpatients who had no treatment success within the conventional system. These patients were desperate and presumably happy to commit themselves to anything that could potentially help. This may also explain the success of the early studies. German language teachers first started offering courses in the nineties, and their group was among the first to start evaluating these programs in Germany<sup>19</sup> and to develop a measurement instrument<sup>20, 21</sup>. Interest grew rapidly, publications were produced in an exponential growth curve and a general enthusiasm seemed to grip the community. They did a first meta-analysis in 2004 and found quite good, medium sized effect sizes, both in controlled and in uncontrolled studies, for MBSR in clinical populations<sup>22</sup>. Meanwhile, the body of literature is growing; mindfulness is becoming a concept used by many people in many different contexts and presumably with meanings different from the original ones. The discussion whether ‘mindfulness’ is perhaps simply a psychological function that can be used outside religion<sup>23-25</sup> has already been raised. This is at least implied by the current classic definition that defines mindfulness as a moment-to-moment awareness in a non-judgmental stance<sup>26</sup>.

Thus, mindfulness has received interest from clinicians and researchers, perhaps because it seems to improve an acceptance of the symptoms which are difficult or impossible to change, installs a cognitive meta-reflective capacity<sup>27</sup> that enhances the degree of freedom of patients, and can help patients change their focus by emphasizing experience of the present moment. Most therapeutic concepts see symptoms as defects that have to be changed, either pharmacologically or psychologically. Thus, pharmacological concepts try to counteract symptoms, and behavioral approaches try to change mental habits towards what is considered to be healthier. In contrast, mindfulness approaches teach one to simply observe, pass no judgment and accept things as they are. The paradoxical experience of patients seems to be that it is exactly this non-judgmental, even curious mental stance of observation that sometimes changes the symptoms, and sometimes just instills peace of mind in relation to them. The MBSR program starts by focusing on the body and reconnecting the mind to the body. In a second step, the mind is itself the object of attention and awareness. This may finally lead to a stance of acceptance which also helps to experience compassion for oneself and for others. A state of connectedness and an experience of being, belonging, and caring are strong pillars of this program.

Mindfulness-Based Cognitive Therapy (MBCT)<sup>28</sup> is an adaptation of the MBSR program. It incorporates elements of cognitive therapy facilitating a detached or decentered view of one’s thoughts and is designed to prevent depressive relapse<sup>29</sup>. It is based on the clinical observation that

decentering one's view and looking at one's own symptoms and mental activities with some detachment can help both alleviate symptoms and discover triggers for potential downward spirals of affect or mood. Long-term vulnerability to depression may be related to the presence of perceived discrepancies between the actual self and ideal self-guides, and MBCT might both protect against increases in self-discrepancy and facilitate a shift in the goals of self-regulation<sup>30</sup>.

These maladaptive self-guides, rumination, avoidance, and perfectionism are four characteristics that can be seen as different aspects of the same 'mode of mind' and mindfulness training might allow people to recognize when this mode of mind is operating<sup>31</sup>.

As a prevention program for those depressed patients who are at great risk of lifelong suffering from depressive relapses, MBCT is certainly an important potential addition to the therapeutic arsenal.

Due to the different approach to illness—acceptance rather than change—adopted by both MBSR and MBCT and due to the different potential mechanism—observing and non-reacting rather than acting and fighting—MBSR and MBCT pose a conceptual challenge to Western medical concepts.

It is therefore of special interest to see whether these treatments actually work, and if so, whether they work better than or similar to established treatments. We therefore decided to conduct a systematic review focusing only on randomized controlled studies, as only these offer a reasonable protection against bias. We have reported this systematic review in detail elsewhere<sup>32</sup>. Here we will summarize the main results with an update of new studies, and draw special attention to some conceptual, theoretical, practical, and methodological consequences.

## **Methods**

### **Identification and Selection**

This review focuses on MBSR and MBCT because both treatments are well-defined and mindfulness training is their key element.

The studies were identified by systematic searches of Medline, PsychInfo and Embase from 1980 to October 2010, using 'mindfulness-based stress reduction', 'mindfulness-based cognitive therapy' and 'mindfulness meditation' and appropriate abbreviations as keywords. Titles, abstracts, and full-texts

of the identified papers were screened for eligibility by one reviewer. All abstracts were read, and when an indication of mindfulness and RCT was found, the entire article was retrieved. The reference lists of selected papers were checked for additional eligible papers. We included only randomized controlled studies on adults, published in English, on either MBSR or MBCT interventions, either in their original form or in appropriate adaptations for certain patient populations.

## Analysis

To examine the effects on physical and mental health, the studies were grouped according to study population in non-clinical populations and clinical populations with physical illness or psychiatric disorders. The update of the new studies is presented in table 2.6.

## Results

Twenty four out of 72 studies fulfilled the criteria and were included. The main reasons for exclusion were too few participants and the intervention not being the standard MBSR or MBCT program.

### Non-clinical populations

Nyklicek *et al.*<sup>33</sup> compared the effects of MBSR to a wait-list control condition while examining potentially mediating effects of mindfulness. They found that well-being, quality of life, vital exhaustion and positive affect improved in the mindfulness but not in the wait-list control condition, whereas negative affect remained unchanged. Mindfulness might mediate this effect.

Davidson *et al.*<sup>34</sup> found that a mindfulness training offered to employees changed not only their anxiety level, but also their immunological functioning measured by higher antibodies to vaccines when compared to a wait-list control group. Moreover, the change of anxiety was correlated to stronger frontal left-asymmetry in their EEG, which was correlated to improved immunity. Davidson interpreted this as an improved plasticity in dealing with emotional stress, an interpretation which is, however, contested<sup>35</sup>.

Daily hassles, psychological distress, and medical symptoms improved in self-selected community residents compared to a control group receiving educational materials<sup>36</sup>. The MBSR training improved medical students' depression and anxiety, and improved their empathy and their spirituality scores compared with waitlist controls<sup>37</sup>.

Thus, in the four studies on non-clinical populations, MBSR was demonstrated to improve mental and physical health without exception. The effect sizes were medium to large. None of the studies, however, used a strong, active control.

### Clinical populations with physical illness

In a large study of 150 patients suffering from multiple sclerosis, Grossman and colleagues<sup>38</sup> showed moderate to strong effects in all measures, especially in quality of life, when compared to treatment as usual (TAU).

Foley *et al.*<sup>39</sup> adapted the MBCT manual to the situation of cancer survivors in a wait-list trial and showed, in a mixed group of cancer patients, of which more than 50% were in late stages 3 and 4, significant improvements in depression and anxiety, as well as in distress and quality of life. Mindfulness improved, and effects sizes were medium to large.

Mularski *et al.*<sup>40</sup> were unable to see any improvement in a group of patients with chronic obstructive pulmonary disease who were taught mindful breathing, or an active control. A high drop-out rate of 40% suggests that the program was either not suited to the patients or that the patients recruited were not committed to really participating in the program.

A study with a similarly negative result was published by Wong who studied 100 patients with chronic pain<sup>41</sup>. MBSR was compared to a strong active control group and both groups improved about the same.

Monti *et al.*<sup>42</sup> tested the efficacy of Mindfulness-Based Art Therapy in women with cancer, and observed a reduction in the symptoms of distress and an improved health-related quality of life when compared to a waitlist control group.

Creswell *et al.*<sup>43</sup> provided initial evidence that MBSR can buffer CD4+T lymphocyte declines in an ethnically diverse sample of HIV-1 infected adults. Additional analyses suggested that the MBSR treatment effects on CD4+T lymphocytes are independent of antiretroviral medication use. The control group received 1 day of MBSR intervention.

Morone *et al.*<sup>44</sup> conducted a pilot wait-list study to assess the feasibility of recruitment and adherence to an MBSR program for older adults with chronic low back pain, and to develop initial estimates of

treatment effects. The completion rate for the intervention group was 68% and 78% for the control group after they crossed over to the MBSR program. Because it was a pilot study, they explored participant outcome on a variety of outcome measures. As a result, no final conclusion can be drawn.

Pradhan *et al.*<sup>45</sup> suggested after a wait-list controlled pilot study that MBSR may complement medical disease management by reducing psychological distress and strengthening well-being in patients with rheumatoid arthritis.

Sephton *et al.*<sup>46</sup> showed that MBSR alleviated depressive symptoms in patients with fibromyalgia when compared to a wait-list control group. All findings persisted when pain, sleep, and antidepressant medication use were controlled for. Functional impairment, pain, and sleep quality were measured prior to randomization. The results of these outcomes were not reported.

Astin *et al.*<sup>47</sup> were unable to show a difference between a treatment combining MBSR and Qi Gong, and an educational program. High drop-out rates of up to 49% make it difficult to draw final conclusions. While both groups improved, they showed no difference between them.

A similar finding was observed in a recent German study<sup>48</sup>. Being the largest and one of the few active controlled studies, it shows a small difference between MBSR and the active control in fibromyalgia patients, which, however, is not significant, due to power problems. The waitlist group also improved significantly.

Specia *et al.*<sup>49, 50</sup> concluded after a wait-list study that the modified MBSR program was effective in decreasing mood disturbance and stress symptoms in both male and female patients with a wide variety of cancer diagnoses, stages of illness, and ages. These improvements were maintained at six-month follow-up.

Hebert *et al.*<sup>51</sup> compared the effectiveness of an intensive dietary intervention on diet and body mass in women with breast cancer to an MBSR program or usual supportive care. The results indicated that MBSR did not make women with breast cancer consume less fat.

Among the thirteen MBSR studies in clinical populations with physical illnesses included, eleven reported changes in mental health, six out of seven showed significant improvements compared to

wait-list or TAU, three improved similar to active control conditions, and one did not improve either in the mindfulness or the active control condition. Three fibromyalgia studies were conducted and none of them showed convincing results, but gave some indications as to improvements. Disease activity was assessed in three studies and no effect was found in rheumatoid arthritis and COPD patients, whereas a positive effect was found in HIV patients.

### Clinical populations with psychiatric disorders

Cognitive Behavioral Group Therapy (CBGT) was superior to MBSR in the improvement of generalized anxiety disorder, although MBSR patients also improved and had similar results in depression and general symptoms<sup>52</sup>.

Moritz *et al.*<sup>53</sup> suggested that a home study-based spirituality educational program can affect mental health by improving mood and quality of life within the same range as reported by other mood intervention programs such as cognitive behavioral therapy and MBSR. The mindfulness intervention followed the modified program developed for cancer patients. Only 57% of the participants in the MBSR group completed the treatment, which is 20–40% lower than the figures reported by the other included MBSR/MBCT studies.

In their first study on MBCT, Teasdale *et al.*<sup>54</sup> suggested that MBCT offers a promising cost-efficient psychological approach to preventing relapse in recovered, recurrently depressed patients. This was replicated by Ma<sup>55</sup> and more recently by Kuyken and colleagues<sup>56</sup>, who also added a cost-benefit analysis and could show that MBCT was the more cost-effective option long term. This was again replicated in principle by Segal and colleagues<sup>57</sup>, who also showed superiority over placebo. It was concluded that MBCT offers protection against relapse on a par with that of maintenance antidepressant pharmacotherapy.

Although slightly better, Bondolfi and colleagues<sup>58</sup> did not see superiority of MBCT over psychiatric treatment in their Swiss sample of 60 patients. This might be mainly due to the fact that the conventionally treated patients had much better results than in the other studies. Teasdale *et al.*<sup>54</sup>, Ma<sup>55</sup>, and Bondolfi<sup>58</sup> compared MBCT to TAU, while Kuyken<sup>56</sup> and Segal<sup>57</sup> compared MBCT to maintenance antidepressant medication.

Thus, seven MBSR/MBCT studies in clinical populations with psychiatric disorders are included. All five MBCT studies reduced depressive relapse. The two MBSR studies were compared to active

control conditions, the improvements were significantly higher in the active control conditions at the end of treatment, but when four-week follow-up was assessed, mindfulness and active control conditions were equal.

Table 2.6 Update of new studies

Author	Participants	Intervention	Control group	Follow-up	Measures	Results
Segal <i>et al.</i> 2010 <sup>57</sup>	Medicated patients with Major depression (≥2 episodes) N=160 mean age 44 58% female	MBCT: 8 weekly, 2-hour sessions and optional monthly meditation classed; plus medication taper	Antidepressant medication or placebo	18 months	Time to relapse Depressive Symptoms Hamilton Depression Rating Scale and Clinical Interview	No significant difference overall between active components MBCT relapse rate: 38%; Medication: 46%; Placebo: 60% Hazard Ratio relative to placebo: MBCT 0.26 (95%CI 0.09–0.79); Medication 0.24 (95%CI 0.07–0.89) Reduction of risk for unstable remitters in MBCT (p=0.01) and Medication (p=0.03) vs. Placebo
Schmidt <i>et al.</i> 2011 <sup>48</sup>	Women with fibromyalgia N=177 mean age 52	MBSR, 8 weekly 2.5 hour session plus day of mindfulness	Active Control, 8 weekly, 2.5 hour sessions relaxation, group support and body work or Waitlist	End of treatment 2 months follow-up	Health related Quality of Life Profile of Quality of Life for the Chronically Ill Fibromyalgia Impact Questionnaire Depression CES-D Anxiety STAI Quality of Sleep Pittsburgh Sleep Quality Index	No significant group x time effect. Significant improvement for all groups MBSR preM=11.7 SD=2.9; PostM=12.6 SD=3.0; 2 month follow-up M=12.8 SD=3.1 Active control preM=11.7 SD=3.3; PostM=12.9 SD=3.4; 2 month follow-up M=12.2 SD=3.6 Waitlist preM=11.7 SD=3.2; PostM=11.8 SD=3.5; 2 month follow-up M=12.3 SD=3.3 No significant group x time effect. Significant improvement for all groups MBSR preM=5.8 SD=1.4; PostM=4.9 SD=1.7; 2 month follow-up M=5.2 SD=2.0 Active control preM=5.5 SD=1.7; PostM=5.1 SD=1.6; 2 month follow-up M=5.3 SD=1.9 Waitlist preM=5.6 SD=1.9; PostM=5.3 SD=1.6; 2 month follow-up M=5.3 SD=1.7 No significant group x time effect. Significant improvement for all groups MBSR preM=11.31 SD=3.4; PostM=10.0 SD=3.8; 2 month follow-up M=10.0 SD=3.8 Active control preM=11.4 SD=4.2; PostM=10.1 SD=4.2; 2 month follow-up M=10.1 SD=4.2 Waitlist preM=11.1 SD=4.4; PostM=10.7 SD=4.4; 2 month follow-up M=10.4 SD=4.1 No significant group x time effect. Significant improvement for all groups MBSR preM=35.5 SD=9.4; PostM=31.3 SD=8.8; 2 month follow-up M=30.8 SD=9.2 Active control preM=34.7 SD=8.7; PostM=32.0 SD=9.0; 2 month follow-up M=32.2 SD=8.8 Waitlist preM=34.8 SD=7.7; PostM=33.1 SD=7.8; 2 month follow-up M=32.4 SD=9.1 No significant group x time effect. Significant improvement for MBSR and active control MBSR preM=11.31 SD=3.45; PostM=10.04 SD=3.76; 2 month follow-up M=10.01 SD=3.6 Active control preM=10.12 SD=4.21; PostM=10.12 SD=4.21; 2 month follow-up M=10.25 SD=4.09

					<p><b>Pain Perception</b></p> <p>Pain Perception Scale</p> <p>Waitlist preM=11.21 SD=4.36; PostM=10.68 SD=4.42; 2 month follow-up M=10.37 SD=4.06</p> <p><b>No significant group x time effect. Significant improvement for all groups</b></p> <p>MBSR preM=35.47 SD=9.38; PostM=31.26 SD=8.78; 2 month follow-up M=30.79 SD=9.20</p> <p>Active control preM=34.74 SD=8.67; PostM=31.96 SD=9.02; 2 month follow-up M=32.17 SD=8.76</p> <p>Waitlist preM=34.78 SD=7.66; PostM=33.09 SD=7.78; 2 month follow-up M=32.38 SD=9.07</p>
<p><i>Astin et al.</i> 2003 <sup>47</sup></p>	<p><b>Women with fibromyalgia</b> <b>N=128</b> mean age 48</p>	<p><b>MBSR+ Quigong</b> 8 weekly, 2.5 hour sessions. 25.8% never attended, attrition up to 49%</p>	<p>Education program groups designed to match time spent and attention by a team of professional facilitator</p>	<p>End of treatment, 2 and 4 months after treatment</p>	<p><b>Total myalgic score</b></p> <p><b>Fibromyalgia Impact</b></p> <p><b>Depressive Symptoms</b> (Becks BDI)</p> <p><b>Pain</b> SF36 Subscales</p> <p><b>No significant group x time effect. Significant changes in MBSR group</b> MBSR preM=17.9, SD=5; postM=15.3, SD=3.5; 4 month follow-up M=15.7, SD=4.3 Education preM=16.8,SD=5.1; postM=15.6, SD=3.4;4 month follow-up M=15.9, SD=4.5</p> <p><b>No significant group x time effect</b> MBSR preM=57.8, SD=10.8; postM=48.8, SD=15.4; 4 month follow-up M=46.4, SD=19.5 Education preM=58.7, SD=13.5; postM=50.1, SD=18.3;4 month follow-up M=50.0, SD=18.2</p> <p><b>No significant group x time effect. Significant changes in both groups</b> MBSR preM=16.7, SD=7.4; postM=13.1, SD=7.9; 4 month follow-up M=12.3, SD=7.7 Education preM=17.2, SD=9.1; postM=14.3, SD=8.4;4 month follow-up M=14.0, SD=9.2</p> <p><b>No significant group x time effect. Significant changes in both groups</b> MBSR preM=32.3, SD=14.4; postM=39.8, SD=17.7; 4 month follow-up M=41.6, SD=22.2 Education preM=31.4, SD=16.7; postM=40.8, SD=18.7;4 month follow-up M=42.4, SD=22.5</p>

### Quality of the included randomized controlled trials

Waitlist control group is the weakest possible control, and is the design used in most of the MBSR studies included. MBCT/MBSR was compared to TAU in four studies. It is difficult to know whether TAU as used in these studies was a strong active control or a minimum treatment.

A treatment method that in previous research has been found effective for a specific disorder is the most stringent comparison condition to use, but this design was only used in three studies<sup>52, 55, 56</sup>.

In order to avoid confounding the therapist and the treatment condition, the treatment should be delivered by more than one therapist; five studies included reported the use of two or more therapists. To conclusively determine if authors actually apply the treatment they describe, independent assessors should rate recorded sessions for adherence to the treatment manual and competence of the therapists. This is reported only in the MBCT studies. Only about half of the studies included reported power calculation, primary outcome, and effect sizes. Thus, the field clearly is still in the initial stage, and conclusions as to its efficacy cannot be considered final. What is also puzzling is that only half of all studies with reported homework practice show a positive correlation between homework and improvement<sup>59</sup>. This could indicate that mindfulness is only one, and perhaps not even the most important, component in this complex program. This would, however, certainly need further clarification.

Overall, the studies provided evidence supporting that:

- MBSR is superior to waitlist in improving mental health in self-selected clinical and non-clinical populations and
- MBCT can reduce the risk of depressive relapse among referred and self-selected recovered, recurrently depressed patients with three or more previous episodes.

### Compliance

The review showed that most patients randomized to the mindfulness interventions (75%–97%) did complete treatment, which was defined as attending at least four or five sessions.

### Limitations

Most studies did not include active control groups. Among the MBSR studies, nine only assessed end of treatment results, and seven reported one- to six-month post-treatment results. The lack of active control groups and long-term follow-up periods constitutes a limitation of many of the

assessed studies. Publication bias cannot be ruled out because most studies have shown positive results.

## Discussion

We tried to answer the question: Are meditation based interventions, especially those using mindfulness as a potential mechanism, effective? We conducted a systematic review of RCTs on MBSR/MBCT. Evidence supports that MBSR improves mental health in non-clinical and clinical populations. It remains unclear, however, whether it can also improve physical health. In clinical populations with physical illness, MBSR complements medical disease management by relieving psychological distress and strengthening well-being. In clinical populations with psychiatric disorders, MBSR has some benefit as it reduces symptoms of distress, anxiety and depression, or teaches patients coping skills to handle these symptoms. MBCT is an effective and efficient way to prevent relapse in recovered, depressed patients with three or more previous episodes. It deserves further study and potentially even inclusion into public mental health schemes as a more sustainable alternative to pharmacotherapy, especially for those who do not reliably improve after medication. Overall, the studies showed medium to large effect sizes, and the improvement fell within the range reported in other psychosocial interventions.

The APA Division 12 Task Force has developed criteria that therapies must fulfill in order to be considered well-established and empirically supported<sup>60</sup>. MBSR meets these criteria. 17 of the MBSR studies included reported mental health outcomes and 14 found MBSR to be more effective than a waitlist or equivalent to active control conditions. Experiments were conducted using treatment manuals and effects have been demonstrated by different investigators in large and clearly specified samples. MBSR thus meets the criteria for the 'well-established' designation.

MBCT also approached the 'well-established' designation regarding prevention of depressive relapse. Methodologically, the reviewed studies are strong, and they show MBCT to be superior to TAU and equivalent to continuing antidepressant medication when compared to MBCT plus support in discontinuing antidepressants in preventing relapse. Treatment manuals and large and clearly specified samples of formerly depressed patients were used, and the studies were conducted by independent investigators. MBCT did not prevent depressive relapse in patients with only two previous episodes, and the number of past episodes of depression is a determined characteristic that might predict differential benefit from MBCT.

Thus, we now know that implementation of the manuals of both MBSR and MBCT are effective for some people. But what is the mechanism? There are weak indications only that mindfulness itself is the ‘active ingredient’ in the therapeutic programs. The fact that the intensity of the homework is weakly correlated only in half of the studies, that the increase of mindfulness is not always correlated to the improvement of symptoms, and that actively controlled studies show only small effect sizes, if at all, of mindfulness over active control, indicate that mindfulness is only partially involved. Hence it is likely that all the other components—group support, the novelty of the program, commitment and compliance, the cognitive restructuring—might play equally important roles. Research into the mechanisms is only starting to emerge. Initial results point to the fact that mindfulness decreases automatic reactions <sup>61</sup>, reduces the propensity for negative reinforcements <sup>24</sup>, increases acceptance <sup>62</sup>, fosters patients with a meta-cognitive viewpoint that allows for some freedom from established and potentially painful ways of reacting <sup>27</sup>, and enhances self-compassion <sup>63</sup>.

One culturally very interesting fact that has gone unnoticed so far is the following: Western medicine and psychotherapy have mainly focused on combating symptoms and have defined therapeutic success by absence of symptoms. Mindfulness based interventions, however, do not focus on symptoms, but on the conscious attitude towards them. By letting symptoms be and teaching patients a different mental stance, namely accepting what is and being attentive to the present moment instead of running away from their illness and trying to change it, these approaches provide patients in particular and the medical culture at large with a completely new viewpoint. Thus, patients might not experience less symptoms, but experience decreased suffering from their symptoms and more freedom in relation to them, manifesting as improved mental health and quality of life. One of the patients in our mindfulness study on fibromyalgia <sup>47</sup> expressed this beautifully by saying: ‘For 20 years, I have been bullied by my illness, never took a week holiday because I felt I have to be close to a doctor. Now, I don’t care. I simply go on holidays and have a good time.’ Another patient who was in one of our mixed patient groups, who had suffered from severe agoraphobia and had not left the house for quite some year, suddenly started going out again, visiting her aunt hundreds of miles away. She was unable to say how it had happened, but all of a sudden, her anxiety was gone. By attending to the present moment, dysfunctional loops which keep patients either fixed to the past, such as in depression, or anxiously anticipating the future, as in anxiety, can be broken. What religions over the ages, not only Buddhism, have taught can then become experience for patients: The richness of a present-moment experience is the richness of life itself <sup>6</sup>. With mindfulness this rather simple but very important truth comes back into our culture, clad in psychological and Buddhist clothes but, in fact, being quite universal. It is arguably not an

easy task to catch this altered stance scientifically. So far it has escaped researchers it seems, except in anecdotes and vignettes.

Future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments. Mindfulness is a systematic training of attention, awareness, compassion, and wisdom. It may be useful because the Dharma is universal<sup>64</sup>. This universal quality may also, however, be present in other programs; in fact it may be this quality that is present when a psychosocial intervention is working. Further, this quality may be pointed to as common humanity, which makes it difficult to capture and investigate.

So far we have not discussed MBSR and MBCT separately. The following three books represent the MBSR manual: *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*<sup>6</sup>, *Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life*<sup>65</sup>, and *Heal Thy Self: Lessons on Mindfulness in Medicine*<sup>64</sup>. What is very special about the MBSR program is that mindfulness has to be integrated in the teacher and that it includes periods of silence. Using the wisdom of the body and mind to face stress, pain, and illness is very different from a traditional CBT perspective which focuses on fixing and problem solving. MBCT focus more on thoughts compared to MBSR, and MBSR teachers more often have a meditation background than MBCT teachers, who often have a psychotherapeutic background. The MBCT manual may look simpler describing mindfulness as attention control training<sup>28</sup> but the authors behind the MBCT manual describe the mindful presence of the therapist as playing a crucial role in the efficacy of treatment. They themselves observed a shift from being problem solving therapists to roles as instructors empowering patients to relate mindfully to their experience<sup>58</sup>.

It is clear that mindfulness is not a pill that can be prescribed. Patients must be ready to practice, be willing to engage and to take daily time out to keep practicing. Naturally, the results apply only to this type of patient, and for them it seems to work.

We saw relatively few studies with negative outcomes. Since most clinical research in this field is either publicly or self-supported, it is likely that the file-drawer problem of unpublished negative studies is small, but it cannot be excluded.

There is certainly a danger involved in the 'hype' around mindfulness: If we take it out of its original context and see it only as a tool, similar to others, it might lose its impact. As explained in the

‘Introduction’, mindfulness has to be seen within a certain context. It is a habit and a way of being rather than merely a psychological skill. It might well be the case that it only lives up to its original strength and power if it is incorporated as a habit into daily life and not just seen as a tool switched on and off according to the symptom load. If that danger is heeded, however, then mindfulness-based approaches might be able to reintroduce a much needed skill to people, which seems previously to have been within the remit of classical religions: that of focusing on the present moment and imbuing it with meaning. Perhaps the modern interest in mindfulness is part of the larger cultural shift which seems to be bringing back religious concepts in secular clothes. Spirituality is, after all, a human condition, and even very ‘secularly’ trained people such as psychotherapists report on spontaneous spiritual experiences<sup>65</sup> and the importance of spirituality in psychotherapy. Thus, we might be currently witnessing a transition of religious concepts into secular and scientific culture. Whether this is a beneficial process or not is difficult to say. It seems, at least from a scientific point of view, that the inclusion of concepts of mindfulness into therapeutic approaches is helpful for people.

### Recommendations for further research

Future RCTs of MBSR and MBCT should use optimal design including the use of an active treatment as comparison, properly trained instructors, follow-up of at least one year and should describe attrition. In clinical populations, it is recommended to test the combination of mindfulness treatment and specialized treatment for the specific medical disorder in question. It is also recommended to explore the effect of longer treatment times, as several of the strong studies reviewed included 3–4 reinforcement classes.

### Standardized training

MBSR teachers from America and Europe have developed principles for training teachers. This non-exclusive list of essential elements of training programs to develop MBSR teachers would include<sup>66</sup>:

1. The MBSR teacher trainer needs to have a personal longstanding grounding in meditative practices and be a committed student of the dharma, as it is expressed both within the Buddhist meditation traditions and in more mainstream and universal contexts exemplified by MBSR. This has nothing to do with being or not being a Buddhist.
2. MBSR is a vehicle for embodying and transmitting the dharma in a wholly secular and universal idiom. It is a *recontextualizing* of dharma, not a decontextualizing of it.

3. MBSR instructors need to have their own personal meditation practice and attend retreats in the spirit of ‘continuing education’ and the ongoing deepening of their practice and understanding.
4. MBSR instructors follow the principle that they never ask more of program participants than they do of themselves on a daily basis in terms of both formal and informal mindfulness practices. This also needs to be the case for MBSR teacher trainers.
5. The teaching of mindfulness is never a matter of merely teaching or operationalizing techniques. Mindfulness is a way of being in a wiser relationship to one's experience, not one particular mental state to be pursued and attained. Thus, the non-instrumental dimensionality of the work and of the practice of mindfulness is the foundation of an effective practice and teaching.
6. Teaching MBSR is an opportunity for right livelihood. Thus, it is important to develop a fair and non-exploitative pricing structure for both MBSR implementation and teacher training.

Similar guidelines were established by the UK Network of Mindfulness-Based Teacher Trainers, along with a professional mental health training that includes the use of evidence-based therapeutic approaches (if delivering MBCT)<sup>67</sup>.

## **Conclusions**

Mindfulness-based interventions work. They can be seen to be clinically validated. Further research is needed to clarify what the exact roles of the mindfulness and meditation components in these interventions are. For patients who choose these interventions, they seem to be beneficial because they foster within them a sense of control and self-efficacy, allowing them to take an active role in their condition without having to rely on external help.

Reference List

- (1) Eppley KR, Abrams AI, Shear J. Differential effects of relaxation techniques on trait anxiety: a meta-analysis. *J Clin Psychol* 1989 November;45(6):957-74.
- (2) Alexander CN, Rainforth MV, Gelderloos P. Transcendental meditation, self-actualization, and psychological health: a conceptual overview and statistical meta-analysis. *J Soc Behav Pers* 1991;(6):189-247.
- (3) Alexander CN, Robinson P, Orme Johnson DW, Schneider RH. The effects of transcendental meditation compared to other methods of relaxation and meditation in reducing risk factors, morbidity, and mortality. *Homeostasis* 1994;(34):243-63.
- (4) Rainforth MV, Schneider RH, Nidich SI, Gaylord-King C, Salerno JW, Anderson JW. Stress reduction programs in patients with elevated blood pressure: a systematic review and meta-analysis. *Curr Hypertens Rep* 2007 December;9(6):520-8.
- (5) Anderson JW, Liu C, Kryscio J. Blood pressure response to transcendental meditation: A meta-analysis. *Am J Hypertens* 2008;(21):310-6.
- (6) Kabat-Zinn J. *Full catastrophe living: using the wisdom of your mind to face stress, pain, and illness*. New York: Delacorte; 1990.
- (7) Kabat-Zinn J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *Gen Hosp Psychiatry* 1982 April;4(1):33-47.
- (8) Kabat-Zinn J. *Wherever you go, there you are: Mindfulness Meditation in everyday life*. New York: Hyperion; 1994.
- (9) Chah A. *A Taste of Freedom. Selected Dhamma Talks*. Penang: The Sangha, Bun Wai Forest Monastery, Sukhi Hotu Dhamma Publications; 2010.
- (10) Dockett KH, Dudley-Grant GR, Bankart CP. *Psychology and Buddhism: From Individual to Global Community*. New York, Boston: Kluwer Academic/ Plenum Publishers; 2003.
- (11) Monneyya B. *Teaching and Training: Pa-Auk Forest Monastery*. 4th ed. Kuala Lumpur: Wave Publications; 2009.
- (12) McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- (13) Goleman D. *Destructive Emotions. How can we overcome them? A scientific Dialogue with the Dalai Lama*. New York: Bantam Dell. A division of Random House, Inc.; 2003.
- (14) Kornfield J. Intensive insight meditation: a phenomenological study. *J Transpersonal Psychol* 1979;11:41-58.
- (15) Kabat-Zinn J. Meditation. In: Holland JD, editor. *Textbook of Psycho-oncology*. Oxford: Oxford University Press; 1998. p. 767-79.
- (16) Kabat-Zinn J. Indra's Net at Work: The mainstreaming of Dharma Practice in Society. In: Watson G, Batchelor S, Claxton G, editors. *The Psychology of Awakening: Buddhism, Science, and Our Day to Day Lives*. London: Rider; 1999. p. 226-49.
- (17) Kabat-Zinn J. Foreword. In: Didonna F, editor. *Clinical handbook of Mindfulness*. New York: Springer; 2009.
- (18) Kabat-Zinn J. Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemporary Buddhism* 2011;12(1):281-306.

- (19) Majumdar M, Grossman P, etz-Waschkowski B, Kersig S, Walach H. Does mindfulness meditation contribute to health? Outcome evaluation of a German sample. *J Altern Complement Med* 2002 December;8(6):719-30.
- (20) Buchheld N, Grossmann P, Walach H. Measuring mindfulness in insight meditation (vipassana) and meditation-based psychotherapy: The development of the Freiburg Mindfulness Inventory (FMI). *J Meditation Res* 2001;(1):11-34.
- (21) Buchheld N, Walach H. Achtsamkeit in Vipassanna-Meditation und Psychotherapie. Die Entwicklung des Freiburger Fragebogens zur Achtsamkeit. *Zeitschrift für Klinische Psychologie, Psychiatrie und Psychotherapie* 2002;(50):153-72.
- (22) Grossman P, Niemann L, Schmidt S, Walach H. Mindfulness-based stress reduction and health benefits. A meta-analysis. *J Psychosom Res* 2004 July;57(1):35-43.
- (23) Sauer S, Lynch S, Walach H, Kohls N. Dialectics of mindfulness: implications for western medicine. *Philos Ethics Humanit Med* 2011;6:10.
- (24) Sauer S, Walach H, Kohls N. Gray's Behavioural Inhibition System as a mediator of mindfulness towards well-being. *Pers and Individual Diff* 2011;50:506-11.
- (25) Wallace BA, Shapiro SL. Mental balance and well-being: building bridges between Buddhism and Western psychology. *Am Psychol* 2006 October;61(7):690-701.
- (26) Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003 April;84(4):822-48.
- (27) Teasdale JD, Segal Z, Williams JM. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behav Res Ther* 1995 January;33(1):25-39.
- (28) Segal ZV, Williams JM, Teasdale JD. *Mindfulness-Based Cognitive Therapy for Depression*. 2002.
- (29) Baer RA. Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review. *Clinical Psychology: Science & Practice* 2003;10(2):125-43.
- (30) Crane C, Barnhofer T, Duggan DS, Hepburn S, Fennel M, Williams JMG. Mindfulness-Based Cognitive Therapy and Self-Discrepancy in Recovered Depressed Patients with a History of Depression and Suicidality. *Cogn Ther Res* 2008;(32 (6)):775-87.
- (31) Williams JMG. Mindfulness, Depression and Modes of Mind. *Cognitive Therapy and Research* 2008;(32 (6)):721-33.
- (32) Fjorback LO, Arendt M, Ornbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatr Scand* 2011 April 28.
- (33) Nyklicek I, Kuijpers KF. Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: is increased mindfulness indeed the mechanism? *Ann Behav Med* 2008 June;35(3):331-40.
- (34) Davidson RJ, Kabat-Zinn J, Schumacher J et al. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Med* 2003 July;65(4):564-70.
- (35) Hagemann D, Neumann E, Becker G, Maier S, Bartussek D. Resting brain asymmetry and affective reactivity: Aggregated data support the right-hemisphere hypothesis. *Pers Individ Dif* 2005;3(26):139-54.
- (36) Williams KA, Kolar MM, Reger BE, Pearson JC. Evaluation of a Wellness-Based Mindfulness Stress Reduction intervention: a controlled trial. *Am J Health Promot* 2001 July;15(6):422-32.

- (37) Shapiro SL, Schwartz GE, Bonner G. Effects of mindfulness-based stress reduction on medical and premedical students. *J Behav Med* 1998 December;21(6):581-99.
- (38) Grossman P, Kappos L, Gensicke H et al. MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology* 2010 September 28;75(13):1141-9.
- (39) Foley E, Baillie A, Huxter M, Price M, Sinclair E. Mindfulness-based cognitive therapy for individuals whose lives have been affected by cancer: a randomized controlled trial. *J Consult Clin Psychol* 2010 February;78(1):72-9.
- (40) Mularski RA, Munjas BA, Lorenz KA et al. Randomized controlled trial of mindfulness-based therapy for dyspnea in chronic obstructive lung disease. *J Altern Complement Med* 2009 October;15(10):1083-90.
- (41) Wong SY. Effect of mindfulness-based stress reduction programme on pain and quality of life in chronic pain patients: a randomised controlled clinical trial. *Hong Kong Med J* 2009 October;15 Suppl 6:13-4.
- (42) Monti DA, Peterson C, Kunkel EJ et al. A randomized, controlled trial of mindfulness-based art therapy (MBAT) for women with cancer. *Psychooncology* 2006 May;15(5):363-73.
- (43) Creswell JD, Myers HF, Cole SW, Irwin MR. Mindfulness meditation training effects on CD4+ T lymphocytes in HIV-1 infected adults: a small randomized controlled trial. *Brain Behav Immun* 2009 February;23(2):184-8.
- (44) Morone NE, Greco CM, Weiner DK. Mindfulness meditation for the treatment of chronic low back pain in older adults: a randomized controlled pilot study. *Pain* 2008 February;134(3):310-9.
- (45) Pradhan EK, Baumgarten M, Langenberg P et al. Effect of Mindfulness-Based Stress Reduction in rheumatoid arthritis patients. *Arthritis Rheum* 2007 October 15;57(7):1134-42.
- (46) Sephton SE, Salmon P, Weissbecker I et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum* 2007 February 15;57(1):77-85.
- (47) Astin JA, Berman BM, Bausell B, Lee WL, Hochberg M, Forsys KL. The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: a randomized controlled trial. *J Rheumatol* 2003 October;30(10):2257-62.
- (48) Schmidt S, Grossman P, Schwarzer B, Jena S, Naumann J, Walach H. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. *Pain* 2011 February;152(2):361-9.
- (49) Speca M, Carlson LE, Goodey E, Angen M. A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Med* 2000 September;62(5):613-22.
- (50) Carlson LE, Ursuliak Z, Goodey E, Angen M, Speca M. The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up. *Support Care Cancer* 2001 March;9(2):112-23.
- (51) Hebert JR, Ebbeling CB, Olendzki BC et al. Change in women's diet and body mass following intensive intervention for early-stage breast cancer. *J Am Diet Assoc* 2001 April;101(4):421-31.
- (52) Koszycki D, Benger M, Shlik J, Bradwejn J. Randomized trial of a meditation-based stress reduction program and cognitive behavior therapy in generalized social anxiety disorder. *Behav Res Ther* 2007 October;45(10):2518-26.
- (53) Moritz S, Quan H, Rickhi B et al. A home study-based spirituality education program decreases emotional distress and increases quality of life--a randomized, controlled trial. *Altern Ther Health Med* 2006 November;12(6):26-35.

- (54) Teasdale JD, Segal ZV, Williams JM, Ridgeway VA, Soulsby JM, Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J Consult Clin Psychol* 2000 August;68(4):615-23.
- (55) Ma SH, Teasdale JD. Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *J Consult Clin Psychol* 2004 February;72(1):31-40.
- (56) Kuyken W, Byford S, Taylor RS et al. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *J Consult Clin Psychol* 2008 December;76(6):966-78.
- (57) Segal ZV, Bieling P, Young T et al. Antidepressant monotherapy vs sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in recurrent depression. *Arch Gen Psychiatry* 2010 December;67(12):1256-64.
- (58) Bondolfi G, Jermann F, der Linden MV et al. Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: Replication and extension in the Swiss health care system. *J Affect Disord* 2009 August 8.
- (59) Vettese LC, Toneatto T, Stea JN, Nguyen L, Wang JJ. Do mindfulness participants do their homework? And does it make a difference? A review of the empirical evidence. *J Cognitive Psychotherapy* 2009;(23):198-225.
- (60) Chambless DL, Ollendick TH. Empirically supported psychological interventions: controversies and evidence. *Annu Rev Psychol* 2001;52:685-716.
- (61) Sauer S, Walach H, Schmidt S, Hinterberger T, Horan M, Kohls N. Implicit and explicit emotional behavior and mindfulness. *Conscious Cogn* 2011 December;20(4):1558-69.
- (62) Kohls NSS&WH. Facets of mindfulness. An online study investigating the Freiburg Mindfulness Inventory. *Personality and Individual Differences* 2009;46:224-30.
- (63) Kuyken W, Watkins E, Holden E et al. How does mindfulness-based cognitive therapy work? *Behav Res Ther* 2010 November;48(11):1105-12.
- (64) Santorelli, S. *Heal thyself: Lessons on mindfulness in medicine*. New York: Crown, Random House; 1999.
- (65) Hofmann L, Walach H. Spirituality and religiosity in psychotherapy--a representative survey among German psychotherapists. *Psychother Res* 2011 March;21(2):179-92.
- (66) [www.umassmed.edu/cfm/trainingteachers/index.aspx](http://www.umassmed.edu/cfm/trainingteachers/index.aspx). 2011.
- (67) [www.bangor.ac.uk/mindfulness](http://www.bangor.ac.uk/mindfulness). 2011.



## Chapter 3.

### The STreSS-2 Trial

**Mindfulness Therapy for Somatization Disorder and  
Functional Somatic Syndromes: randomized trial, one year  
follow-up, active control**

Paper III

Fjorback LO, Arendt M, Schröder A, Rehfeld E, Oernbol E, Walach H, & Fink P

*Submitted*

## Abstract

### Objective

To conduct a feasibility and efficacy trial of mindfulness therapy in somatization disorder and functional somatic syndromes such as fibromyalgia, irritable bowel syndrome, and chronic fatigue syndrome, defined as *bodily distress syndrome* (BDS).

### Methods

We randomized 119 patients to either *mindfulness therapy* (mindfulness-based stress reduction and some cognitive behavioral therapy elements for BDS) or to an active control group receiving *specialized treatment* (specialist medical care and brief cognitive behavioral therapy for BDS). The primary outcome measure was physical health (SF-36 Physical Component Summary) at 15-month follow-up.

### Results

The majority of the patients were women out of work without an education; 91% reported high patient satisfaction. In the mindfulness group, 88% completed treatment, 92% reported that they were meditating at the end of treatment. Both groups registered significant improvements over time. In the *mindfulness therapy* group, improvement in physical health was obtained towards the end of treatment and it remained present at one-year follow-up, whereas the *specialized treatment* group achieved no change until one year follow-up. The change scores averaged half a standard deviation which amounts to a clinically significant change; 29% changed 1 standard deviation. Significant between-group differences were observed at treatment cessation.

### Conclusion

Our findings suggest that even a socially marginalized population with chronic BDS is willing to participate and engage in a treatment that requires a high level of patient involvement. Clinically important changes in physical health were obtained.

## INTRODUCTION

Somatization disorder and functional somatic syndromes such as fibromyalgia, irritable bowel syndrome, and chronic fatigue syndrome are major public health issues for which effective treatment is rarely delivered<sup>1-3</sup>. These disorders are considered by many clinicians to be among the most frustrating disorders to manage, and the levels of patient dissatisfaction are reported to be high<sup>4, 5</sup>. The management of these disorders may be associated with costly, repetitive diagnostic procedures, and organ-oriented treatments with poor effect<sup>3, 6</sup>.

Cognitive behavioral therapy (CBT) and graded exercise may improve outcomes<sup>7</sup>. A Cochrane review on fibromyalgia concluded that supervised graded exercise training has effects; adherence, however, to many of the interventions was poor<sup>8</sup>. A systematic review concluded that CBT is the best established treatment for a variety of somatoform disorders<sup>4</sup>. White<sup>9</sup> showed that individual CBT or individual graded exercise therapy alongside specialist medical care were more effective in treating chronic fatigue syndrome than specialist medical care alone. However, randomized controlled trials in this area are few, and research is hampered by the heterogeneous nature of these disorders and by the lack of clear definitions<sup>1</sup>. Recently, a new empirically defined definition bodily distress syndrome (BDS) was introduced unifying various functional somatic syndromes and somatization disorder under one diagnostic label<sup>10, 11, 12</sup>. Furthermore, a new CBT-based intervention entitled 'Specialized Treatment for Severe Bodily Distress Syndrome' (STreSS) has been developed by our group. STreSS was found to be effective in improving self-reported physical health in a previous trial<sup>13, 14</sup>.

The potential mechanisms in BDS involve pathophysiological, psychological, and social mechanisms. Functional brain imaging has shown impairments of sensory processing in BDS patients which may indicate a deficiency in the cognitive regulation of symptom perception<sup>15, 16</sup>. In contrast, other studies have indicated that mindfulness practice may be associated with changes in specific brain areas, which are essential for cognitive and emotional regulation<sup>17-22</sup>. Mindfulness-based stress reduction (MBSR)<sup>23</sup> is a complementary group program that may reduce symptoms of stress, anxiety, fatigue, and depression<sup>24, 25</sup>. However, the value of studies on the efficacy of MBSR has so far been limited due to their lack of long-term follow-up and active control groups. The effect of MBSR has been explored on fibromyalgia in three studies, and none of them showed convincing results, but gave some indications as to improvement<sup>26-28</sup>. Mindfulness-based cognitive therapy<sup>29, 30</sup> is an adaptation of the MBSR program that may prevent depressive relapse<sup>30-33, 34</sup>. We

hypothesized that the strategy of combining MBSR with CBT for a specific disorder would be beneficial in treating BDS. We developed a group program called *mindfulness therapy* which integrates MBSR and some CBT elements from the STreSS-1 manual<sup>14</sup>. We aimed at testing the feasibility of this program and comparing the effect of *mindfulness therapy* with that of an active control condition, *specialized treatment*, on self-reported physical health at 15-month follow-up in patients with multi-organ BDS.

## **METHODS**

### **Study design and patients**

Between April 2007 and September 2008, primary care physicians and hospital wards referred patients to The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Denmark. The patients were referred from both urban and rural areas covering a population of approximately three million people. The case notes were screened for eligibility, and the patients who were considered likely to meet inclusion criteria were invited to undergo a clinical assessment. The inclusion criteria were: (1) Chronic (i.e. at least 2 years) of the multi-organ type BDS, which requires functional somatic symptoms from at least three out of four bodily systems: the cardiopulmonary, gastrointestinal, musculoskeletal, or general symptoms; (2) moderate to severe impairment in daily living<sup>35</sup>; (3) age 20 to 50 years; (4) absence of severe psychiatric morbidity, i.e. psychotic and bipolar disorders. The patients with comorbid depression and anxiety and with comorbid medical conditions (e.g. asthma, diabetes) were included if the symptoms attributed to these conditions could be clearly differentiated from the symptoms due to BDS. Exclusion criteria: (1) Current alcohol or drug abuse; (2) pregnancy; (3) not fluent in the Danish language (operationalized as non-Scandinavian origin).

### **Assessment**

All patients underwent a five-to-seven hours bio-psycho-social assessment, including a laboratory screening battery, schedules for clinical assessment in neuropsychiatry (SCAN)-diagnostic interview, as well as a physical and neurological examination.

### **Randomization**

At the end of the assessment, eligible patients were randomized to either *mindfulness therapy* (n=60) or *specialized treatment* (n=60). To ensure a constant flow and consistent, identical probability for receiving *mindfulness therapy*, a block randomization was organized in five clusters of 24 patients. A

statistician calculated the randomization algorithm. The coding was documented beforehand in opaque envelopes.

### **Treatment elements**

Figure 3.1 depicts the treatment elements provided to each group <sup>36</sup>.

#### **Treatment elements within assessment**

The assessment was conducted by one out of three psychiatrists specialized in BDS and CBT. Most of the assessments (95%) were conducted by two investigators, one of whom is an educated mindfulness teacher from the Center for Mindfulness, University of Massachusetts Medical School, USA. The other psychiatrist had participated in two MBSR programs and acceptance and commitment therapy teacher training. The patients received proper diagnoses, psychoeducation, and treatment advice on medicine and graded exercise. Antidepressant medication was only recommended if a patient had a comorbid depression, and the recommendations followed the guidelines of the National Board of Health, Denmark. The same was true for analgesics; patients were generally advised to gradually taper off morphine derivatives and benzodiazepines. All medications were administered by the patient's family physician.

Figure 3.1 Timing and treatment elements <sup>36</sup>

Time line	Mindfulness therapy	Specialized treatment
Clinical assessment	<b>a</b> <b>b</b>	<b>a</b> <b>b</b>
Randomization Baseline (time 0)	Baseline measurement (just before the assessment)	
During treatment period (0-4 months)	<b>c</b> <b>d</b> <b>e</b> <b>f</b>	<b>g</b> <b>h</b> <b>e</b> <b>f</b>
3 months	First outcome measurement (end of treatment)	
During follow-up period (3-9 months)	<b>i</b>	<b>i</b>
9 months	Second outcome measurement	
During follow-up period (9-15 months)	<b>i</b>	<b>i</b>
15 months	Third outcome measurement (Trial Endpoint)	
<b>a</b>	Comprehensive life-time review of case notes and clinical records from primary care physicians, ambulatory, care and hospital wards.	
<b>b</b>	Comprehensive bio-psycho-social assessment, including SCAN-diagnostic interview, physical and neurological examination, and laboratory screening battery. At the end of the assessment, patients received information about the nature, course, and treatment of BDS.	
<b>c</b>	Treatment manual, including schedule, symptom diary, educational material, worksheets, and homework assignment for the nine treatment modules. Non-attending patients received the chapters by mail.	
<b>d</b>	Nine treatment modules, 3.5 hours each, based on a mindfulness-based stress reduction and a cognitive-behavioral approach, delivered in groups of 12 patients by two psychiatrists, at weeks 1,2,3,4,5,6,7,8,9,11.	
<b>e</b>	Letter to the patients' primary care physician and referring doctor regarding diagnosis and illness history as well as treatment recommendations in case of a comorbid depression or anxiety.	
<b>f</b>	Letters to social authorities, when needed.	
<b>g</b>	Individual treatment plan conducted from a manual. Treatment manual, including a CBT case formulation, definition of individual treatment goals, identification of perpetuating factors, and lifestyle changes.	
<b>h</b>	Individual psychiatric consultation, two hours within the first month after the clinical assessment.	
<b>i</b>	Treatment as usual.	

### Mindfulness therapy

The manualized *mindfulness therapy* features eight weekly 3½ hours sessions and one follow-up session, involving 12 patients per group. We included psychoeducation, symptom registration, and a model for graded exercise from the STreSS-1 manual. We excluded individual treatment goals and the use of individual treatment plans. We closely followed the MBSR manual developed by Jon Kabat-Zinn, Center for Mindfulness<sup>23, 37, 38</sup>, except the all-day retreat which lasted only 3½ hours. All five groups were lead by two psychiatrists, one had developed the STreSS-1 manual and had 20 years of psychotherapy experience, the other had 20 years of meditation practice. Mindfulness is based upon concepts of mental training that propose that non-judgmental awareness of moment-to-moment experience (i.e. mindfulness) may positively affect the accuracy of perception, acceptance of intractable health-related changes, realistic sense of control, and appreciation of available life experiences<sup>23 39</sup>. The *mindfulness therapy* applied these concepts to a multifactorial illness model. Details about the MBSR and the STreSS treatment modules are given in Table 3.1<sup>40</sup>. Two of the five treatment groups were videotaped for therapist supervision and checks on treatment manual adherence. Two therapists independent of the trial made an overall judgment and found that the treatment was in accordance with the manual.

**Table 3.1 Overview of treatment modules in *mindfulness therapy***

Week	Four ennobling truths	Foundation of mindfulness	MBSR curriculum	Objective STreSS	Homework	Teaching intentions
1	Understanding suffering	Mindfulness of body	There is more right than wrong with you	What is BDS? Registration and differentiation of fluctuating symptoms	Body scan meditation, sitting meditation	Experiencing new possibilities
2			Perception and creative responding or response?	What are symptoms? Diagnostic labels for BDS		Discovering embodiment
3	Letting go of craving	Mindfulness of feelings	Pleasure and the power of presence	Biological, psychological, and social factors contributing to the development and maintenance of BDS	Body scan meditation/ yoga, Sitting meditation	Cultivating observation
4			Shadow of stress (unpleasant events)	Connecting bodily symptoms, emotions, thoughts, and behaviors. Restoring sleep		
5	Realizing liberation	Mindfulness of mind states	Finding space for responding	Defusion of inflexible symptom attributions, impact of negative illness perceptions	Sitting meditation, yoga/ walking meditation	Moving toward acceptance
6			Working with difficult situations	Identifying cognitive distortions		
7	Cultivating the path	Mindfulness of mental states	Cultivating kindness		Choosing your preferred practices	Increasing compassion
8			A new beginning	Recapitulation of theories/ exercises		
12			What is mindfulness?	What is BDS?		

### Specialized treatment

Within the first month after the assessment, the patients were offered a two-hours individual consultation by the psychiatrist who had performed the assessment. The multifactorial illness model was individualized (as a CBT case formulation), and an individual treatment plan was drawn up, including the definition of individual treatment goals, and identification of perpetuating factors. Advice was given on general lifestyle changes (exercise, nutrition, meditation, network, etc.).

### Outcome measures

The patients completed questionnaires at baseline (just prior to the assessment interview), at the end of treatment (3-month follow-up), and again 6 and 12 months after the treatment was completed, i.e. at 9 and 15 months of follow-up (Figure 3.1). The primary outcome was decided a priori as the mean change in the SF-36 Physical Component Summary (PCS) from baseline to 15-month follow-up. PCS is a summary measures of physical health constructed from eight subscales. The PCS score ranges from 0-100; the highest score is the best function, with a mean of 52.5 in the general Danish population <sup>41</sup>. A change of 0.5 standard deviation (SD) is regarded as a clinically important difference <sup>42-44</sup>. For the subscales improvements exceeding or equal to 5 points indicate clinically and socially relevant changes <sup>45</sup>. The secondary outcome measures were other health-related quality of life measures of the SF-36 and symptoms such as: illness worry (Whitely-7-index <sup>46</sup>; range 100-0; lowest score is the best function), physical symptoms (SCL-90-R Somatisation Subscale <sup>47</sup>; range 100-0; lowest score is the best function), and severity of depression and anxiety (SCL-8 range 100-0; lowest score is the best function). Furthermore, we split the change in primary outcome from baseline to the different follow-up times into two categories in the following three ways: 1) the patients who reported a positive change; 2) the patients who reported improvement, i.e. a change greater than half a SD (SD for PCS at baseline); 3) the patients who reported marked improvement, i.e. a change greater than 1 SD. The two categories correspond to whether the patients experienced a change in the three specified magnitudes – yes or no. Also, the time spent on mindfulness yoga and meditation practice was measured.

### Statistical analysis

The power calculation is based on PCS <sup>42</sup>. The uncertainty evaluation for PCS score is estimated from given estimates in a previous randomized controlled trial <sup>48</sup> and quoted in population studies <sup>41</sup>. The power was estimated to 0.84 based on 60 patients in each group, an expected dropout rate of

15% (*mindfulness therapy*), and five-points group difference in change of PCS score between groups ( $p=0.05$ ). A three-to-six-points change in PCS is often stated as a clinically and socially important difference<sup>49 50</sup>. Descriptive statistics are used to characterize the patients and to provide information of primary and secondary outcomes at baseline and follow-up times. All other analyses are based on intention to treat.

We entered the primary as well as the majority of the secondary outcomes as a dependent variable in one model. The model is a mixed model with a random intercept<sup>51</sup>. The model has two primary explanatory variables; the variable indicates treatment group and time. We did not expect the development over time to be linear, and therefore time enters the model as a categorical variable. We enabled different developments over time for the two treatment groups by adding an interaction term between treatment groups and time. We further adjusted for a number of variables where the choice of adjustment variables was made prior to the analysis and based on previous research<sup>52</sup>. The variables are gender, age, social status, impairment of symptoms, and life time psychiatric comorbidity. All adjustment variables are entered in a linear fashion with age as a continuous variable and the rest as categorical variables. The results from the model are presented as estimates of difference from baseline to follow-up in each group with 95% confidence intervals (CI). We estimated the effect size of the group differences as Cohen's *d*. For all analyses, statistical significance was set to  $p < 0.05$ .

To ensure the intention to treat analysis, we used multiple imputations of missing outcomes. The multiple imputations were made by means of a multivariate normal data augmentation method with 50 unique dataset separately applied to each group. All adjustment variables were included as covariates in the imputation method<sup>51</sup>. The probability of patients reporting a positive change, an improvement, and a marked improvement was calculated from log odds from a simple logistic regression model applied to the imputed data with 95% CI. All analyses were done in Stata version 11<sup>51</sup>.

### **Role of the funding source**

The sponsors of the study had no role in the study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data, and all the named authors had final responsibility for the decision to submit the manuscript for publication.

## RESULTS

Figure 3.2 illustrates the trial profile. Briefly, 135 (82%) of the 165 consecutively referred patients screened for eligibility agreed to participate in the assessment. Of these, seven did not meet the primary consent criteria, eight were excluded due to other reasons, and 120 were randomized. One later withdrew informed consent, thus 119 (94%) agreed to participate in the trial. The majority of the patients completed treatment: 58 (97%) completed the *specialized treatment*, whereas 52 (88%) completed the *mindfulness therapy*, defined as attending four or more classes, 49 (83%) attended six or more classes. Seven (12%) attended 0 or one class, the remaining 52 (88%) attended on average eight classes. The patient satisfaction was high; 91% in both treatment arms evaluated the treatment as good or outstanding. The baseline characteristics are presented in Table 3.2, and the groups did not differ on any variable. The majority of the patients were women out of work; moreover, half had primary school as their highest level of education. The majority also had multiple functional somatic syndromes diagnoses, and all met the criteria for somatization disorder. The transportation was arranged from the hospital for 20% of the patients, because otherwise they would have been unable to attend the hospital. An attrition analysis found no significant differences between completers and non-completers with respect to baseline characteristics. The proportion of patients taking antidepressant medication at some point the year before treatment (40-46%) and the year after treatment (37-40%) was similar in both groups. Table 3.3 shows the mean (SD) for scores of SF-36. At 9- and 15-month follow-up, patients had improved at least five points on seven out of the eight subscales. Figure 3.3, 3.4, and 3.5 and Tables 3.4 and 3.5 illustrate that both groups registered statistically and clinically significant improvements across time on primary and continuous secondary outcomes, but no significant between-group differences were observed. For primary outcome (PCS) different development over time for the two treatment groups could not be established ( $F(3,2674)=1.51, p=0.21$ ). The *mindfulness therapy* group significantly changed at the end of treatment and this change remained at 15-month follow-up, whereas no significant change was seen in the *specialized treatment* group until at the 15-month follow-up. However, in the *mindfulness therapy* group, 26%; CI, 14-38 reported a marked improvement ( $> 1SD$ ) at the end of treatment compared with 10%; CI, 2-18 in the *specialized treatment* group. This amounts to a statistically significant difference between the groups (OR=3.21; CI, 1.05-9.78,  $p=0.04$ ). However, at the 9-month follow-up, the difference between the groups fell short of reaching conventional significance ( $p=0.07$ ). Among the completers, 92% reported that they practiced meditation at the end of treatment, which declined to 63% and 52% at 9-month and 15-month follow-up, respectively.

Figure 3.2 Trial profile

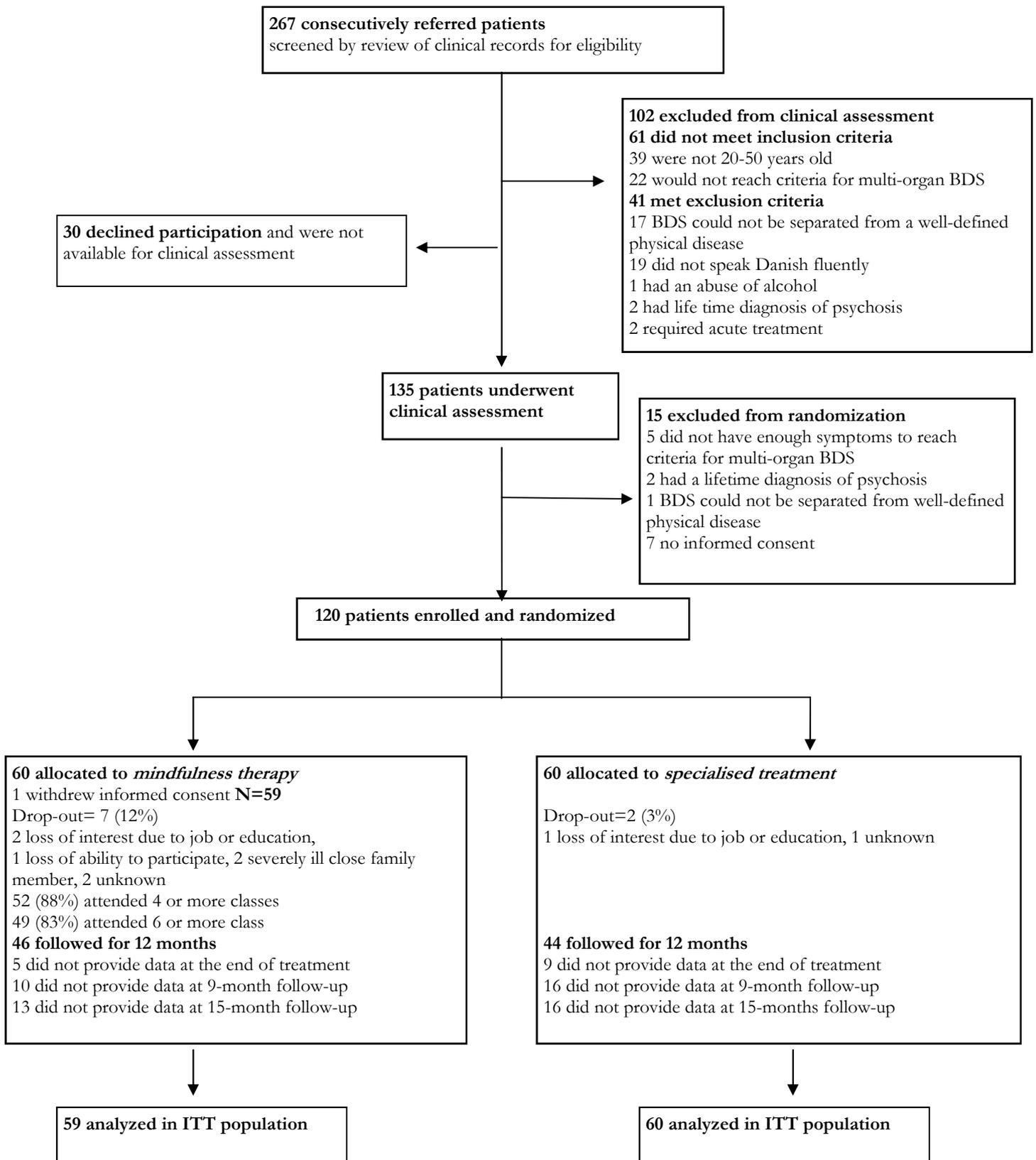


Table 3.2 Patients characteristics

	<i>Mindfulness therapy</i> N=59	<i>Specialized treatment</i> N=60
Age (years) mean (SD), median	38 (9), 40	40 (8), 40
Female gender	47 80%	48 80%
Married/ living with a partner	47 80%	41 70%
Children living at home	33 58%	38 59%
Only primary school (DK: 7 -10 <sup>th</sup> grade)	31 54%	28 48%
Employed, student, vocational rehabilitation	19 32%	17 28%
Unemployed	6 10%	6 10%
On sick leave	21 36%	23 38%
Disability pension or flexible work	13 22%	14 23%
Somatization disorder (ICD-10 codes)	59 100%	60 100%
Somatization disorder (DSM-IV codes)	56 95%	57 95%
Undifferentiated somatoform disorder (DSM-IV codes)	3 5%	3 5%
Illness duration (years)	12 (10,6)	15 (12,6)
Clinically rated impairment in daily living		
Moderate	15 25%	13 22%
Severe	44 75%	47 78%
Functional somatic syndromes		
Chronic fatigue syndrome	42 71%	46 77%
Fibromyalgia	48 81%	51 85%
Irritable bowel syndrome	26 44%	25 42%
Non-cardiac chest pain	30 51%	41 68%
Hyperventilation syndrome	12 20%	11 18%
Tension headache	45 76%	48 80%
Health anxiety	18 31%	19 32%
Current Major depressive disorder (DSM-IV codes)	13 22%	12 20%
Current Anxiety disorder (DSM-IV codes)	14 24%	14 23%
Previous Major depressive disorder (DSM-IV codes)	19 32%	20 33%
Previous Anxiety disorder (DSM-IV codes)	16 27%	16 27%
Lifetime psychiatric comorbidity	42 71%	37 62%

Data are number, mean (SD).

Table 3.3 Raw data: SF-36

Outcome	Group	N	Baseline Mean (SD)	N	3 months Mean (SD)	N	9 months Mean (SD)	N	15 months Mean (SD)
PCS*	Mindfulness	57	30.3 (9.8)	53	33.8 (10.8)	49	34.3 (11.4)	45	34.0 (10.6)
	Specialized	60	31.2 (9.4)	51	31.5 (9.6)	43	32.2 (9.8)	45	35.3 (9.5)
MCS*	Mindfulness	57	43.2 (12.9)	53	43.6 (11.6)	49	44.9 (11.8)	45	45.6 (13.5)
	Specialized	60	41.8 (11.6)	51	44.1 (13.1)	43	44.2 (12.9)	45	43.6 (11.4)
Physical functioning	Mindfulness	59	60.4 (20.9)	54	64.6 (22.1)	49	65.5 (22.1)	46	63.1 (22.6)
	Specialized	60	57.1 (22.2)	51	59.2 (22.2)	43	60.5 (23.2)	45	66.8 (19.4)
Role physical	Mindfulness	59	16.9 (32.0)	54	23.9 (33.5)	50	28.0 (37.3)	45	33.3 (39.2)
	Specialized	60	20.8 (28.4)	51	20.1 (31.6)	44	19.9 (31.7)	45	30.0 (34.8)
Bodily pain	Mindfulness	59	27.2 (23.1)	55	35.7 (25.7)	50	39.2 (27.5)	46	36.7 (27.9)
	Specialized	60	29.8 (21.3)	51	32.0 (22.0)	44	33.4 (22.7)	45	39.2 (21.6)
General health	Mindfulness	57	32.8 (15.9)	55	41.4 (20.5)	50	42.1 (22.9)	46	42.8 (19.2)
	Specialized	60	35.0 (15.8)	51	39.2 (18.4)	44	41.2 (21.3)	45	42.9 (19.1)
Vitality	Mindfulness	58	29.5 (20.7)	55	32.9 (23.0)	50	37.9 (23.4)	46	36.3 (21.8)
	Specialized	60	29.2 (18.3)	51	32.7 (22.6)	44	33.6 (25.4)	45	34.6 (22.9)
Social functioning	Mindfulness	59	56.6 (23.9)	55	58.6 (26.0)	50	62.0 (28.5)	46	64.1 (26.8)
	Specialized	60	52.9 (26.3)	51	55.9 (30.7)	44	57.4 (23.9)	45	59.4 (26.1)
Role emotional	Mindfulness	59	60.5 (44.8)	54	59.6 (39.6)	50	61.3 (43.8)	45	65.2 (41.1)
	Specialized	60	57.2 (41.2)	51	59.5 (41.8)	44	61.4 (41.9)	45	63.7 (43.1)
Mental health	Mindfulness	58	59.9 (19.5)	55	61.6 (17.5)	50	65.0 (16.3)	46	65.4 (19.0)
	Specialized	60	56.4 (19.6)	51	62.5 (20.1)	44	62.1 (20.0)	45	61.4 (20.4)

PCS: Physical component summary.

MCS: Mental component summary

Table 3.4 Mean of difference from baseline to follow-up

SF-36 PCS	Estimate	95% CI	T	p-value	Effect size
Mindfulness 3 months	3.8	1.6 ; 5.9	3.47	0.001	0.45
9 months	3.6	1.4; 5.8	3.23	0.001	0.42
15 months	3.8	1.5; 6.1	3.24	0.001	0.42
Specialized 3 months	0.8	-14; 2.9	0.72	0.470	0.09
9 months	1.8	-0.6; 4.1	1.47	0.141	0.19
15 months	3.7	1.3; 6.0	3.05	0.002	0.39
<b>SF-36 Bodily pain</b>					
Mindfulness 3 months	7.8	2.6; 12.9	2.96	0.003	0.39
9 months	10.7	5.5; 16.0	4.02	<0.001	0.52
15 months	8.5	3.0; 14.0	3.05	0.002	0.40
Specialized 3 months	2.7	-2.4; 7.9	1.04	0.297	0.13
9 months	4.0	-1.4; 9.5	1.46	0.145	0.19
15 months	9.0	3.2; 14.8	3.06	0.002	0.39
<b>SF-36 General health</b>					
Mindfulness 3 months	8.5	4.0; 13.1	3.70	<0.001	0.48
9 months	9.3	4.5; 14.1	3.82	<0.001	0.50
15 months	9.8	5.0; 14.5	4.05	<0.001	0.53
Specialized 3 months	5.3	0.6; 10.1	2.19	0.029	0.28
9 months	9.0	3.7; 14.3	3.35	0.001	0.43
15 months	10.1	5.0; 15.3	3.89	<0.001	0.50
<b>Health anxiety (Whitely)</b>					
Mindfulness 3 months	-12.8	-18,0;-7,5	-4.76	<0.001	-0.62
9 months	-15.3	-20,5;-10,0	-5.66	<0.001	-0.74
15 months	-17.1	-22,5;-11,6	-6.13	<0.001	-0.80
Specialized 3 months	-15.0	-20,4;-9,5	-5.34	<0.001	-0.70
9 months	-17.4	-23,0;-11,9	-6.20	<0.001	-0.79
15 months	-14.9	-20,7;-9,2	-5.09	<0.001	-0.66
<b>Physical symptoms (SCL-som)</b>					
Mindfulness 3 months	-4.4	-8.6;-0.3	-2.10	0.036	-0.27
9 months	-4.9	-9.0;-0.8	-2.31	0.021	-0.30
15 months	-7.8	-12.3;-3.3	-3.40	0.001	-0.44
Specialized 3 months	-6.7	-10.8;-2.5	-3.14	0.002	-0.41
9 months	-9.0	-13.5;-4.5	-3.92	<0.001	-0.51
15 months	-8.5	-13.0;-4.0	-3.72	<0.001	-0.48
<b>Anxiety and depression (SCL-8)</b>					
Mindfulness 3 months	-6.7	-12.4;-1.1	-2.35	0.019	-0.31
9 months	-7.7	-13.6;-1.9	-2.58	0.010	-0.34
15 months	-8.8	-14.6;-3.0	-2.97	0.003	-0.39
Specialized 3 months	-8.8	-14.4;-3.2	-3.06	0.002	-0.40
9 months	-9.7	-15.5;-3.9	-3.26	0.001	-0.42
15 months	-9.4	-15.7;-3.1	-2.93	0.004	-0.38

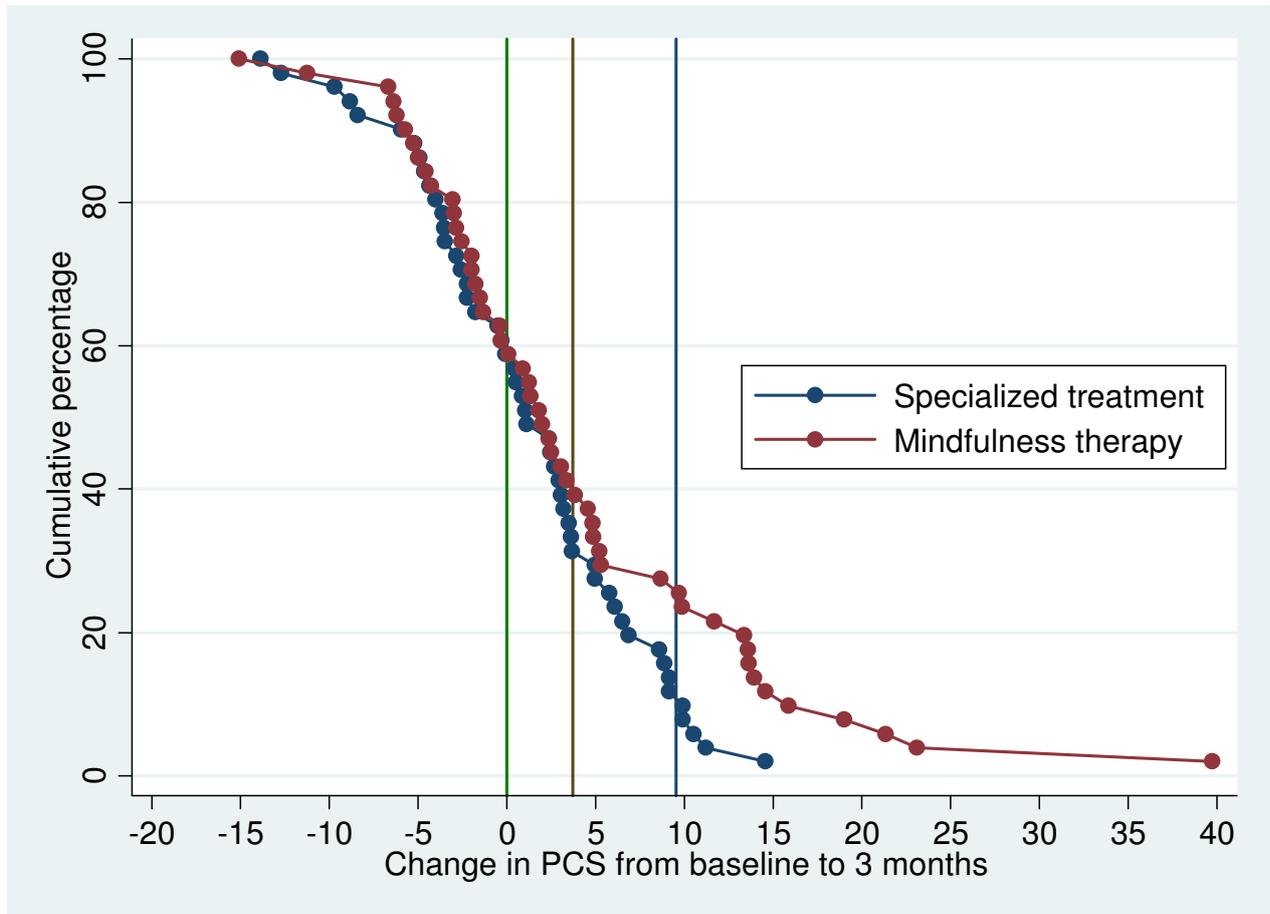
The estimates stem from a mixed model with random intercepts adjusted linearly for age, gender, social status, impairment, lifetime psychiatric co-morbidity estimated in 50 multiple imputed datasets.

**Table 3.5 Dichotomized outcome: physical functioning (PCS) and illness worry (Whitely-7)**

	<b>Mindfulness Probability of change on PCS (95 CI)</b>	<b>Specialized Probability of change on PCS (95 CI)</b>	<b>Mindfulness Probability of change on Whitely (95 CI)</b>	<b>Specialized Probability of change on Whitely (95 CI)</b>
Positive change 3 months	59% (46-73)	56% (42-70)	72% (60-84)	78% (66-89)
Treatment response 3 months	37% (24-50)	29% (16-41)	44% (31-57)	45% (32-58)
Marked improvement 3 months	<b>26% (14-38 )</b>	<b>10% (2-18 )*</b>	23% (12-34)	24% (13-35)
Positive change 9 months	62% (49-75 )	60% (45-74 )	75% (63-87)	71% (58-83)
Treatment response 9 months	39% (26-52 )	31% (18-44 )	49% (36-63)	49% (36-63)
Marked improvement 9 months	<b>28% (15-40)</b>	<b>12% (2-22)*</b>	26% (12-34)	33% (20-46)
Positive change 15 months	68% (55-81)	65% (51-79)	73% (61-85)	76% (64-88)
Treatment response 15 months	40% (26-53)	49% (35-63)	51% (38-65)	52% (38-66)
Marked improvement 15 months	29% (16-42)	25% (12-37)	30% (17-43)	28% (15-41)

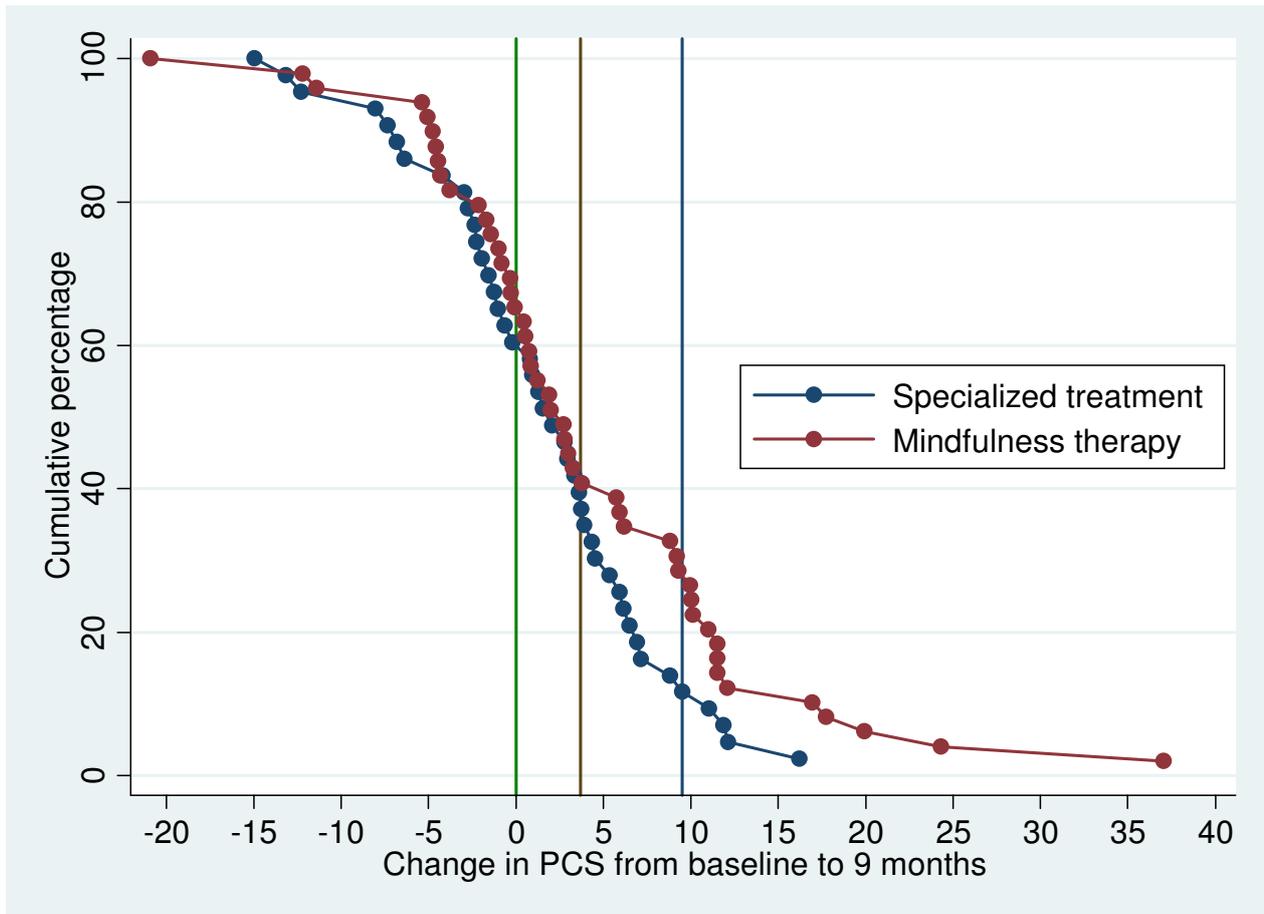
\* The differences between groups were significant at 4 months P=0.04, but fell short of significance at 10 months p=0.07

Figure 3.3 Improvement in physical health at 3 months



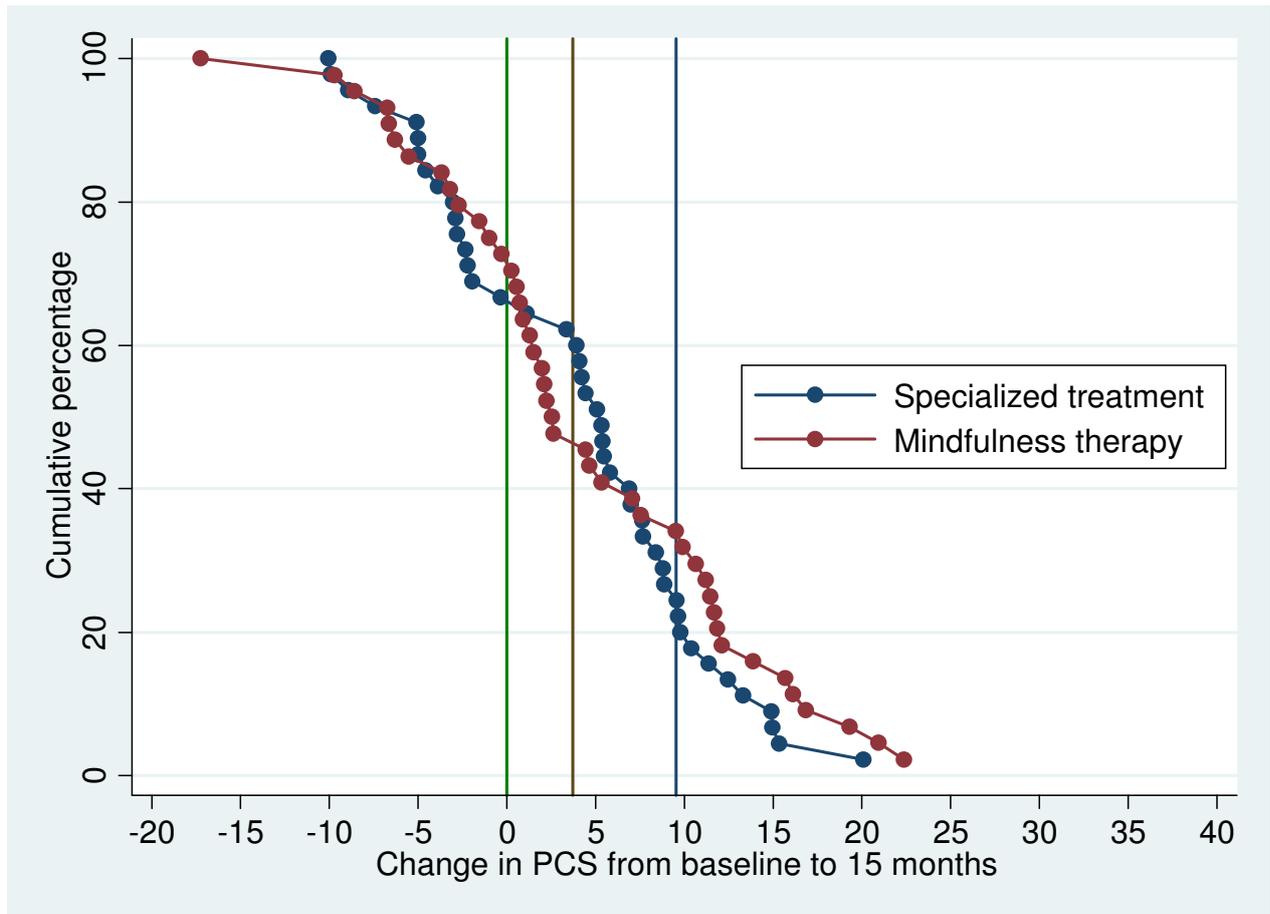
The numbers indicate the percentage of patients whose self-reported physical health had improved from baseline to 3 months. The vertical lines indicate the level of improvement. A positive change is change scores  $>0$  (first vertical bar), treatment response is change scores  $> \frac{1}{2}$  SD (second vertical bar), and marked improvements is change scores  $> 1$ SD (third vertical bar).

Figure 3.4 Improvement in physical health at 9 months



The numbers indicate the percentage of patients whose self-reported physical health had improved from baseline to 9 months. The vertical lines indicate the level of improvement. A positive change is change scores  $>0$  (first vertical bar), treatment response is change scores  $> \frac{1}{2}$  SD (second vertical bar), and marked improvements is change scores  $> 1$ SD (third vertical bar).

Figure 3.5 Improvement in physical health at 15 months



The numbers indicate the percentage of patients whose self-reported physical health had improved from baseline to 15 months. The vertical lines indicate the level of improvement. A positive change is change scores  $>0$  (first vertical bar), treatment response is change scores  $> \frac{1}{2}$  SD (second vertical bar), and marked improvements is change scores  $> 1$ SD (third vertical bar).

## DISCUSSION

This trial is one of the few mindfulness studies where referred patients are compared with an active control group over a period of 15 months. 82% agreed to participate in the assessment consultation, 94% agreed to participate in the trial, and 88% completed *mindfulness therapy*. Thus, the trial demonstrated that *mindfulness therapy* is feasible and acceptable to patients with multi-organ BDS. Our findings on the effect of *mindfulness therapy* suggest that this treatment was superior to *specialized treatment* at the end of treatment. However, at the 15-month follow-up, the control group showed comparable gains.

Our findings of rather comparable improvements in both groups can be interpreted in several ways. First, it could be the result of unspecific factors, regression towards the mean, or the natural history of the disorder. Since the positive findings were maintained at 15-month follow-up and the participants had been ill for at least two years prior to the treatment (on average 13.5 years), it is unlikely that the observed effect is attributable to the natural history of the disorder or to regression towards the mean, although the study design cannot completely rule out this possibility. A second interpretation is that both treatment modalities had some therapeutic effect for the patients; the possibility in this case being that both interventions were uniquely responsible for the positive therapeutic changes that were observed. Based on the findings, it is not clear, however, whether the apparent changes were the results of some similar features or the results of particular components that were unique to each of the groups. In that sense, our findings join a large body of evidence in psychotherapy research, where, overall, good benefits are reported, but differential effects are difficult to demonstrate, because generic and common factors seem to have the strongest influence

<sup>53</sup>.

The relationship between the clinician and the patient lies at heart of a successful outcome of therapy according to extant literature on bodily distress <sup>6</sup>; and a treatment method that in previous research has been found effective for the disorder in question is the most stringent comparison condition to use <sup>54</sup>.

It was deemed unethical to compare the *mindfulness therapy* group with a group of patients recruited from a waitlist or treatment as usual since individual CBT and psychiatric consultation have previously been found to have positive outcomes <sup>55</sup>. We, therefore, decided to do our very best in the control group and established a strong, active control group where individual treatment was

planned in collaboration between the patient and a MD specialized in BDS, CBT, psychiatry, and mindfulness, within one or two weeks after they had spent a whole day together, going through all the patient's illness and suffering history. Thus, an important lesson may be learnt from trials reporting negative results as most positive trials have compared intervention with treatment as usual or waitlist control. The *specialized treatment* offered in the present trial improved treatment to a point that it seemed to be beneficial to the patients.

### Comparison with other studies

The SF-36 health survey has been administered longitudinally to measure important health and functioning domains in The Medical Outcome Study (MOS), which is a large-scale multiyear survey of patients with chronic health conditions. The percentage of MOS patients who were eligible for work and could not work was 57.6% for PCS scores below 35. For each one-point decrease in the PCS scale score below 45, a two-point increase was observed in the percentage of patients unable to work, which is similar to the findings in our study where 68% were out of work <sup>42</sup>. Thus, a mean increase in PCS from 30 to 34 may reflect a clinically and socially significant change. Also, on seven out of eight subscales on the SF-36 patients improved by more than five points, which is indicative of clinically and socially relevant changes <sup>45</sup>. The physical functioning subscale of the SF-36, which measures impairments in physical activities such as climbing stairs, changed very little in the *mindfulness therapy* group. To understand this, we tested the baseline physical functioning among the responders (change in PCS > ½ SD) and non-responders in the two groups. At baseline, the physical functioning was lower both in the *specialized treatment* group and among responders compared with the non-responders; the non-responders had physical functioning scores close to or within the normal range. When physical functioning scores fall within the normal range, there may be less room for improvement. A recent study <sup>9</sup> on chronic fatigue syndrome excluded patients with a physical functioning > 60; in our *mindfulness therapy* group the mean physical functioning was 60,4 at baseline. Another explanation could be that the strong focus on the observation of the body in the *mindfulness therapy* group made some patients realize that they were actually worse than they thought. Also, the non-responders had significantly more health anxiety (Whitely 7) and more severe anxiety and depression (Scl-8) than the responders, and they improved on these scales.

*Mindfulness therapy* appears to produce improvements within the range of those improvements that were reported in the STreSS-1 trial, where CBT was compared with enhanced usual care, and no improvements on the SF-36 scale were observed in the enhanced usual care group, which indicates

that the changes found in the two treatments *mindfulness therapy* and *specialized treatment* reflect a real change attributable to the interventions.

### Strengths and limitations

Our findings are strengthened by a relatively small number of patients needed to be screened and assessed in order to identify the 119 included patients, and we did not exclude the patients who were unable to attend hospital. Also, the drop-out rate was small; the attendance was high; we used manually-defined treatments provided by competent clinicians; and the treatment acceptance and participant satisfaction were high.

The methodological limitations may have influenced our results. We only included patients with severe and chronic illness, and they had very low levels of social functioning. In the context of the present study where mindfulness was used as a treatment and not solely as part of a prevention program or a complementary program, the patients might have needed more individual guidance before they entered the *mindfulness therapy* group. A personal admission interview could have defined realistic patient goals and helped them move in the desired direction. We might have been too optimistic about the specific benefit of meditation and the nonspecific group effect. Another weakness of the *mindfulness therapy* group is that we did not include booster classes, as is often done in mindfulness trials. Many patients requested this, and we saw a decline in some outcomes from 9 to 15 months follow-up and a corresponding drop in formal mindfulness practice. Many patients described positive experiences from participating in the mindfulness intervention. The fact that this is not reflected more in the quantitative data may be ascribed to measurement problems, as the SF-36 is known to be not very sensitive to change, and mindfulness studies generally use other scales.

### Recommendations

This group of patients is currently very expensive to the health care system, and little or no health gain is achieved in spite of the effort<sup>6</sup>. This testifies to the clear need for specific treatments that can achieve health gains, but also for tools that patients may use and practice by themselves to gain a better health or maintain improvements. The findings from the *mindfulness therapy* study suggest that even socially marginalized patients suffering from chronic BDS are willing to participate and engage in a treatment that requires a high level of patient involvement.

In future trials, we recommend that the combination of *mindfulness therapy* and individual treatment plans is tested. We also recommend that the effect of longer treatment times or the inclusion of booster sessions is explored. In order to detect decisive ingredients, future studies could include neurobiological measures.

### Conclusions

To conclude, this study showed that *mindfulness therapy* was comparable to *specialized treatment* in improving quality of life and symptoms. Nevertheless, considering the more rapid improvement following *mindfulness therapy*, *mindfulness therapy* may be a potentially useful intervention in BDS patients. Further research is needed to replicate or even expand these findings and also to explore whether integrating *mindfulness therapy* with *specialized treatment* yields a better outcome.

Reference List

- (1) Henningsen P, Zipfel S, Herzog W. Management of functional somatic syndromes. *Lancet* 2007 March 17;369(9565):946-55.
- (2) Fink P, Rosendal M. Recent developments in the understanding and management of functional somatic symptoms in primary care. *Curr Opin Psychiatry* 2008 March;21(2):182-8.
- (3) Sharpe M, Carson A. "Unexplained" somatic symptoms, functional syndromes, and somatization: do we need a paradigm shift? *Ann Intern Med* 2001 May 1;134(9 Pt 2):926-30.
- (4) Kroenke K. Efficacy of treatment for somatoform disorders: a review of randomized controlled trials. *Psychosomatic Med* 2007 December;69(9):881-8.
- (5) Jackson JL, Kroenke K. Difficult patient encounters in the ambulatory clinic: clinical predictors and outcomes. *Arch Intern Med* 1999 May 24;159(10):1069-75.
- (6) Creed F, Henningsen P, Fink P. *Medically Unexplained Symptoms, Somatisation and Bodily Distress. Developing Better Clinical Services*. Cambridge: Cambridge University Press; 2011.
- (7) Zijdenbos IL, de Wit NJ, van der Heijden GJ, Rubin G, Quartero AO. Psychological treatments for the management of irritable bowel syndrome. *Cochrane Database Syst Rev* 2009;(1):CD006442.
- (8) Busch AJ, Schachter CL, Overend TJ, Peloso PM, Barber KA. Exercise for fibromyalgia: a systematic review. *J Rheumatol* 2008 June;35(6):1130-44.
- (9) White PD, Goldsmith KA, Johnson AL et al. Comparison of adaptive pacing therapy, cognitive behaviour therapy, graded exercise therapy, and specialist medical care for chronic fatigue syndrome (PACE): a randomised trial. *Lancet* 2011 March 5;377(9768):823-36.
- (10) Fink P, Toft T, Hansen MS, Ornbol E, Olesen F. Symptoms and syndromes of bodily distress: an exploratory study of 978 internal medical, neurological, and primary care patients. *Psychosomatic Med* 2007 January;69(1):30-9.
- (11) Fink P, Toft T, Hansen MS, Ørnbøl E, Olesen F. Symptoms and syndromes of bodily distress: an exploratory study of 978 internal medical, neurological, and primary care patients. *Psychosom Med* 2007 January;69(1):30-9.
- (12) Fink P, Schroder A. Brug 6901. *J Psychosom Res* 2010 May;68(5):415-26.
- (13) Schröder A, Rehfeld E, Ørnbøl E, Sharpe M, Licht R, Fink P. A novel treatment approach for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Submitted* 2010.
- (14) Schröder A, Rehfeld E, Oernboel E, Sharpe M, Licht R, Fink P. A novel group CBT based unified treatment for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Br J Psychiatry* 2012;In Press.
- (15) Kuzminskyte R, Kupers R, Videbech P, Gjedde A, Fink P. Increased sensitivity to supra-threshold painful stimuli in patients with multiple functional somatic symptoms (MFS). *Brain Res Bull* 2010 April 29;82(1-2):135-40.
- (16) Wood PB. Neuroimaging in functional somatic syndromes. *Int Rev Neurobiol* 2005;67:119-63.
- (17) Jha AP, Stanley EA, Kiyonaga A, Wong L, Gelfand L. Examining the protective effects of mindfulness training on working memory capacity and affective experience. *Emotion* 2010 February;10(1):54-64.
- (18) Holzel BK, Carmody J, Vangel M et al. Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Res* 2011 January 30;191(1):36-43.
- (19) Holzel BK, Carmody J, Evans KC et al. Stress reduction correlates with structural changes in the amygdala. *Soc Cogn Affect Neurosci* 2010 March;5(1):11-7.

- (20) Holzel BK, Ott U, Hempel H et al. Differential engagement of anterior cingulate and adjacent medial frontal cortex in adept meditators and non-meditators. *Neurosci Lett* 2007 June 21;421(1):16-21.
- (21) Lazar SW, Kerr CE, Wasserman RH et al. Meditation experience is associated with increased cortical thickness. *Neuroreport* 2005 November 28;16(17):1893-7.
- (22) Lazar SW, Bush G, Gollub RL, Fricchione GL, Khalsa G, Benson H. Functional brain mapping of the relaxation response and meditation. *Neuroreport* 2000 May 15;11(7):1581-5.
- (23) Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to face Stress, Pain, and Illness*. New York: Delacourte; 1990.
- (24) RA Baer. *Mindfulness training as a clinical intervention: a conceptual and empirical review*. *Clin Psychol* 10 (2003), pp 125-143 2003.
- (25) Fjorback LO, Arendt M, Ornbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatr Scand* 2011 April 28.
- (26) Sephton SE, Salmon P, Weissbecker I et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum* 2007 February 15;57(1):77-85.
- (27) Astin JA, Berman BM, Bausell B, Lee WL, Hochberg M, Forsy KL. The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: a randomized controlled trial. *J Rheumatol* 2003 October;30(10):2257-62.
- (28) Schmidt S, Grossman P, Schwarzer B, Jena S, Naumann J, Walach H. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. *Pain* 2011 February;152(2):361-9.
- (29) Segal ZV, Williams JM, Teasdale JD. *Mindfulness-Based Cognitive Therapy for Depression*. 2002.
- (30) Teasdale JD, Segal ZV, Williams JM, Ridgeway VA, Soulsby JM, Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J Consult Clin Psychol* 2000 August;68(4):615-23.
- (31) Ma SH, Teasdale JD. Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *J Consult Clin Psychol* 2004 February;72(1):31-40.
- (32) Bondolfi G, Jermann F, der Linden MV et al. Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: Replication and extension in the Swiss health care system. *J Affect Disord* 2009 August 8.
- (33) Kuyken W, Byford S, Taylor RS et al. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *J Consult Clin Psychol* 2008 December;76(6):966-78.
- (34) Segal ZV, Bieling P, Young T et al. Antidepressant monotherapy vs sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in recurrent depression. *Arch Gen Psychiatry* 2010 December;67(12):1256-64.
- (35) Fink P, Schröder A. One single diagnosis, Bodily distress syndrome, succeeded to capture ten diagnostic categories of functional somatic syndromes and somatoform disorders. *Journal of Psychosomatic Research* 2010;68:415-26.
- (36) Perera R, Heneghan C, Yudkin P. Graphical method for depicting randomised trials of complex interventions. *BMJ* 2007 January 20;334(7585):127-9.
- (37) Kabat-Zinn J. *Wherever you go, there you are: Mindfulness Meditation i everyday life*. New York: Hyperion; 1994.
- (38) Santorelli, S. *Heal thyself: Lessons on mindfulness in medicine*. New York: Crown, Random House; 1999.

- (39) Grossman P, Kappos L, Gensicke H et al. MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology* 2010 September 28;75(13):1141-9.
- (40) McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- (41) Bjorner JB, Damsgaard MT, Watt T, Groenvold M. Tests of data quality, scaling assumptions, and reliability of the Danish SF-36. *J Clin Epidemiol* 1998 November;51(11):1001-11.
- (42) Ware JE, Kosinski M. *SF-36 Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: Quality Metric Inc.; 2001.
- (43) Norman GR, Sloan JA, Wyrwich KW. Interpretation of changes in health-related quality of life: the remarkable universality of half a standard deviation. *Med Care* 2003 May;41(5):582-92.
- (44) Ware JE, Jr., Bayliss MS, Rogers WH, Kosinski M, Tarlov AR. Differences in 4-year health outcomes for elderly and poor, chronically ill patients treated in HMO and fee-for-service systems. Results from the Medical Outcomes Study. *JAMA* 1996 October 2;276(13):1039-47.
- (45) Ware JrJ, Snow KK, Gandek B, Kosinski M. *SF-Health survey: Manual and interpretation guide* The Health Institute, New England Medical Center, Boston; 1993.
- (46) Fink P, Ewald H, Jensen J et al. Screening for somatization and hypochondriasis in primary care and neurological in-patients: a seven-item scale for hypochondriasis and somatization. *J Psychosom Res* 1999 March;46(3):261-73.
- (47) Derogatis LR, Cleary PA. Confirmation of the dimensional structure of the SCL-90: A study in construct validation. *J Clin Psychol* 1977;33(4):981-9.
- (48) Schroder A, Fink P, Fjordback L, Frostholm L, Rosendal M. [Towards a unified treatment approach for functional somatic syndromes and somatization]. *Ugeskr laeger* 2010 June 14;172(24):1839-42.
- (49) Kosinski M, Zhao SZ, Dedhiya S, Osterhaus JT, Ware JE, Jr. Determining minimally important changes in generic and disease-specific health-related quality of life questionnaires in clinical trials of rheumatoid arthritis. *Arthritis Rheum* 2000 July;43(7):1478-87.
- (50) Swigris JJ, Brown KK, Behr J et al. The SF-36 and SGRQ: validity and first look at minimum important differences in IPF. *Respir Med* 2010 February;104(2):296-304.
- (51) StataCorp. *StataCorp. Stata Multiple Imputation*. Texas: College Station, Texas:Stata Press; 2009.
- (52) Walwyn R, Roberts C. Therapist variation within randomised trials of psychotherapy: implications for precision, internal and external validity. <http://www.sagepublications.com> 2011; *Stat Methods Med Res*; published online 16 July 2009.
- (53) Baskin TW, Tierney SC, Minami T, Wampold BE. Establishing specificity in psychotherapy: a meta-analysis of structural equivalence of placebo controls. *J Consult Clin Psychol* 2003 December;71(6):973-9.
- (54) Ost LG. Efficacy of the third wave of behavioral therapies: a systematic review and meta-analysis. *Behav Res Ther* 2008 March;46(3):296-321.
- (55) Escobar JI, Gara MA, Diaz-Martinez AM et al. Effectiveness of a time-limited cognitive behavior therapy type intervention among primary care patients with medically unexplained symptoms. *Ann Fam Med* 2007 July;5(4):328-35.

## Chapter 4.

### Economic evaluation

#### **Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes: economic evaluation alongside a randomized trial**

#### Paper IV

Fjorback LO, Carstensen T, Arendt M, Rehfeld E, Oernbol E, Walach H, & Fink P  
*Submitted*

## Abstract

### Objective

To evaluate the economic effectiveness of *mindfulness therapy* compared with *specialized treatment* for patients with somatization disorder and functional somatic syndromes such as fibromyalgia and chronic fatigue syndrome, defined as *bodily distress syndrome* (BDS).

### Methods

A total of 119 BDS patients were randomized to *mindfulness therapy* or *specialized treatment* and compared with 5950 matched controls. Register data were analyzed from 10 years before their inclusion to 15-month follow-up. The main outcome measures were disability pension at the 15-month follow-up and a reduction in total health care costs. Unemployment and sickness benefit prior to inclusion were tested as possible risk factors.

### Results

At 15-month follow-up, 25% from the *mindfulness therapy* group received disability pension compared with 45% from the *specialized treatment* group ( $p=0.025$ ). The total health care utilization was reduced over time in both groups from the year before inclusion (mean \$ 5325, median \$ 2971) to the year after inclusion (mean \$ 3644, median \$ 1593) ( $p=0.0001$ ). This overall decline was seen in spite of elevated costs due to assessment and *mindfulness therapy* or *specialized treatment*. The BDS patients accumulated significantly more weeks of unemployment and sickness benefit 5 and 10 years before inclusion ( $p<0.0001$ ) than the population controls.

### Conclusions

*Mindfulness therapy* may prevent disability pension and it may have a potential to significantly reduce societal costs and increase the effectiveness of care. Accumulated weeks of unemployment and sickness benefit are possible risk factors for BDS.

## Introduction

Bodily symptoms that cannot be explained by well-defined physical disease forms one of the most expensive categories of health care expenditure and lead to high societal costs<sup>1</sup>. Somatization disorder and functional somatic syndromes such as fibromyalgia, irritable bowel syndrome, and chronic fatigue syndrome are major public health concerns for which effective treatment is rarely delivered<sup>2,4</sup>. Consequently, these patients may have elevated rates of medical care utilization<sup>5</sup> and time missed from work<sup>6</sup>.

An estimated minimum of 5% of the Danish population suffers from functional somatic syndromes, and they account for 10-20% of the expenses of the Danish health care system<sup>7</sup>. In the UK, functional somatic syndromes reportedly account for 20-35% of all consultations<sup>8,9</sup>. In the Netherlands, medically unexplained symptoms and somatoform disorders is the fifth most expensive diagnostic category<sup>10,11</sup>. The costs appear to be higher than those incurred by stroke and cancer. The high health care costs do not include time lost from work and reduced productivity, but cover medical consultations and expensive investigations, which lead to little or no health gain<sup>1</sup>.

Thus, somatization disorder and functional somatic syndromes are common, costly, and highly debilitating conditions<sup>12</sup>. In spite of a clear need to develop cost-effective interventions, research into this domain remains limited; and, moreover, these disorders are heterogeneous and lack a clear definition. Different medical specialities use different syndrome diagnoses; whereas somatization disorder is used in psychiatry.

Bodily distress syndrome (BDS) is a diagnosis developed from empirical research that may unite different functional somatic syndromes and somatization disorder<sup>13,14</sup>. The diagnostic criteria for multi-organ BDS was used in two randomized controlled treatment trials<sup>15</sup>. The present study is based on one of these studies entitled 'Mindfulness therapy for Somatisation Disorder and Functional Somatic Syndromes- randomized trial, one year follow-up, active control'<sup>16</sup>. We followed the patients who participated in the randomized controlled trial and measured the social and economic consequences of their illness, through registers up to ten years before and one year after their treatment. In order to give a more precise estimate of the economic burden of BDS, we compared the patients included in the trial with a matched control group (N=5950) representing the background population.

The aim of the study was to estimate the economic consequences of BDS. We hypothesized that patients suffering from BDS received more disability pension at 15-month follow-up compared with the background population. We also hypothesized that the two active treatment modalities *mindfulness therapy* and *specialized treatment* were equally effective in maintaining the patient's connection to the labor market and reducing the accelerated use of health care utilization and the high health care cost.

## METHODS

### Study design and population

The social and economic follow-up data were obtained alongside a randomized controlled trial comparing *mindfulness therapy* with *specialized treatment* in patients suffering from multi-organ BDS. The present study included two different populations: 1) a cohort of 119 referred BDS patients included in the randomized controlled trial; 2) a cohort of 5950 population controls, alive at baseline and matched on gender, age, and ethnicity. The central registry Statistics Denmark randomly sampled the population controls in a proportion of 50 to 1.

Between April 2007 and September 2008, primary care physicians and hospital wards referred patients to The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Denmark according to the following inclusion criteria: (1) Chronic (i.e. at least 2 years) multi-organ BDS that requires functional somatic symptoms from at least three out of four bodily systems: cardiopulmonary, gastrointestinal, musculoskeletal, or general symptoms and moderate to severe impairment in daily living;<sup>17</sup> (2) age 20 to 50 years; (3) absence of severe psychiatric morbidity, i.e. psychotic and bipolar disorders. The patients with comorbid depression and anxiety, and with comorbid medical conditions (e.g. asthma, diabetes) were included if their conditions could be separated from BDS. Exclusion criteria: (1) Current alcohol or drug abuse; (2) pregnancy; (3) not fluent in the Danish language (operationalized as non-Scandinavian origin).

All patients underwent blood test screening, physical examination, and a 5-7-hours neuropsychiatric and psychological assessment interview. 59 patients were randomized to *mindfulness therapy* (9 group sessions of mindfulness-based stress reduction and elements of cognitive behavioral therapy for BDS<sup>18</sup>) and 60 patients to *specialized treatment* (a two-hour individual consultation by the same psychiatrist who conducted the assessment consultation). Both groups registered significant improvements across time. For the primary outcome (SF-36 physical component score (PCS)<sup>19</sup>), the *mindfulness therapy* group improved at the end of treatment and this improvement remained present one year post treatment,

whereas the *specialized treatment* group did not improve until one year post treatment. The change scores were on average 0.5 standard deviation (SD), which is a clinically significant change: 29% changed 1 standard deviation. The details on the study are given elsewhere <sup>16</sup>.

### Resource use

Denmark runs a nationwide centralized register of personal information, the Civil Registration System, where every citizen is given a unique personal identification number. Virtually every government agency and all central registries in Denmark receive information about a person from the database in which data are continuously updated with all relevant health-related and other information. This unique data pool allows every citizen to be followed closely from birth to death. In the present study, we extracted relevant person-specific information from these centralized Danish registries.

### Transfer payments

DREAM is a database administered by the Danish Labor Market Authority. The DREAM database is feasible for follow-up of social and economic consequences of disorders <sup>20</sup>. It may be used for public health research, and may be useful for socioeconomic analyses of selection bias and dropout from other studies <sup>20</sup>. DREAM contains weekly information on transfer payments for all citizens in Denmark since 1991. Transfer payments include sickness benefit, disability pension, unemployment benefit, flexible work (jobs created for persons with limited working capacity), etc. A transfer payment is registered in DREAM for a week if the person has received a transfer benefit for at least one day during a week. Regarding sick leave, the first two weeks are paid by the employer, so there is a threshold on two weeks for registration, but the full period is registered if a sick leave period continues for more than two weeks. Information on students' grants, maternity leave, retirement pension, etc. is also registered in DREAM.

### Health care costs

Any public health care-related cost, whether incurred in the primary or secondary health care sector, is registered by the Danish Ministry of Health, which calculated the aggregated health care costs from 2006-2009 for the 119 included patients. Every Danish citizen is entitled to publicly funded health care and most examinations and treatments are free of charge, e.g. visits to family physicians, specialist doctors, emergency rooms, and hospitalization, including tests, treatment, follow-up care, and some drugs. Health care users pay for non-essential cosmetic surgery, dental care, and a portion of

prescription medication. The aggregated health care costs are divided into four variables: Total health care costs; costs related to general hospital (in- and out-patients); costs related to primary care; and costs related to psychiatric services (in- and out-patients).

## Medication

All prescribed medications are registered, and we made a summary of prescribed medication of opioids (including derivatives of opiates), benzodiazepines (including anxiolytic and hypnotic benzodiazepines), and antidepressants (including selective serotonin reuptake inhibitors, dual serotonin and norepinephrine reuptake inhibitors, noradrenaline and specific serotonergic agent, tricyclic antidepressant) given to patients and controls. We also calculated the percentage of participants who received at least one prescription the year before their inclusion and the following year as well as the number of prescriptions and the total number of pills counted by number of prescriptions times pack size.

## Outcome measures

### Disability pension

Disability pension at the 15-month follow-up is used as outcome.

Transfer payments were divided into five categories: 1: disability pension; 2: flexible work (jobs created for persons with limited working capacity); 3: sickness benefit; 4: unemployed; 5: self-supporting. Which of these five categories each patient fit into was determined at two time points: a 12-week period immediately before baseline and a 12-week period 15 months after baseline. We chose a 12-week period over a one-week period to obtain as precise an estimate of the transfer payments received during the two time periods as possible.

The procedure of categorization: 1) the person entering the group with the highest number of weeks registered; 2) a hierarchy of the groups overruling other groups, i.e. if a person within the 12 weeks period had had one week on flexible work, the person entered this group even if the person had more weeks on other benefits, and disability pension overruled flexible work. Presently, DREAM includes 110 transfer codes; a table displaying the exact categorization of each code can be collected from the authors.

We used the transfer payment categories proposed by Hjollund et al.<sup>20</sup> and Carstensen et al.<sup>21</sup>. Carstensen<sup>21</sup> grouped sickness benefit and vocational rehabilitation as temporary health-related

benefits, whereas flexible work and disability pension were grouped as permanent health-related benefits. Some BDS patients had already dropped out of the labor market at baseline, and to be able to distinguish between possible levels of marginalization, we divided the permanent health-related benefits group into two separate categories: flexible work and disability pension.

The self-supporting group includes the working population, students receiving Danish students' grants, and parents receiving maternity benefits. If a person had no entry in DREAM or had emigrated, we assumed that that person was self-supporting. Furthermore, those who received vocational rehabilitation benefits were allocated to the self-supporting group, because eligibility for such benefits requires that the person will be able to fully support him- or herself.

The unemployment category consists of all unemployed citizens receiving unemployment benefit together with citizens on social benefit. Social benefit is a transfer income administered by the municipal social service department and is allocated to citizens who have no income and where the absence of such assistance would make them unable to support themselves.

### **Reduction in health care costs**

Changes in the randomized BDS patients' health care costs one year before assessment and one year after were measured as total health care costs, costs related to general hospital, costs related to primary care, and costs related to psychiatric services. Included in the analysis of health care expenditure one year after inclusion were also costs incurred due to assessment, *mindfulness therapy*, and *specialized treatment*. The costs were calculated in 2007 Danish kroner (at their 2007 value), and we used the average exchange rate for 2007 given by the National Bank of Denmark to exchange into 2007 U.S. \$ (100/ 544.5551) for the calculation into U.S. dollars.

### **Risk factors**

In order to detect possible risk factors for BDS and to describe social and economic consequences over time, we compared the BDS patients with the background population in terms of three pre-treatment variables: 1) self-support; 2) sickness benefit; and 3) unemployment benefit. We counted the number of weeks on transfer payment of the specific types registered in the DREAM database five years (i.e. 0-260 weeks) and ten years (i.e. 0-520 weeks) before baseline. The distributions were highly skewed, and we chose to group the observations on each variable in three groups: 1) fully self-

supporting or no transfer benefits; 2) between one week and to 90<sup>th</sup> percentile; and 3) the uppermost 10%.

### **Self-supporting**

Self-support during the previous five years (total 0-260 weeks) was categorized as: 1) Full self-support; 2) 57-259 weeks; and 3) <57 weeks. Self-support during the previous ten years (total 0-520 weeks) was categorized as: 1) Full self-support; 2) 181-519 weeks; and 3) <181 weeks.

### **Sickness benefit**

Sickness benefit during the previous five years (total 0-260 weeks) was categorized as: 1) No sickness benefit; 2) 1-26 weeks; 3) >26 weeks. Sickness benefit during the previous ten years (total 0-520 weeks) was categorized as: 1) No sickness benefit; 2) 1-51 weeks; and 3) >51 weeks.

### **Unemployment**

Unemployment during the previous five years (total 0-260 weeks): 1) No unemployment; 2) 1-79 weeks; and 3) >79 weeks. Unemployment during the previous ten years (total 0-520 weeks) was categorized as: 1) No unemployment; 2) 1-157 weeks; and 3) >157 weeks.

### **Statistical analysis**

Purely descriptive statistics for the social categorization flow from baseline to 15-month follow-up are reported. Concerning the main outcome, namely disability pension, a comparison of *mindfulness therapy* and *specialized treatment* was made by  $\chi^2$  tests.

We described highly skewed health care costs by reporting inter quartile ranges, medians, and means. This was supported by non-parametric Wilcoxon matched pairs test of the paired data of one year before and one year after as well as non-parametric Wilcoxon Mann-Whitney test of equal distribution of the change from one year before to one year after in *specialized treatment* and *mindfulness therapy*. We calculated a non-parametric Wilcoxon Mann-Whitney test for the non-normally distributed data such as week counts of the various types of transfer payments 5 and 10 years back in time from the assessment. The data were processed in Stata version 11 <sup>22</sup>.

## RESULTS

Figure 4.1 features the trial profile. A total of 135 consecutive patients, referred from primary and secondary care, were screened in person with a clinical assessment interview. 120 patients were initially randomized, however, one participant later withdrew informed consent: thus, 119 BDS patients were included in the trial. The drop-out rate in the *mindfulness therapy* group was 12% compared with 3% in the *specialized treatment* group, but the register data were obtained for all 119 patients. No significant differences in baseline characteristics were observed between the two treatment groups, either between subjects who participated or declined participation, or between drop-outs and completers<sup>16</sup>.

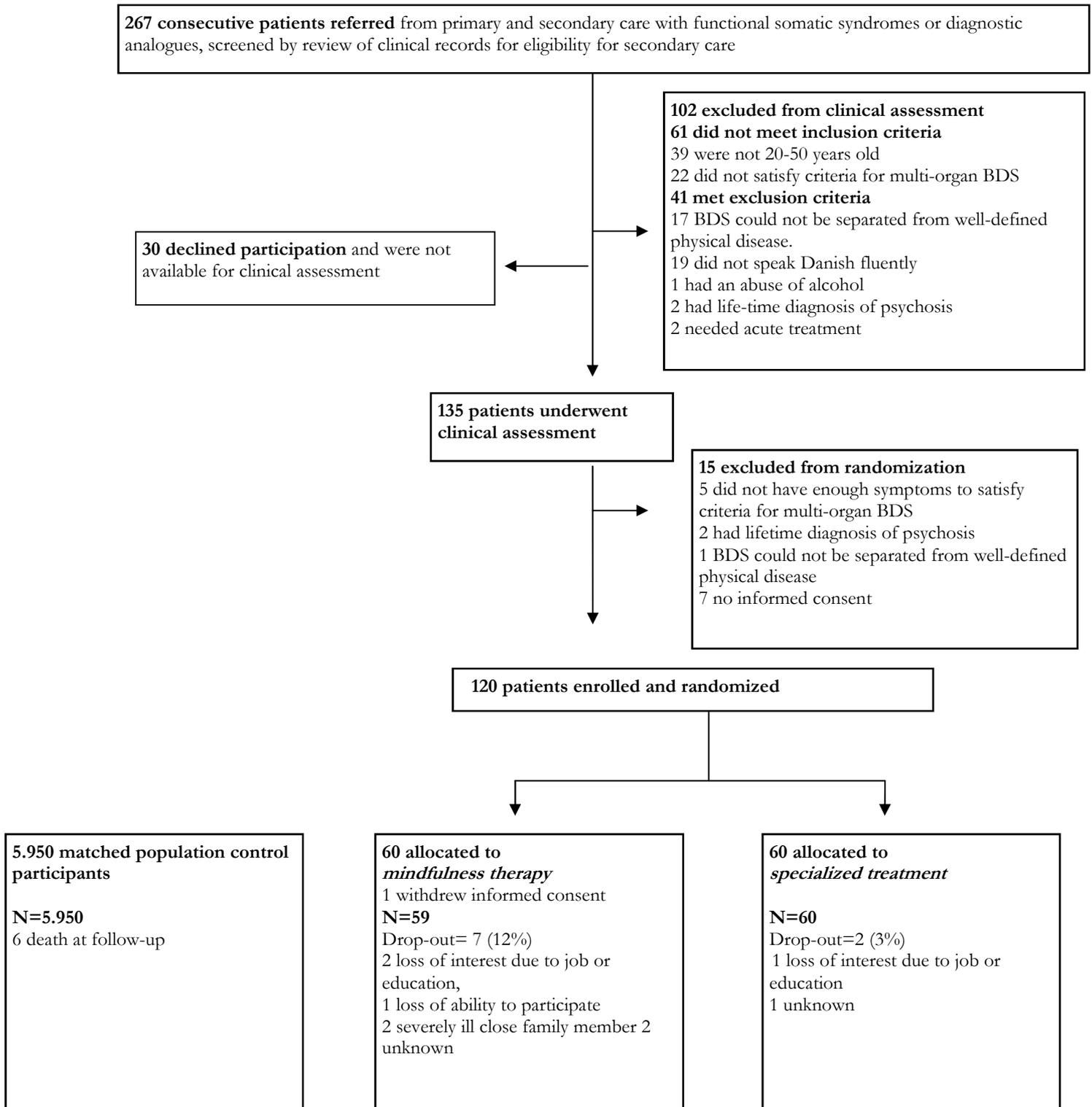
Table 4.1 shows baseline characteristics of patients included in the randomized trial and the population controls. The BDS patients had a lower yearly income in 2008 than population controls (Wilcoxon Mann-Whitney, difference=\$ 152.225,  $p < 0.0001$ ), but there was no difference between the groups in terms of the percentage of individuals with a higher education, defined as having a college or university degree.

Table 4.2 shows that more BDS patients than population controls were receiving disability pension at the 15-month follow-up, but fewer BDS patients in the *mindfulness therapy* group than patients in the *specialized treatment* group were receiving disability pension at the 15-month follow-up. The difference between the groups remained significant when only the new cases receiving disability pension were analyzed. At baseline there was no significant difference between groups in the prevalence of disability pension  $\chi^2(1) = 0.847$  and  $p = 0.36$ .

Table 4.3 details the categorization flow between categories from baseline to the 15-month follow-up. The largest shift is observed among patients receiving sickness benefit at baseline. At baseline, 21 (36%) in the *mindfulness therapy* group and 23 (38%) in the *specialized treatment* group were receiving sickness benefit and all but one (99%) shifted to a new category. This should be compared with the population control group where 36 (19%) of the participants receiving sickness benefit at baseline were still receiving sickness benefit at the 15-month follow-up. In the *mindfulness therapy* group, 7 (33%) patients shifted from sickness benefit to the self-support category, 4 (19%) to the unemployed category, 6 (28%) shifted to flexible work, and 4 (19%) were receiving disability pension. In the *specialized treatment* group, 3 (13%) shifted to the self-support category, 1 (4%) to the unemployed category, 8 (35%) shifted to flexible work, and 10 (43%) were receiving disability pension. Flexible work and disability pension are permanent health-related benefits, and a comparison of the *mindfulness therapy* group and the

*specialized treatment* group showed that significantly more participants from the latter group had shifted to a permanent health-related benefit,  $\chi^2(1) = 5.5321$  and  $p = 0.019$ .

Figure 4.1 Trial profile



**Table 4.1 Baseline characteristics**

	<b>Patients: <i>Mindfulness therapy</i> N=59</b>	<b>Patients: <i>Specialized treatment</i> N=60</b>	<b>Population controls N=5950</b>
Years of age (SD), median	38 (9), 40	40 (8), 40	39 (9), 40
Female gender	47 80%	48 80%	4750 80%
Married	32 54%	29 48%	2929 49%
Children living at home	35 59%	35 58%	3364 55%
Education			
Only primary school or high school	22 37%	11 18%	1734 29%
College or university degree	20 34%	23 38%	2272 38%
Others	17 29%	26 44%	1944 33%
Total income in 2008, mean (SD)	\$ 38.864 (19.463)	\$ 43.028(18.674)	\$ 56.189 (37.253)

Table 4.2 Disability pension at 15-month follow-up

	Mindfulness therapy	Specialized treatment	Background population	Total	All three groups compared $\chi^2$ (df), p	Mindfulness compared with specialized $\chi^2$ (df), p
- Disability pension	44 (75%)	33 (55%)	5635 (95%)	5712	214.6 (2), <b>p &lt; 0.001</b>	5.0 (1), <b>p = 0.025</b>
+ Disability pension	15 (25%)	27 (45%)	309 (5%)	351		
Total	59 (100%)	60 (100%)	5944 (100%)	6063		
- Disability pension	44 (75%)	33 (55%)	5635 (95%)	5712	790.3 (2) <b>P &lt; 0.001</b>	4.1 (1) <b>P = 0.042</b>
New cases of disability pension	11 (20%)	20 (38%)	37 (1%)	5785		
Total	55 (100%)	53 (100%)	5672 (100%)	5785		

Table 4.3 Categorization flow from baseline to 15-month follow-up

Mindfulness Specialized Population	Self- Support Follow-up	Unemployed Follow-up	Sickness benefit Follow-up	Flexible work Follow-up	Disability pension Follow-up	Total
Self- Support	10 (53%) 10 (59%)	1 (5%) 0	2 (11%) 1 (6%)	4 (21%) 1 (6%)	2 (11%) 5 (29%)	19 (100%) 17 (100%)
Baseline	4712 (93%)	213 (4%)	145 (3%)	7 (0.1%)	5 (0.1%)	5086 (100%)
Unemployed	0	4 (67%)	0	0	2 (33%)	6 (100%)
Baseline	0	3 (50%)	0	0	3 (50%)	6 (100%)
	120 (42%)	126 (45%)	17 (6%)	3 (1%)	16 (6%)	283 (100%)
Sickness benefit	7 (33%)	4 (19%)	0	6 (28%)	4 (19%)	21 (100%)
Baseline	3 (13%)	1 (4%)	1 (4%)	8 (35%)	10 (43%)	23 (100%)
	108 (57%)	22 (12%)	36 (19%)	19 (10%)	6 (3%)	191 (100%)
Flexible work	0	0	0	6 (67%)	3 (33%)	9 (100%)
Baseline	0	0	1 (14%)	4 (57%)	2 (29%)	7 (100%)
	2 (2%)	1 (1%)	3 (3%)	101 (86%)	10 (9%)	117 (100%)
Disability pension	0	0	0	0	4 (100%)	4 (100%)
Baseline	0	0	0	0	7 (100%)	7 (100%)
	0	0	0	0	272 (99.6%)	273 (100%)
Total	17 (29%) 13 (22%)	9 (15%) 4 (7%)	2 (3%) 3 (5%)	16 (27%) 13 (22%)	15 (25%) 27 (45%)	59 (100%) 60 (100%)
	4942 (83%)	362 (6%)	201 (3%)	130 (2%)	309 (5%)	5944* (100%)

\*In the population control group 6, people had died at follow-up (at baseline, 4 were self-supporting, 1 unemployed, and 1 was receiving disability pension).

### Health care costs

Table 4.4 displays the health care utilization. Complete health care costs were obtained for all 119 patients, which is 100% of the patients included in the randomized controlled trial. No differences in the baseline health care costs between participants in the two intervention groups were found. Exploratory non-parametric tests were performed on total health care costs, costs related to general hospitals, primary care, and psychiatric services. The tests revealed a larger reduction in total costs, costs related to general hospitals, and primary care. In contrast, the analysis showed an increase in costs related to psychiatric services, which is attributable to the extra costs incurred by the trial: assessment, *mindfulness therapy*, and *specialized treatment*. No differences were observed between the groups, except for psychiatric costs which were significantly higher in the *mindfulness therapy* group than in the *specialized treatment* group (Wilcoxon Mann-Whitney  $Z=-8.773$ ,  $p< 0.0001$ ). *Mindfulness therapy* was about 5-6 times as expensive as *specialized treatment*, even if the costs accrued from a group of 12 participants meeting 9 times equals the cost incurred by spending time seeing 12 participants for individual consultations. The pre-existing categories in the national health care system led to this difference, because of reimbursement due to pre-existing categories.

### Medication

Table 4.5 gives a summary of prescribed opioid, benzodiazepine, and antidepressant medication. It shows that these medications did not differ between the intervention groups at any time. For most patients, benzodiazepines and opioids were not prescribed; antidepressant medication was prescribed for some, but it is unknown whether the indication was depression, anxiety, or pain. At all time points, more patients than population controls were receiving prescribed opioid, benzodiazepine, and antidepressant medication.

### Risk factors

Table 4.6 displays possible risk factors for BDS. We found that patients were more inclined to receive sickness benefit, be more unemployed, and less self-supporting 5 and 10 years back in time than the gender-, age- and ethnicity-matched population controls. In the 5-year period preceding baseline, the patients had only been able to support themselves about half of the time, whereas population controls had been able to support themselves almost all the time. The benefit figures may even be underestimated because only adult citizens can receive a transfer payment, and 5 patients and 250 population controls were not adults (>18 years of age) 5 years back in time, and 17 patients and 850

population controls were not adults 10 years back.

Table 4.4 Health care costs for BDS patients

	Total BPS patients N=119			Mindfulness therapy N=59			Specialized treatment N= 60		
	Mean (SD)	Median P25-P50-P75	Wilcoxon matched pairs signed rank Difference=0	Mean (SD)	Median P25-P50-P75	Wilcoxon matched pairs signed rank Difference=0	Mean (SD)	Median P25-P50-P75	Wilcoxon matched pairs signed rank Difference=0
<b>Total health care costs</b>									
One year pre-treatment	5325 (9319)	1459- <b>2971</b> - 6435	Z= 3.8	4643 (5125)	1205- <b>3013</b> - 6526	Z=2.5	5996 (12122)	1513- <b>2950</b> - 6352	Z=2.9
Baseline and one year ahead	3644 (5791)	608- <b>1593</b> - 3623	<b>P=0.0001</b>	3937 (6117)	714- <b>1805</b> - 3894	<b>P=0.0112</b>	3355 (5488)	582- <b>1563</b> - 2843	<b>P=0.0034</b>
<b>General hospital</b>									
One year pre-treatment	3214 (4171)	300- <b>1591</b> - 4739	Z=4.9	3347 (4427)	377- <b>1916</b> - 4845	Z=4.0	3083 (3936)	291- <b>1484</b> - 3707	Z=2.9
Baseline and one year ahead	1771 (3411)	0- <b>230</b> - 1842	<b>P&lt;0.0001</b>	1633 (3083)	0- <b>172</b> - 1842	<b>P=0.0001</b>	1906 (3727)	0- <b>294</b> - 1828	<b>P=0.0039</b>
<b>Primary care</b>									
One year pre-treatment	468 (386)	226- <b>370</b> - 571	Z=4.4	466 (456)	238- <b>357</b> -535	Z=3.1	470 (306)	219- <b>399</b> - 654	Z=3.1
Baseline and one year ahead	373 (480)	142- <b>266</b> - 453	<b>P=0.0001</b>	383 (621)	138- <b>240</b> -427	<b>P=0.0014</b>	363 (286)	157- <b>283</b> - 473	<b>P=0.0018</b>
<b>Psychiatric services</b>									
One year pre-treatment	1028( 8268)	0- <b>0</b> -0	Z=-8.4	151 (920)	0- <b>0</b> -0	Z=-6.7	1891 (11591)	0- <b>0</b> -0	Z=-5.5
Baseline and one year ahead	1967 (2157)	564- <b>1128</b> - 3102	<b>P=0.0001</b>	3211 (2407)	2778- <b>3102</b> - 3325	<b>P=0.0001</b>	744 (737)	547- <b>564</b> - 564	<b>P= 0.0001</b>

Prices are given in 2007 US \$. No differences were observed between groups, except for psychiatric costs which were significantly higher in the *mindfulness therapy* group than in the *specialized treatment* group (Wilcoxon Mann-Whitney Z=-8.773, p< 0.0001).

**Table 4.5 Medication**

	Mindfulness therapy			Specialized treatment			Population Controls		
	Received medication*	Prescriptions Mean (SD) p25-p50-p75	Amount of pills Mean (SD) p25-p50-p75	Received medication	Prescriptions Mean (SD) P25-p50-p75	Amount of pills Mean (SD) p25-p50-p75	Received medication	Prescriptions Mean (SD) p25-p50-p75	Amount of pills Mean (SD) p25-p50-p75
Opioids									
One year pre-treatment	19 (32%)	3.1 (7), 0-0-2	195 (426), 0-0-200	21 (35%)	3.8 (11),0-0-2	282 (791), 0-0-60	310 (5%)	0.2 (2), 0-0-0	26 (849), 0-0-0
One year post-treatment	18 (31%)	3.1 (12), 0-0-1	213 (714), 0-0-50	15 (25%)	2.8 (11), 0-0-1	203 (604), 0-0-10	296 (5%)	0.2 (1), 0-0-0	25 (870), 0-0-0
Benzodiazopine									
One year pre-treatment	11 (19%)	1.1 (4), 0-0-0	49 (187), 0-0-0	11 (18%)	0.8 (2), 0-0-0	21 (62), 0-0-0	335 (6%)	0.2 (2), 0-0-0	13 (141), 0-0-0
One year post-treatment	7 (11%)	1.4 (7), 0-0-0	79 (365), 0-0-0	9 (15%)	0.5 (2), 0-0-0	16 (59), 0-0-0	331 (6%)	0.2 (2), 0-0-0	12 (127), 0-0-0
Antidepressant									
One year pre-treatment	27 (46%)	2.3 (4), 0-0-3	128 (200), 0-0-224	24 (40%)	2.1 (3), 0-0-4	151 (276), 0-0-237	447 (8%)	0.4 (2), 0-0-0	25 (111), 0-0-0
One year post-treatment	22 (37%)	2.2 (4), 0-0-4	139 (226), 0-0-300	24 (40%)	2.1 (3), 0-0-4	166 (288), 0-0-265	482 (8%)	0.4 (2), 0-0-0	24 (108), 0-0-0

\*At least one prescription.

Table 4.6 Potential risk factors for BDS

	<b>BDS Patients N=119</b>	<b>Population controls N=5950</b>	<b>Wilcoxon Mann Whitney</b>	
<b>5 years back in time</b>	Mean (SD), p25-p50-p75	Mean (SD), p25-p50-p75	Z	p
Weeks of self-support	120 (89), 32-133-198	213 (79), 205-256-260	11,914	<0.0001
Weeks of sickness benefit	52 (48), 7-49-90	8 (20), 0-0-0	-13,087	<0.0001
Weeks of unemployment	39 (65), 0-0-58	21 (49), 0-0-12	-3,814	<0.0001
			$\chi^2$ (df)	
Full self-support	5 (4%)	2485 (42%)	1001 (2)	<0.001
57-259 weeks	77 (65%)	2898 (49%)		
<57 weeks	37 (31%)	567 (9%)		
No sickness benefit	24 (20%)	3675 (62%)	345 (2)	<0.001
1-26 weeks	22 (19%)	1723 (29%)		
>26 weeks	73 (61%)	552 (9%)		
No unemployment	62 (52%)	4016 (68%)	18 (2)	<0.001
1-79 weeks	33 (28%)	1349 (23%)		
>79 weeks	24 (20%)	585 (9%)		
<b>10 years back in time</b>			Z	p
Weeks of self-support	299(159), 160-334-423	429(142), 400-503-520	10.281	<0.0001
Weeks of sickness benefit	69 (60), 15-61-106	13 (29), 0-1-11	-12,4	<0.0001
Weeks of unemployment	80(114), 0-25-107	44 (88), 0-0-45	-5,482	<0.0001
			$\chi^2$ (df)	
Full self-support	5 (4%)	1677 (28%)	60 (2)	<0.001
181-519 weeks	82 (69%)	3703 (62%)		
<181	32 (27%)	570 (10%)		
No sickness benefit	17 (14%)	2860 (48%)	301 (2)	<0.001
1-51 weeks	34 (29%)	2547 (43%)		
>51 weeks	68 (57%)	542 (9%)		
No unemployment	33 (28%)	3093 (52%)	29 (2)	<0.001
1-157 weeks	64 (54%)	2271 (38%)	11,914	
>157 weeks	22 (18%)	586 (10%)	-13,087	

## DISCUSSION

*Mindfulness therapy* for patients suffering from multi-organ BDS had substantial socioeconomic benefits compared with *specialized treatment*. The costs related to permanently health-related benefits in general and disability pension in particular were significantly lower in the *mindfulness therapy* group than in the *specialized treatment* group over a 15-month follow-up period. *Mindfulness therapy* was significantly more expensive than *specialized treatment*. In spite of these additional costs, *mindfulness therapy* appears to reduce the overall health care costs within the range of *specialized treatment*. The reduction in costs observed in to primary care equals a reduction of four visits per year in both groups. And the reduction of costs observed in general hospitals equals a reduction of nine outpatient visits per year in the *mindfulness therapy* group and six visits per year in the *specialized treatment* group. Five and ten years before their inclusion, the BDS patients were less self-supporting than an age-, gender- and ethnicity-matched population control group; the BDS patients accumulated more weeks of sickness benefit and unemployment. Thus, the included BDS patients may have been ill and in high risk for a social decline five and ten years before they received a proper diagnosis and treatment. For the year of inclusion, the BDS patients had a lower yearly income than the population controls, even if the two groups had identical fractions of members with a higher education. These results indicate that the social and economic consequences of BDS are significant and *mindfulness therapy* is a cost-effective treatment.

### Comparison with other studies

To the best of our knowledge long time follow-up data on the social and economic consequences of somatization disorder or functional somatic syndromes have not previously been analyzed on the basis of data obtained from valid central registers. Much of the evidence regarding risk factors comes from cross-sectional studies, interviews, and self-reports<sup>23 24</sup>.

According to the OECD's Health Data 2009<sup>25</sup>, Denmark's health costs per person, public and private, equaled \$3,512. (in the US the equivalent figure is \$7,290). Our trial reduced the annual mean total health care costs from \$ 5,325 to \$3,644, which is very close to the average annual cost per person. In 2006, Allen et al.<sup>26</sup> reported on health care utilization pre and post-treatment in a study testing a psychiatric consultation intervention plus 10 sessions of individual cognitive behavioral therapy for somatization disorder. They found a reduction from a median of \$ 1.944 pre-treatment to \$ 1.205 post-treatment. The costs related to the treatment were excluded from the analysis. Their analysis was only conducted on participants with complete records of health care data

(68% of the 84 included patients). We reduced total health care costs from a median of \$ 2.971 (2007 US \$) pre-treatment to \$ 1.593 post-treatment. Our study may be less biased than the study by Allen et al. Firstly, we used register data that were available for 100% of the included patients. Secondly, all Danish citizens are covered and registered by the national health care system.

A lack of education is often found to be a risk factor for bodily distress<sup>1, 23 24</sup> even if this general observation may seem to be contradicted since both Allen et al. and we found that about 37% of the patients suffering from somatization disorder had a college degree; a figure similar to that observed for the matched population control group. Allen et al. investigated self-selected patients from university clinics, which may have explained the high proportion of well-educated people. We investigated referred patients from both urban and rural areas; the majority were out of work and had no or little education; and since the entire Danish population is covered by the health care system, our sample may not have been biased towards a more educated population. These findings highlight the significance and high prevalence of BDS, even in a well-educated population. They also point to the importance of a multi-factual illness understanding and approach, as BDS cannot be explained only as a social problem. However, since the age range was 20-50 years, in 5 or 10 years the proportion of participants with a higher education may be very different for BDS patients when compared to the population controls. Kuyken et al.<sup>27</sup> found that mindfulness-based cognitive therapy (MBCT) may be a cost-effective option in the long term. MBCT was more effective than maintenance antidepressant medication, but there was no difference in the average cost between the two groups. A cost-effectiveness analysis suggested that the additional cost of MBCT may be justified in terms of improvements in the proportion of patients who relapse; but only if the willingness to pay for such improvements is \$ 1.000 or above.

### Strengths and limitations

Our findings are strengthened by a relatively small number of patients who needed to be screened and assessed in order to identify the 119 included patients in the randomized controlled trial. Also, the drop-out rate was small; the attendance was high; we used manual-defined treatments provided by competent clinicians; and the treatment acceptance and participant satisfaction rates were high<sup>16</sup>.

The main strengths of the social and economic analysis were the follow-up design, the relatively large number of included patients, and a very large control group. The data were obtained from central registers, which excludes recall bias and bias due to subjective parameters. The only inclusion

criteria for the matched population controls were: 1) that they were alive at baseline, and 2) that they were not included in the present randomized trial. Thus, the population control group represents the background population. Potential limitations may apply to the use of register data in the sense that their data might not be entirely accurate. However, Denmark has a rich tradition for registration that provides a unique data resource, so any such bias is considered to be negligent. We had information only about public and national social and health care utilization; therefore, any costs related to alternative treatments are not included in the analysis. Moreover, we had no information on medical diagnoses in the control group. Also, the participants (patients and population controls) may have registered as self-supporting although they may, in fact, not have been able to work due to social or health problems, because they did not formally satisfy the criteria for receipt of transfer payment. However, being excluded from the social system in Denmark is a very rare possibility. Prescribed medications are registered per year; thus, it is a very rough estimate and bias may be related to the time: still the data confirmed that there was no difference between the groups in terms of prescribed medication (opioid, benzodiazepine, and antidepressant medication) at any time points.

### Policy implications and recommendations

For health care planners and clinicians, economic and social evaluations of medical disorders and treatments are increasingly important. In line with previous research, this study shows that BDS is a disorder that may have severe economic and social consequences<sup>1</sup>. This study with a 15-month follow-up shows promising results from the implementation of *mindfulness therapy* for patients suffering from BDS. The effects of *mindfulness therapy* after 15 months are unknown. BDS may be detected years before it is formally diagnosed by investigating persons with accumulated weeks of sickness benefits or unemployment. We expect that earlier and perhaps more intensive treatments may be of significant benefit to patients, employers, and society. Further research is needed to test this hypothesis.

MBCT is now being recommended by the UK's best practice advisory board for NHS-NICE (National Health Service-National Institute of Health and Clinical Excellence); however, challenges related to the implementation of evidence-based mindfulness approaches are reported from the UK<sup>28</sup>. Few teachers are competent in its delivery and several reviews, books, and papers have pointed to the importance of the teachers' competence<sup>29, 30, 31, 32, 33</sup>. Thus, competent teachers are recommended, and the successes and failures of implementing *mindfulness therapy* need to be investigated.

## Conclusions

Preliminary evidence suggests that *mindfulness therapy* may prevent disability pension at 15-month follow-up and may reduce health care costs. Thus, *mindfulness therapy* may have a potential to significantly reduce societal costs, improve function, and increase effectiveness of care.

Reference List

- (1) Creed F, Henningsen P, Fink P. *Medically Unexplained Symptoms, Somatisation and Bodily Distress. Developing Better Clinical Services*. Cambridge: Cambridge University Press; 2011.
- (2) Henningsen P, Zipfel S, Herzog W. Management of functional somatic syndromes. *Lancet* 2007 March 17;369(9565):946-55.
- (3) Fink P, Rosendal M. Recent developments in the understanding and management of functional somatic symptoms in primary care. *Curr Opin Psychiatry* 2008 March;21(2):182-8.
- (4) Sharpe M, Carson A. "Unexplained" somatic symptoms, functional syndromes, and somatization: do we need a paradigm shift? *Ann Intern Med* 2001 May 1;134(9 Pt 2):926-30.
- (5) Barsky AJ, Orav EJ, Bates DW. Somatization increases medical utilization and costs independent of psychiatric and medical comorbidity. *Arch Gen Psychiatry* 2005 August;62(8):903-10.
- (6) Kjølter M, Rasmussen NK, Keiding L, Petersen HC, Nielsen GA. *Sundhed og sygelighed i Danmark 1994 - og udviklingen siden 1987*. København: DIKE; 1995.
- (7) Fink P. Kronisk somatisering Afdeling for Psykiatrisk Demografi, Psykiatrisk Universitetshospital i Aarhus, Universitet; 1997.
- (8) Hamilton J, Campos R, Creed F. Anxiety, depression and management of medically unexplained symptoms in medical clinics. *J R Coll Physicians Lond* 1996 January;30(1):18-20.
- (9) Peveler R, Kilkenny L, Kinmonth AL. Medically unexplained physical symptoms in primary care: a comparison of self-report screening questionnaires and clinical opinion. *J Psychosom Res* 1997 March;42(3):245-52.
- (10) Dunlop SP, Jenkins D, Spiller RC. Distinctive clinical, psychological, and histological features of postinfective irritable bowel syndrome. *Am J Gastroenterol* 2003 July;98(7):1578-83.
- (11) Meerding WJ, Bonneux L, Polder JJ, Koopmanschap MA, van der Maas PJ. Demographic and epidemiological determinants of healthcare costs in Netherlands: cost of illness study. *BMJ* 1998 July 11;317(7151):111-5.
- (12) Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-behavioral therapy for somatization disorder: a randomized controlled trial. *Arch Intern Med* 2006 July 24;166(14):1512-8.
- (13) Fink P, Toft T, Hansen MS, Ørnboel E, Olesen F. Symptoms and syndromes of bodily distress: an exploratory study of 978 internal medical, neurological, and primary care patients. *Psychosom Med* 2007 January;69(1):30-9.
- (14) Schröder A, Fink P. Functional somatic syndromes and somatoform disorders in special psychosomatic units: organizational aspects and evidence-based treatment. *Psychiatr Clin North Am* 2011 September;34(3):673-87.
- (15) Schröder A, Rehfeld E, Ørnboel E, Sharpe M, Licht R, Fink P. A novel group CBT based unified treatment for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Br J Psychiatry* 2012;In Press.
- (16) Fjorback LO, Arden M, Ørnboel E et al. Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes - randomized trial, one-year follow-up, active control. *Submitted* 2012.
- (17) Fink P, Schröder A. One single diagnosis, Bodily distress syndrome, succeeded to capture ten diagnostic categories of functional somatic syndromes and somatoform disorders. *Journal of Psychosomatic Research* 2010;68:415-26.
- (18) Schröder A, Rehfeld E, Ørnboel E, Sharpe M, Licht R, Fink P. A novel treatment approach for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Submitted* 2010.
- (19) Ware JE, Kosinski M. *SF-36 Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: Quality Metric Inc.; 2001.

- (20) Hjollund NH, Larsen FB, Andersen JH. Register-based follow-up of social benefits and other transfer payments: accuracy and degree of completeness in a Danish interdepartmental administrative database compared with a population-based survey. *Scand J Public Health* 2007;35(5):497-502.
- (21) Carstensen TB. The influence of psychosocial factors on recovery following acute whiplash trauma (PhD thesis) Aarhus University; 2012.
- (22) StataCorp. *StataCorp. Stata Multiple Imputation*. Texas: College Station, Texas:Stata Press; 2009.
- (23) Creed F, Barsky A. A systematic review of the epidemiology of somatisation disorder and hypochondriasis. *J Psychosom Res* 2004 April;56(4):391-408.
- (24) Deary V, Chalder T, Sharpe M. The cognitive behavioural model of medically unexplained symptoms: A theoretical and empirical review. *Clin Psychol Rev* 2007 July 17.
- (25) OECD. OECD Health Data 2011. <http://stats.oecd.org/Index.aspx?DataSetCode=SHA> 2011.
- (26) Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-behavioral therapy for somatization disorder: a randomized controlled trial. *Arch Intern Med* 2006 July 24;166(14):1512-8.
- (27) Kuyken W, Byford S, Taylor RS et al. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *J Consult Clin Psychol* 2008 December;76(6):966-78.
- (28) Crane C, Kuyken K, Hastings RP, Rothwell N, Williams J.M.G. Training Teachers to Deliver Mindfulness-Based Interventions: Learning from the UK Experience. *Mindfulness* 2012;DOI 10.1007/s12671-010-0010-9.
- (29) Kabat-Zinn J. Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemporary Buddhism* 2011;12(1):281-306.
- (30) McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- (31) Fjorback LO, Arendt M, Ornbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatr Scand* 2011 April 28.
- (32) Kabat-Zinn J, Santorelli SF. Training Teachers to Deliver Mindfulness-Based Stress Reduction. Available online: <http://www.umassmed.edu/cfm/trainingteachers/index.aspx> (accessed on 1 November 2011) 2012.
- (33) Centre for Mindfulness Research and Practice. Our Mission Statement. Available online: <http://www.bangor.ac.uk/mindfulness> (accessed on 1 November 2011) 2012.



## **Chapter 5. General discussion and conclusion**

**What is gained by a mindfulness approach?**

## Development of a mindfulness treatment approach

The present thesis has contributed to the development of a mindfulness approach as treatment for Bodily Distress Syndrome which is an important and widespread condition. Before a detailed discussion on the findings, a more critical issue could be raised; namely, if it really was necessary to develop a mindfulness approach for BDS considering the many treatment methods already available: STreSS-1; individual CBT; individual psychodynamic psychotherapy; graded exercises therapy; psychiatric consultation intervention; specialist medical care; MBSR; MBCT; yoga; meditation; mindfulness training offered in Buddhist settings, etc.

With great respect for these different resources, I found it advantageous (and very exiting) to conduct a structured treatment of *mindfulness therapy* that drew on my background in medicine, CBT, yoga, meditation, and mindfulness. By using this knowledge and experience, I may have helped BDS patients to navigate in a complex world where they can be totally lost. One patient, for example paid \$ 20.000 for anti-HIV medication prescribed from a private physician despite the fact that he was not HIV-positive. Another had slept throughout his 20s doped from the morphine prescribed by his family physician. Having teeth removed, repeating cortisone injections, months and years of bed rests, repeating explorative surgeries, and a variety of treatments performed by spiritual hands and crystals are an incomplete list of the many options the BDS patients make use of.

A published example is Michael Brown <sup>1</sup> who for 10 years had been preoccupied with the task of attempting to cope with and heal himself from a painful condition (Horton's syndrome). In his book *The Presence Process - a healing journey into present moment awareness* he describes a momentary experience of 100% present moment awareness, facilitated by the ingestion of peyote cactus: *'I felt complete. I felt whole. I felt physically present, mentally clear, emotionally balanced, and spiritually connected'*. Unlike the BDS patients in the present trial, Michael Brown resolved what he believes was an unconscious emotional condition that manifested as a painful ailment. Michael Brown continues: *'However, if we want to neutralize the causal emotional charge that is unconsciously driving us to manifest accidents that are injuring us to disease that are physically, mentally, or emotional debilitating to us, then a medical practitioner is possible the last person that we may consider approaching'*.

No matter what we believe as medical practitioners, the fact remains that the majority of the referred BDS patients have experienced an odyssey of treatments through the health care system and through alternative treatments. Safety guidelines are therefore highly recommended, as also explained by David M. Eisenberg <sup>2</sup>, Director of the Division for Research and Education in Complementary and Integrative Medical Therapies and the Osher Institute at Harvard Medical School:

*Even in my primary care clinic in a university hospital, if I asked ten patients were they using or thinking about using alternative unproven techniques, three or four or five would say yes. And then it hit me, maybe the strategy was to document the extent to which Americans in academic hospitals were using these things. Document how much money they were spending and then bring it to my academic colleagues and try to make the argument that we must out of concern for patients figure out which were safe, which were dangerous, which saved money, which cost money <sup>3</sup>.*

When it comes to BDS patients, modern medicine and alternative treatments seem to have forgotten Hippocrates' guiding of doing no harm. The word mindfulness means to 'remember'; remember the body, the mind (intelligence), and the heart (kindness). This is so obvious and trivial, but it may, nevertheless, be exactly what is called for in modern medicine. Teaching how to feel whole, physically present, mentally clear, and emotionally balanced may, indeed, be an integrated part of modern medicine. *Mindfulness therapy* is definitely not a miraculous cure I invented, and many new questions have been raised, but I 'remembered', expanded my knowledge, shared it with the patients, and had great fun.

### What is new?

The present study is a continuation of the STreSS-1 trial which did not include yoga, meditation, or mindfulness training. The present study, which is also called the STreSS-2 trial, can therefore be seen as a new, original contribution; not solely as CBT framed as an updated version.

The MBSR program is a practical manual for 'Full Catastrophe Living, Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness' <sup>4</sup> and to 'Heal Thy Self' <sup>5</sup>. MBSR is an invitation to embark upon a journey of self-development, self-discovery, learning, and healing <sup>4</sup>. Growth, development, and maturation as a mindfulness practitioner and mindfulness teacher are critical parts of a process that is not painless <sup>6</sup>. One of the key principles of the MBSR program is a medically heterogeneous environment, in which people with a broad range of medical conditions participate in classes together without segregation by diagnosis or

conditions. This approach focuses on what people have in common rather than what is special about their particular disease. The participants share being alive, having a body, breathing, thinking, feeling, perceiving, an incessant flow of mental states, including anxiety, worry, frustration, irritation, anger, sorrow, helplessness, despair, joy, and the capacity to cultivate a moment-to-moment awareness by directing attention in particular systematic ways<sup>7</sup>.

In contrast, MBCT was developed as a prevention program for formerly depressed patients, and the MBCT program focuses more on thoughts. Like in the MBCT program, we adapted the MBSR program by targeting a specific patient population; but in contrast to the MBCT program, *mindfulness therapy* focuses much more on the body. Since the BDS patients start out with a problem in their body and a desire for a new body, learning how to be present in the very body they try to escape from is a very practical and useful skill.

The hospital setting and our medical background may be important factors as we used analogies to chronic medical conditions and gave specific medical feedback. Also, the medical assessment is important because it ensured that the patients received the right diagnosis, which is the basis for the right treatment. Mindfulness is not a cure one can use when nothing else is working, but it may very well be the right treatment if the body is distressed to a level where it is no longer functioning. In *mindfulness therapy*, the core focus is observing what is present in the body, and by doing so insights may arise, for example: ‘I noticed that I am able to regulate the level of stress in the body’, ‘I noticed that I hate myself’, ‘I noticed that I feel isolated most of the time, but in class it is as if everything is okay, as if I am okay’, ‘Now, I have tools so I can work without becoming ill’, ‘I never believed in any of this, but experiencing a body without a simple symptom totally blew me away’, ‘Not much happened but I quit the painkillers’, ‘I realized that I am not the only one suffering, but that it is a human condition just like happiness’, ‘I realized that by keeping my focus on the pain, humor suddenly arrived’.

Chapter 1 highlighted the fact that BDS patients are suffering, and that mindfulness means to work with the very stress and pain that causes the suffering<sup>4</sup>. According to the Buddha himself, we are all suffering; but for BDS patients, the physical suffering is so present that it cannot be ignored. However, BDS patients do not come to the hospital saying: ‘I am suffering’ but they do come with a body they want to have fixed. The tools offered by medicine, including psychiatry, are intended to fix or attack the symptoms, not to release

suffering or promote flourishing<sup>8,9</sup>. Moreover, courses on the mind and body or on mental health are not part of a professional education in medicine. However, this may be changing since an intensive educational program in mindfulness, communication, and self-awareness has been tested in a before-and-after design for primary care physicians, and this program is associated with improvement in primary care physicians' well-being, psychological distress, burnout, and the capacity for relating to the patients<sup>10</sup>. Apparently, there is a growing interest in the possible effectiveness of bringing mindfulness into secular settings within mainstream society, including medicine. How to engage BDS patients in the work of observing and embracing a painful and/or fatigued body, how to inspire them to use what is now known from modern medicine (physical exercises, healthy nutrition, healthy relationships, CBT, etc.), and how to engage in their everyday lives is an ever evolving process, in which I believe *mindfulness therapy* is a contribution.

## Summary of findings in relation to aims

The aim of this PhD thesis was to create a mindfulness treatment approach for BDS by:

### **1) Developing a theoretical model for including mindfulness in the treatment of BDS**

By practicing body awareness, mind awareness, and communication skills patients may develop self-regulatory and self-care skills and improve their health. The theoretical model for including mindfulness training into the treatment of BDS rests on identified neurobiological impairments in these patients and the neurobiological improvements that mindfulness training may offer.

### **2) Reviewing mindfulness-based interventions**

The overall results from the reviews<sup>11 12</sup> and from the mindfulness literature indicate that MBSR and MBCT have something to offer. The reviews<sup>11 12</sup> recommended MBSR as a useful method for improving mental health; however, the lack of a long-term follow-up and active control groups are limitations in most studies. MBCT was recommended as a tool for preventing depressive relapse in recovered, recurrently depressed patients to prevent depressive relapse, but the implication of MBCT is challenged, especially the mindfulness teachers' lack of education is stated as problematic<sup>13</sup>.

### 3) Testing the acceptability and feasibility of mindfulness therapy

The randomized controlled trial indicates that BDS patients are capable of and willing to engage in *mindfulness therapy*. This is an important finding since treatment adherence is reported to be problematic in this particular patient population<sup>14,15</sup>. This thesis showed that *mindfulness therapy* can safely and successfully engage BDS patients to take better care of themselves.

### 4) Evaluating the effect of mindfulness therapy

*Mindfulness therapy* was comparable to *specialized treatment* in improving the quality of life and symptoms of patients with BDS. *Mindfulness therapy* produced greater and more rapid improvements than *specialized treatment*. The observed improvements may reflect a clinically and socially significant change.

*Mindfulness therapy* appears to produce improvements within the range of those reported in the STreSS-1 trial, where CBT was compared with enhanced usual care, and no improvements on the SF-36 scale were observed in the enhanced usual care group. This indicates that the changes accomplished with the two treatments *mindfulness therapy* and *specialized treatment* reflect real changes attributable to the interventions.

### 5) Evaluating the social and economic effects of mindfulness therapy

*Mindfulness therapy* had substantial socioeconomic benefits over *specialized treatment*. The costs incurred to cover permanent health-related benefits, especially disability pension, were significantly lower in the *mindfulness therapy* group than in the *specialized treatment* group over a 15-month follow-up period. The total health care utilization was reduced over time in both groups from the year before inclusion (mean \$ 5.325, median \$ 2.971) to the year after inclusion (mean \$ 3.644, median \$ 1.593) ( $p=0.0001$ ). There was no difference between the two groups.

### 6) Analyzing the social and economic consequences of BDS

The BDS patients had accumulated significantly more weeks of unemployment and sickness benefit 5 and 10 years before inclusion ( $p<0.0001$ ) than the population controls.

In conclusion, the social and economic consequences of BDS are significant and *mindfulness therapy* may have a potential to significantly improve the quality of life and symptoms, prevent social decline, and reduce societal costs.

## General discussion of methods

### DESIGN

#### Selection bias

The intervention was delivered only to patients with a strong treatment need due to the BDS and was restricted to patients who had been ill for at least two years. This may have skewed the recruitment by increasing the rate of the most severe cases. The BDS patients enrolled in the trial may not be representative of all patients suffering from somatization disorder or functional somatic syndromes as the recruitment may have been biased towards those willing to engage in a psycho-social treatment. The fact that our research clinic is placed at a general hospital may have ensured a higher acceptability of participation than if it had been placed at a psychiatric hospital. Another possible selection bias could stem from the fact that we recruited our study participants from individuals seeking help within the health care system. However, most of the patients did not seek help due to BDS, but due to particular physical symptoms, and the physicians only referred patients whose symptoms could indicate BDS. The trial may have limited generalizability because of volunteer bias, although we only included referred patients. Furthermore, doctors may not have referred patients with a low treatment motivation. Our experience speaks against this possibility, because many of the patients were highly skeptical at the beginning of the clinical assessment. Some patients remained highly skeptical almost until the very end of the treatment. In the *specialized treatment* group, the patients very often began the consultation after the assessment by stating: ‘So, you also believe that it is just in my mind’. This dual way of thinking deeply embedded in our culture makes it hard to grasp the idea that the problem of BDS (and most other illnesses) is one that encompasses both the body and the mind. In the *mindfulness therapy* group, some patients were excited, other highly skeptical in the beginning; most patients very quickly found it difficult especially the yoga practice, and they found it very painful to simply observe the symptoms; however, towards the end, most patients were sad that the group was ending. Finally, selection bias could be present due to mindfulness, yoga, and meditation, so that only patients interested in these practices were willing to participate. Nevertheless, the participation rate was extraordinarily high. We may have been very successful in convincing the patients to participate in the clinical trial. Although we tried only to include motivated patients by telling them that *mindfulness therapy* may be very challenging, and that they should only participate if they were, indeed, willing to engage in the treatment; even so very few declined participation, possibly owing to a thorough clinical assessment and the lack of alternative treatment options.

### **Assessment**

We made a comprehensive life-time review of case notes and clinical records from primary care physicians, ambulatory care, and hospital wards. We subsequently used the SCAN interview as our main diagnostic instrument. This may constitute limitations due to the diagnostic algorithms deployed in the SCAN interview. Currently, SCAN is the most comprehensive diagnostic tool available to explore BDS and functional somatic syndromes as it covers almost all physical symptoms experienced by humans. But it does not include the counting of tender points (diagnostic criteria for fibromyalgia) or a detailed specification of bowel movements (diagnostic criteria for irritable bowel syndrome). Using criteria for various other syndromes may therefore have complemented the SCAN. On the other hand, these limitations are not specific for our study, and the use of SCAN strengthens our study because we interpreted the symptoms within a clinical context. Moreover, the assessments were performed by trained physicians with sufficient clinical expertise and all patients underwent a physical and neurological examination.

### **The randomized trial**

In general, randomized controlled trials compromise if an intervention can work under ideal circumstances (*efficacy* trial with high internal validity), and if it does work in the real world (*effectiveness* trial with high external validity)<sup>16</sup>. We tried to mirror the real world and to achieve high external validity by having few inclusion and exclusion criteria; for example, allowing the participants to have comorbidities and take drugs. The sample resembles actual clinical patients, but the patients met all DSM or ICD criteria for the diagnosis given, which contributed to a high internal validity.

In the STreSS-1 trial, primary care physicians and all hospital wards in the western part of Denmark were reached by posted mail. All the BDS patients had a theoretical chance of being referred to the trial. Inclusion for the present STreSS-2 trial began when the inclusion for the STreSS-1 trial had ended, at which time physicians had become used to referring patients. The enrolment of the participants into the present trial may therefore be said to reflect a clinical practice that is practicable and manageable. However, since the physicians may have seen an effect from the STreSS-1 trial, they may have referred more severe and more intractable patients to the STreSS-2 than to the STreSS-1 trial. We raised the age criteria to 50 years (45 in STreSS-1); and contrary to the practice in STreSS-1, we did not exclude those in litigation.

We considered all functional somatic syndromes fulfilling the criteria for multi-organ BDS and did not restrict the inclusion criteria to single syndromes. Nor did we exclude patients due to a lack of suitability for the intervention or lack of motivation.

We had no passive control group and therefore cannot, in theory, establish causality between improvement and *mindfulness therapy* or *specialized treatment*. However, since the STreSS-2 trial began when the STreSS-1 trial ended, we decided to use our knowledge from the STreSS-1 trial and aimed at sharing this knowledge with all the patients. It was deemed unethical to compare the *mindfulness therapy* group with a group of patients recruited from a waitlist or treatment as usual since individual CBT and psychiatric consultation intervention have previously been found to have positive outcomes<sup>17 18</sup>. We, therefore, decided to do our very best in the control group and to establish a strong, active control group. However, the present results remain relevant even if the population may have been selected and we lacked a passive control group.

A randomized controlled trial cannot examine aspects like: the result of unspecific factors, regression towards the mean, or the natural history of the disorder. Since positive findings were maintained at the 15-month follow-up and the participants had been ill for at least two years prior to the treatment (on average 13.5 years), it is hardly likely that the observed effect is attributable to the natural history of the disorder or to regression towards the mean, although the study design cannot completely rule out this possibility.

### **Active ingredient**

*Mindfulness therapy* is composed of many elements and the study design cannot determinate the active ingredients. Some of the strong elements are: 1) connection to the body, 2) connection to the mind, 3) connection to self and others. The yoga practices: body scan (yoga nidra) and hatha yoga are the tools systematically used to enhance the connection with the body. The meditation practices systematically used to discipline the mind consists of concentration on breath, the body as a whole, pain, sounds, thoughts, and emotions; these practices are used to keep the attention in the present, observing what is present in the awareness, and embracing whatever comes up with a friendly non-judgmental attitude. Connection to the self and others are practiced through deep listening. From a mindfulness perspective, deep listening is the greatest gift a teacher can offer, it is not just being silent, but it is being fully present with the

patient. This presence may be explained as compassion in action or an ethical action that is believed to be the outcome and expression of a clear mind and an open heart.

Among clinicians, scientists, and even Buddhist masters, there is an ongoing debate about what mindfulness and its essence really is. Mindfulness is both a practice and an outcome. Some argue that the quality of attention is that which is most important<sup>19 20</sup>; others claim that acceptance and the level of compassion are the most important elements<sup>20</sup>. It is claimed that the healing is mediated by the teacher's authenticity and his or her ability to truly see the patient and act with compassion and ethics. If this truly is the essence of mindfulness, then this aspect of mindfulness may not be separated as a component only delivered to the *mindfulness therapy* group. Because if mindfulness is integrated into the person that delivered the *specialized treatment*, then it is not possible for such a person to spend eight or nine hours with a patient not being mindful; they may connect and mindfulness is being communicated. Conversely, if mindfulness is mainly engaging in formal practices, it may be separated. This type of communication is of course, not exclusive to mindfulness; it may be expressed as a common humanity and it equals the therapeutic alliance in psychotherapy.

## Data

### Processing of questionnaires

The data were designed and processed using the TELEform software program, which allows optical reading of data. The research secretaries were provided with guidelines on how to handle cases of doubt. The project head and the statistician were responsible for the further collation of data.

### Questionnaire

The SF-36 is an established instrument, widely used and well-validated in the general population<sup>21, 22</sup>, in primary care,<sup>22</sup> and in various medical conditions<sup>23</sup>. But it may not be accurate in measuring BDS patients' self-reported health<sup>24-26</sup>. The SF-36 questionnaires were filled in prior to the clinical assessment, and it is possible that this influenced the patients' self-reported health. In order to be taken seriously, they may have attributed their limitations to physical rather than emotional problems. Also, to keep up appearance or because of insufficient knowledge, they may have scored their physical functioning better than it actually was. For example, if one never gets out of the home (which was very common), then one

does not know whether it is difficult to walk a distance or climbing the stairs. A cross-sectional study suggested that the PCS and the MCS component scores of the SF-36 may not be valid in patients with BDS and proposed a new aggregate score, the Perceived Physical Health (PPH) score, including physical functioning, bodily pain, and vitality<sup>27</sup>. However, improvements assessed with the PCS and the PPH showed similar results in the BDS patients<sup>28</sup>. Health profiles have been compared between different medical and psychiatric conditions<sup>29</sup>. The BDS patients included in this trial scored physical functioning almost within normal range; but role physical, bodily pain, general health, vitality, and social functioning scores were scored about ten points worse than in patients suffering from both a psychiatric condition and a severe chronic medical condition such as congestive heart failure, chronic obstructive pulmonary disease and/or advanced diabetes; while scores of role emotional and mental health were about the same as in this group of patients suffering from both mental and physical conditions.

One SF-36 question asks: ‘compared to one year ago, how would you rate your health in general now?’ The other questions refer to the past four weeks. But there may be recall bias anyway because the current state at a particular day a patient answers the questionnaire influences recall. The SF-36 questionnaire asks questions like: ‘Is it problematic?’, ‘Do you have difficulties?’ or, ‘Within the past four weeks did you cut down on the amount of time you spent on work’, ‘Accomplished less than you would like’. We have no idea what the person did accomplish; we only know how he or she judged accomplishment. The scoring could reflect a pattern of perfectionism rather than the impairment itself. People adapt to the current state and memory is fallible and more a construction than a fact, so the questionnaire will inevitable give rise to some bias. The mentioned biases will underestimate a possible effect.

### **Register data**

Denmark runs a nationwide centralized register of personal information where every citizen is awarded a unique personal identification number. Virtually every government agency and all central registries in Denmark receive information about a person from the database in which data are continuously updated with all relevant health-related and other information. This unique data pool allows every citizen to be followed closely from birth to death.

The registers have almost full population coverage, and no informed consent is required to use data from those registered. The data can be used in an anonymous form. In the DREAM database, persons supported by their spouse, e.g. housewives and persons ‘dropped out’ of society, i.e. people who receive no employer or transfer payment, are not registered and they are therefore counted as self-supporting. However, these groups are considered to represent only a minor proportion according to the Danish Ministry of Employment.

### **Analysis**

In the analysis phase, we accounted for confounding by matching and stratification. We used intention to treat analysis<sup>30 31</sup> and multiple imputation<sup>32</sup> in an appropriate manner. No participants were excluded from the final analysis. We decided to use simple descriptive analyses of workability, as these data have never been presented before and a pure description is highly valuable for hypothesis-generating research to be tested in future trials.

### **Generalizability**

The population studied is a selected group in the sense that they are likely to be the most severe, the most unusual, and most intractable patients compared with the entire cohort of persons suffering from bodily distress. In principle, socio-demographic bias should not influence the selection of patients as the health care in Denmark is free of charge for all citizens. Immigrants were excluded, but they constitute less than 10% of the Danish population so this bias is hardly a problem. The results from the study may be generalizable to a Scandinavian population between 20-50 years of age who suffer from multi-organ BDS.

## **General discussion of results**

### **Clinical importance**

The magnitude of the statistically significant differences observed may or may not be sufficient to make clinicians and health care planners consider changing their current practices. To interpret outcomes and to facilitate such decision-making, we displayed outcomes directly by units and by the percentage of patients who improved. The evaluation of whether the outcome is clinically important can be evaluated through clinical knowledge and the literature. A meta-analysis concluded that compared with CBT for depression or other mental disorders the efficacy of CBT for medically unexplained symptoms seems to be lower<sup>33</sup> and only small between-group effect sizes are found when compared with treatment as

usual or a waitlist<sup>33 34</sup>. Moreover, patients presenting in primary care with physical symptoms have been followed for five years, and it was reported that poor baseline functional status, illness worry, and longer symptom duration predicted a lack of resolution<sup>35 36</sup>.

Thus, it is unlikely that the patients enrolled in the present study would have improved without the interventions since they had poor baseline functioning, high scores of illness worry, and very long symptom duration. At the end of treatment, a statistically significant higher number of patients randomized to the *mindfulness therapy* group (28%) than to the *specialized treatment* group (10%) reported a marked improvement (PCS >1 SD), OR=3.21 [1.05-9.78]. A value of OR > 2 marks a clinically important difference<sup>16</sup>. The standards for Cohen's d effect size are approximately 0.2 small, 0.5 moderate, 0.8 large as a rule of thumb; whether it is a clinically important difference is a matter of clinical judgment, not a statistical one<sup>16</sup>. Judgment depends on how serious the disorder is, how big the difference is, what that represents in terms of behavioral change, how difficult it is to change, and how costly the intervention is<sup>16</sup>. Our results highlight the fact that BDS implies a social decline for some. BDS is a significant and costly illness from which even young and well-educated persons may suffer. The improvement in PCS score outcome may not be huge; still, the use of register-based data afforded us with an excellent opportunity to gain insight into possible behavioral changes. Overall, an intervention that is safe, is acceptable to the patients, may prevent social decline, and may even reduce total health care costs, is sufficiently encouraging to warrant future further investigation. Suffering from somatic symptoms is stressful, suffering from somatic symptoms without having a diagnosis or an explanation may be even more stressful. Both intervention groups had improved outcomes for illness worry, anxiety, depression, and somatic symptoms. Thus, receiving the BDS diagnosis may have a therapeutic effect. Reducing the level of distress seems to be relevant as stressors perceived as inescapable or unavoidable evoke the strongest adverse biological consequences<sup>37</sup>. In the *specialized treatment* group the BDS diagnosis was individualized and supplemented with an individual treatment plan which improved treatment to a point that seems to be clinically important.

### **Treatment response equals disability pension?**

However, the participants randomized to *specialized treatment* did not improve in terms of their PSC scores until the 15-month follow-up. All participants whether they were randomized to the *mindfulness therapy* group or the *specialized treatment* group received information containing with a definition of stress: when the demands exceeds the resources, one can cope either by

decreasing the demands or enhancing the resources. We speculated if a treatment response could be explained by receiving disability pension (decreasing the demands). We analyzed if a clinically significant treatment response (PCS change score  $> 1/2SD$ ) at 15-month follow-up was associated with receiving disability pension. 13/27 (48%) of those receiving disability pension in the *specialized treatment* group at the 15-month follow-up improved, 7/27 (26%) did not reach a clinically significant treatment response, and 7/27 (26%) were lost at follow-up. In the *mindfulness treatment* group, 4/15 (27%) of those receiving disability pension improved, 6/15 (40%) did not reach a clinical significant treatment response, and 5/15 (33%) were lost at follow-up. Thus, receiving disability pension in general cannot explain a clinical treatment response, and a clinical treatment response was not at all associated with disability pension in the *mindfulness therapy* group. For some BDS patients, disability pension is the only realistic solution, but from a therapeutic point of view, it is not a very ambitious treatment, and the therapeutic ambitions should be raised, at least for the younger part of the population.

### **Possible risk factors**

We found results suggesting that accumulated weeks of unemployment or sickness benefits are possible risk factors for chronic and severe multi-organ BDS. We do not know if accumulated weeks of unemployment or sickness benefits five and ten years before inclusion were simply leading to a future BDS, or the reason for accumulated weeks of unemployment or sickness benefits was BDS. But these measures were assessed at different time points, and the results certainly point towards the existence of an association. Many patients have an understanding of a very sudden onset of their illness. However, we found impaired working capability five and ten years before study enrolment. These results point to a clinical relevance of vulnerability factors; they suggest that BDS may be detected much earlier; and they offer valuable information that may be used to inform in possible prevention programs or treatment initiatives. These findings also suggest that there may be opportunities for arresting or maybe even preventing the BDS patients' odysseys through the health care system and/or alternative treatments that could save financial resources which could be better used for prevention and treatment programs.

### **Comparison with other studies**

An overall comparison with other studies is difficult, because of the variability in the populations studied, the diagnostic criteria used, the interventions delivered, and the types of

measures deployed. In former randomized controlled trials testing mindfulness interventions, the typical participant is a white, middle-aged, middleclass, well-educated woman. In this study, the majority were out of work and had little or no education. Our findings suggest that even a socially marginalized population with chronic bodily distress is willing to participate and engage in a treatment that requires a high level of patient involvement. We checked if having an education was associated with a clinical treatment response and found absolutely no association (the results are not reported). We have previously reported that the BDS population group was just as educated as the matched population controls; we believe that this similarity reflects the age group (20-50); if the subjects had all been 50 years of age, a difference in education is highly probable, since it is likely that more population controls than BDS patients would have achieved an education by the age of 50.

Previously, four other mindfulness interventions have reported change scores of the SF-36. The PCS scores for woman with cancer improved from 38 to 40<sup>38</sup>, the MCS scores improved from 32 to 39 among emotionally distressed patients<sup>39</sup>, bodily pain improved from 40 to 45 for older adults with chronic low back pain<sup>40</sup> and from 32 to 40 in woman with fibromyalgia<sup>41</sup>. Thus, improvements on the SF-36 have not been huge in previous randomized controlled mindfulness studies.

A comparison of SF-36 change scores following CBT and the results of the present study are hampered by the fact that the CBT interventions were of different duration and mostly are individual CBT. Moreover, there is variability in the diagnostic criteria, the severity, and the duration of illness. In general, the less severe cases seem to be those who have achieved the highest level of improvements. CBT plus specialist medical care improved the SF-36 physical functioning score from 39 to 58<sup>42</sup> in patients suffering from chronic fatigue syndrome, but the study excluded patients with a physical functioning > 60; in our *mindfulness therapy* group, the mean physical functioning was 60 at baseline.

The STreSS-1 trial reported an effect size of 0.51; 95% CI 0.19-0.83 on the primary outcome, which should be compared with an effect size of 0.42; 0.17-0.68 in the present STreSS-2 trial. But the group size (12 versus 9) and the age ( $\leq 50$  versus  $\leq 45$ ) were higher, the social marginalization was worse, and the intervention covered a shorter period (3 versus 4 months) in STreSS-2. CBT was compared with enhanced usual care in the STreSS-1 trial, and no improvements on the SF-36 scale were observed in the enhanced usual care group, which

indicates that the changes found in the two treatments *mindfulness therapy* and *specialized treatment* in the present study reflect a real change attributable to the interventions.

In the STreSS-1 trial 73% reported a positive change and 25% a marked improvement, while 68% reported a positive change and 29% a marked improvement in the STreSS-2 trial. Both trials reached high effect sizes for illness worry and small effect sizes for anxiety and depression. We therefore conclude that CBT in STreSS-1 and *mindfulness therapy* in STreSS-2 were equally effective. The data on disability pension have not yet been analyzed in the STreSS-1 trial.

The benefit observed following *specialized treatment* is in line with previous research which has reported effect of individual CBT<sup>43</sup>, specialist medical care<sup>42</sup>, and psychiatric consultation intervention<sup>43</sup>.

**Conclusion: A mindfulness approach can safely be integrated into the treatment of BDS and it improves health.**

Patients with BDS are currently being largely neglected which results in enormous societal costs and much human suffering; consequently much benefit could be reaped if health care professionals and planners gave higher priority to BDS. There is no ‘gold standard’ for BDS management. However, the STreSS-1 trial proposed a stepped care model<sup>28, 44</sup> and suggested that the application of such a strategy would lead to improved health care and has the potential to save costs. The present STreSS-2 trial provides encouraging preliminary evidence for the effect and cost-effectiveness of *mindfulness therapy*. *Mindfulness therapy* is a useful complementary treatment in the management of BDS; it offers an additional intervention option to be integrated into the stepped care model. Doing no harm and improving treatment for BDS patients require close collaboration across medical specialties. The BDS diagnosis has shown its potential to facilitate the delivery of evidence-based care across medical specialties, as it has now been tested in two randomized controlled trials where it has proved its clinical usefulness for hundreds of patients.

Instead of telling patients that they just have to ‘live with their symptoms’ and that ‘there is nothing to be done’, we can now offer evidence-based treatments based on the results achieved by the STreSS-1 and STreSS-2 trials. One model does not fit all the patients, thus

having more treatment options is an advantage. *Mindfulness therapy* may be used as a specific prevention program for high-risk groups and may be added at all levels in the stepped care model. Although encouraging, large-scale multicenter trials are needed for further evaluation.

Reference List

- (1) Brown M. *The Presence Process A healing journey into present moment awareness*. New York: Beaufort books; 2005.
- (2) Eisenberg DM, Harris ES, Littlefield BA et al. Developing a library of authenticated Traditional Chinese Medicinal (TCM) plants for systematic biological evaluation--rationale, methods and preliminary results from a Sino-American collaboration. *Fitoterapia* 2011 January;82(1):17-33.
- (3) Kanodia AK, Legedza AT, Davis RB, Eisenberg DM, Phillips RS. Perceived benefit of Complementary and Alternative Medicine (CAM) for back pain: a national survey. *J Am Board Fam Med* 2010 May;23(3):354-62.
- (4) Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to face Stress, Pain, and Illness*. New York: Delacourte; 1990.
- (5) Santorelli, S. *Heal thyself: Lessons on mindfulness in medicine*. New York: Crown, Random House; 1999.
- (6) McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- (7) Santorelli SF. Mindfulness-based Stress Reduction Professional Training. Curriculum Guide and Supporting Materials. 2007.  
Ref Type: Unpublished Work
- (8) Goleman D. *Destructive Emotions. How can we overcome them? A scientific Dialogue with the Dalai Lama*. New York: Bantam Dell. A division of Random House, Inc.; 2003.
- (9) Fredrickson BL, Cohn MA, Coffey KA, Pek J, Finkel SM. Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *J Pers Soc Psychol* 2008 November;95(5):1045-62.
- (10) Krasner MS, Epstein RM, Beckman H et al. Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *JAMA* 2009 September 23;302(12):1284-93.
- (11) Fjorback LO, Arendt M, Ornbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatr Scand* 2011 April 28.
- (12) Fjorback LO, Walach H. Meditation Based Therapies - A Systematic Review and Some Critical Observations. *Religions* 2012;3:1-18.
- (13) Fabrizio Didonna. *Clinical handbook of mindfulness*. springer; 2009.
- (14) Busch AJ, Schachter CL, Overend TJ, Peloso PM, Barber KA. Exercise for fibromyalgia: a systematic review. *J Rheumatol* 2008 June;35(6):1130-44.
- (15) Astin JA, Berman BM, Bausell B, Lee WL, Hochberg M, Forys KL. The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: a randomized controlled trial. *J Rheumatol* 2003 October;30(10):2257-62.
- (16) Streiner DL, Norman GR. *PDQ Epidemiology*. 3rd ed. USA: People's Medical Publishing House; 2009.
- (17) Escobar JI, Gara MA, Diaz-Martinez AM et al. Effectiveness of a time-limited cognitive behavior therapy type intervention among primary care patients with medically unexplained symptoms. *Ann Fam Med* 2007 July;5(4):328-35.

- (18) Speckens AE, van Hemert AM, Spinhoven P, Hawton KE, Bolk JH, Rooijmans HG. Cognitive behavioural therapy for medically unexplained physical symptoms: a randomised controlled trial. *BMJ* 1995 November 18;311(7016):1328-32.
- (19) Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003 April;84(4):822-48.
- (20) Kohls NSS&WH. Facets of mindfulness. An online study investigating the Freiburg Mindfulness Inventory. *Personality and Individual Differences* 2009;46:224-30.
- (21) McHorney CA, Ware Jr JE, Rogers W, Raczek AE, Lu JF. The validity and relative precision of MOS short- and long-form health status scales and Dartmouth COOP charts. Results from the Medical Outcomes Study. *Med Care* 1992 May;30(5 Suppl):MS253-MS265.
- (22) Brazier JE, Harper R, Jones NM et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *BMJ* 1992 July 18;305(6846):160-4.
- (23) Ware Jr JE, Kosinski M, Gandek B. *SF-36 Health Survey: Manual and Interpretation Guide*. Lincoln,RI: Quality Metric Incorporated; 2005.
- (24) Taft C, Karlsson J, Sullivan M. Do SF-36 summary component scores accurately summarize subscale scores? *Qual Life Res* 2001;10(5):395-404.
- (25) Wilson D, Parsons J, Tucker G. The SF-36 summary scales: problems and solutions. *Soz Präventivmed* 2000;45(6):239-46.
- (26) Simon GE, Revicki DA, Grothaus L, VonKorff M. SF-36 summary scores: are physical and mental health truly distinct? *Med Care* 1998 April;36(4):567-72.
- (27) Schröder A, Ørnbøl E, Licht R, Sharpe M, Fink P. Outcome measurement in functional somatic syndromes: SF-36 summary scores and some scales were not valid. *Journal of Clinical Epidemiology*. In press 2011.
- (28) Schröder A, Rehfeld E, Oernboel E, Sharpe M, Licht R, Fink P. A novel group CBT based unified treatment for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Br J Psychiatry* 2012;In Press.
- (29) Ware JE, Kosinski M. *SF-36 Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: Quality Metric Inc.; 2001.
- (30) Hollis S, Campbell F. What is meant by intention to treat analysis? Survey of published randomised controlled trials. *BMJ* 1999 September 11;319(7211):670-4.
- (31) Nuesch E, Trelle S, Reichenbach S et al. The effects of excluding patients from the analysis in randomised controlled trials: meta-epidemiological study. *BMJ* 2009;339:b3244.
- (32) Curran D, Molenberghs G, Fayers PM, Machin D. Incomplete quality of life data in randomized trials: missing forms. *Stat Med* 1998 March 15;17(5-7):697-709.
- (33) Kleinstauber M, Witthoft M, Hiller W. Efficacy of short-term psychotherapy for multiple medically unexplained physical symptoms: a meta-analysis. *Clin Psychol Rev* 2011 February;31(1):146-60.
- (34) Toft T, Rosendal M, Ornbøl E, Olesen F, Frostholt L, Fink P. Training General Practitioners in the Treatment of Functional Somatic Symptoms: Effects on Patient Health in a Cluster-Randomised Controlled Trial (the Functional Illness in Primary Care Study). *Psychother Psychosom* 2010 April 29;79(4):227-37.
- (35) Jackson JL, Kroenke K. Prevalence, impact, and prognosis of multisomatoform disorder in primary care: a 5-year follow-up study. *Psychosomatic Med* 2008 May;70(4):430-4.

- (36) Rosendal M, Bro F, Sokolowski I, Fink P, Toft T, Olesen F. A randomised controlled trial of brief training in assessment and treatment of somatisation: effects on GPs' attitudes. *Fam Pract* 2005 August;22(4):419-27.
- (37) Clauw DJ. Potential mechanisms in chemical intolerance and related conditions. *Ann N Y Acad Sci* 2001 March;933:235-53.
- (38) Monti DA, Peterson C, Kunkel EJ et al. A randomized, controlled trial of mindfulness-based art therapy (MBAT) for women with cancer. *Psychooncology* 2006 May;15(5):363-73.
- (39) Moritz S, Quan H, Rickhi B et al. A home study-based spirituality education program decreases emotional distress and increases quality of life--a randomized, controlled trial. *Altern Ther Health Med* 2006 November;12(6):26-35.
- (40) Morone NE, Greco CM, Weiner DK. Mindfulness meditation for the treatment of chronic low back pain in older adults: a randomized controlled pilot study. *Pain* 2008 February;134(3):310-9.
- (41) Sephton SE, Salmon P, Weissbecker I et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum* 2007 February 15;57(1):77-85.
- (42) White PD, Goldsmith KA, Johnson AL et al. Comparison of adaptive pacing therapy, cognitive behaviour therapy, graded exercise therapy, and specialist medical care for chronic fatigue syndrome (PACE): a randomised trial. *Lancet* 2011 March 5;377(9768):823-36.
- (43) Kroenke K. Efficacy of treatment for somatoform disorders: a review of randomized controlled trials. *Psychosomatic Med* 2007 December;69(9):881-8.
- (44) Schroder A, Fink P. Functional somatic syndromes and somatoform disorders in special psychosomatic units: organizational aspects and evidence-based treatment. *Psychiatr Clin North Am* 2011 September;34(3):673-87.

**Chapter 6.**  
**Research perspectives**

## Perspectives for the use of the BDS diagnosis and a mindfulness approach

Expertise in behavioral medicine or mind/body medicine is rarely present in routine medical settings. This may result in an insufficient knowledge of BDS and a problematic communication between the patients and the medical practitioners. For example, the referred BDS patients reported that the most common responses they receive from their physicians are: *'You are going to have to learn to live with this'* or *'Your symptoms are not real or that rare that I have no idea about their origin'*. BDS clinics using a unified approach for the various functional somatic syndromes and psychiatric conditions are rare or non-existing in most countries. The successful biomedical revolution and the diagnostic confusion of BDS may have contributed to a neglect of BDS in clinical practise and health care planning. However, a BDS research clinic is establish at the general hospital, Aarhus University Hospital, Denmark <sup>1</sup>.

In line with previous research, this thesis confirmed that BDS is a common, costly, and highly debilitating condition <sup>2</sup>. And the results of this thesis give hope <sup>2</sup> to a much earlier delivering of safely guidelines, prevention, and treatment initiatives, which seems to be a better use of the financial resources.

The relationship between emotion and symptom expression is being studied in chronic medical conditions <sup>3-5</sup>, and the BDS diagnosis has the potential to expand this research field, because the unifying approach is useful, non-stigmatizing, and may resolve the confusion related to classification. The BDS diagnosis is easy to communicate across medical specialties and makes sense to the patients, because it does not define symptoms as 'mental' and not 'physical', but unifies medical conditions and psychiatric disorders.

The unified integrated approach may fill the gab between medicine and psychiatry. The STreSS-1 trial may educate patients and health care practitioners in BDS <sup>6</sup>. The MBSR program may teach patients how to learn to live with this <sup>7</sup>. The MBCT program may teach formerly depressed patients how to recognize when the mind is operating in maladaptive modes of mind <sup>8</sup>. And *Mindfulness therapy* may teach BDS patients how to recognize when the body is operating in destructive patterns. The patients learn that they have a real disorder; that the disorder most likely is an imbalance in the autonomic nervous system; that catastrophizing thinking, inactivity, and overloading make the symptoms worse; that connecting to the body can improve health; the imbalance in the autonomic

nervous system can be balanced by this connection; symptoms, emotions, and thoughts come and go, which one will notice when observing the awareness, the mind, and the body.

In order to detect decisive ingredients, future studies could include neurobiological measures. Functional brain imaging has shown impairments of the sensory processing in BDS patients, which may indicate a deficiency in the cognitive regulation of symptom perception<sup>9 10</sup>. The emotion and cognitive regulation are connected with the immune system, the endocrine system, and the autonomic nervous system<sup>11, 12</sup>. Thus, practicing emotional regulation skills may improve mental and physical health. In addition, research suggests that basic functions associated with the prefrontal cortex may emerge following mindfulness meditation<sup>13</sup>. These functions include regulation of the body systems, balancing emotions, attuning to others, modulating fear, responding flexibly, and exhibiting insight and empathy<sup>13</sup>. Functions that may be investigated through a combination of neuroscience, qualitative studies, and effect trials, because many of the cognitive and emotional regulatory processes implemented in the prefrontal cortex operate relatively automatically and are opaque to direct self-reporting and are represented only indirectly in self-reported measures<sup>14</sup>.

This phenomenon may have been present in our trial in which it was not unusual that patients were almost unable to climb the stairs to attend the *mindfulness therapy* program, which was located at the third floor (without an elevator); but by the end of treatment, they had no trouble climbing the stairs; however, when we asked them about their improvement, they often stated that they did not realize that so much had changed.

Neuroscientific work has uncovered components of emotion regulation that could not have been discovered through self-report methods, these components may be investigated in BDS patients. Thus, neuroimaging, behavioral, and biological measures may complement the evaluation of treatment effect in future trials.

Our trial was carried out at a highly specialized research clinic at a general university hospital. Many patients had to travel 2-3 hours to attend assessment and treatment. A similar treatment may be delivered at local clinics. When treating BDS patients at local clinics, physicians are recommended to ensure proper medical diagnoses. A proper BDS diagnosis is not achieved only by filling out a questionnaire. The BDS diagnosis is a clinical diagnosis similar to depression; and the level of impairment, the number of symptoms, and the duration of this illness are to be interpreted in a clinical context. It is common sense that all medical and mental illnesses are being diagnosed and

addressed. *Mindfulness therapy*, MBSR, and MBCT are complementary and participatory treatments; they are not alternative treatments, for example for cancer. The success and the failure of the implementation of *mindfulness therapy* at local clinics need to be investigated to determine the boundary conditions for a nationwide application. Sufficient training and education in mindfulness and CBT are highly recommended. MBCT is now being recommended by the UK's best practice advisory board for NHS-NICE (National Health Service-National Institute of Health and Clinical Excellence). However, challenges related to the implementation of evidence-based mindfulness approaches are being reported from the UK<sup>15</sup>. Few teachers are competent in its delivery, and several reviews, books, and papers have pointed to the importance of the teachers' competence<sup>16 17 18 19 20</sup>. According to Jon Kabat-Zinn, the practice of mindfulness is not just a good idea, and there is a great risk that mindfulness will be grasped and understood in a limited way, simply as a concept. Thus, a training of teachers is recommended, and the implementation of *mindfulness therapy* in other settings needs to be evaluated.

The training of mindfulness teachers and an analysis of the effect of *mindfulness therapy* delivered at local clinics are under preparation. Also, *mindfulness therapy* for patients with shoulder impairments (impingement- or rotator cuff syndrome) is under preparation. The shoulder patients' experience of *mindfulness therapy* will be investigated in a qualitative anthropological PhD study. Also, an ongoing qualitative PhD study is investigating how BDS patients experience stress in their daily lives before and after *mindfulness therapy*. In addition, the effect of pharmacotherapy and acceptance and commitment therapy is currently tested in ongoing STreSS-3 and StreSS-4 trials where *specialized treatment* is included for all patients.

Large-scale multicenter trials are needed to explore the effectiveness and cost-effectiveness of *mindfulness therapy*. The effect of longer treatment times, the inclusion of booster sessions, and whether integrating *mindfulness therapy* with *specialized treatment* yields a better outcome may be explored.

Reference List

- (1) Schroder A, Fink P. Functional somatic syndromes and somatoform disorders in special psychosomatic units: organizational aspects and evidence-based treatment. *Psychiatr Clin North Am* 2011 September;34(3):673-87.
- (2) Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-behavioral therapy for somatization disorder: a randomized controlled trial. *Arch Intern Med* 2006 July 24;166(14):1512-8.
- (3) Rosenkranz MA. Substance P at the nexus of mind and body in chronic inflammation and affective disorders. *Psychol Bull* 2007 November;133(6):1007-37.
- (4) Rosenkranz MA, Davidson RJ. Affective neural circuitry and mind-body influences in asthma. *Neuroimage* 2009 September;47(3):972-80.
- (5) Davidson RJ, Kabat-Zinn J, Schumacher J et al. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Med* 2003 July;65(4):564-70.
- (6) Schröder A, Rehfeld E, Oernboel E, Sharpe M, Licht R, Fink P. A novel group CBT based unified treatment for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Br J Psychiatry* 2012;In Press.
- (7) Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to face Stress, Pain, and Illness*. New York: Delacourte; 1990.
- (8) Segal ZV, Williams JM, Teasdale JD. *Mindfulness-Based Cognitive Therapy for Depression*. 2002.
- (9) Kuzminskyte R, Kupers R, Videbech P, Gjedde A, Fink P. Increased sensitivity to supra-threshold painful stimuli in patients with multiple functional somatic symptoms (MFS). *Brain Res Bull* 2010 April 29;82(1-2):135-40.
- (10) Wood PB. Neuroimaging in functional somatic syndromes. *Int Rev Neurobiol* 2005;67:119-63.
- (11) Davidson RJ, Jackson DC, Kalin NH. Emotion, plasticity, context, and regulation: perspectives from affective neuroscience. *Psychol Bull* 2000 November;126(6):890-909.
- (12) Davidson RJ. Affective neuroscience and psychophysiology: toward a synthesis. *Psychophysiology* 2003 September;40(5):655-65.
- (13) Siegel DJ. *The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being*. 2007.
- (14) Davidson RJ. Toward a biology of personality and emotion. *Ann N Y Acad Sci* 2001 May;935:191-207.
- (15) Crane C, Kuyken K, Hastings RP, Rothwell N, Williams J.M.G. Training Teachers to Deliver Mindfulness-Based Interventions: Learning from the UK Experience. *Mindfulness* 2012;DOI 10.1007/s12671-010-0010-9.
- (16) Kabat-Zinn J. Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemporary Buddhism* 2011;12(1):281-306.
- (17) McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- (18) Fjorback LO, Arendt M, Ornbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatr Scand* 2011 April 28.
- (19) Kabat-Zinn J, Santorelli SF. Training Teachers to Deliver Mindfulness-Based Stress Reduction. Available online: <http://www.umassmed.edu/cfm/trainingteachers/index.aspx> (accessed on 1 November 2011) 2012.
- (20) Centre for Mindfulness Research and Practice. Our Mission Statement. Available online: <http://www.bangor.ac.uk/mindfulness> (accessed on 1 November 2011) 2012.

- (21) Løvschall CWFS, Hartvigsen J, Johannsen HV, Beck Ss, Kjølbj MJ. Medicinsk teknologivurdering af kirurgisk behandling af patienter med udvalgte og hyppige skulderlidelser. Aarhus: MTV og Sundhedstjenesteforskning, Region Midtjylland; 2011.
- (22) Sørensen L, Vobbe JW, Beckmann JH. Psychological Profiling of Shoulder Patients in a Day Clinic. 2012. Ref Type: Unpublished Work

## **English and Danish summaries**

## English summary

We have created a mindfulness approach to treat patients who experience multiple, persistent, and disabling physical symptoms that cannot be explained by a well-defined medical or surgical condition. Randomized controlled trials in this area are few, and research is hampered by the lack of clear definitions. Bodily distress syndrome (BDS) or bodily stress is an empirically defined definition unifying various conditions such as fibromyalgia, chronic fatigue syndrome, and somatization disorder.

In the present PhD, we explored whether patients suffering from BDS may be committed to mental training in the form of *mindfulness therapy*, which is a mindfulness program specifically targeted patients suffering from BDS.

The theoretical model for including mindfulness training in the treatment of BDS is based on identified neurobiological impairments in these patients and the neurobiological improvements that mindfulness training may offer. BDS is a major public health issue possibly associated with the pathology of the immuno-endocrine and autonomic nervous system. BDS patients are often stigmatized, and effective treatment is rarely delivered, which leaves these patients isolated, left by themselves, vulnerable to potentially harming medical and/or alternative treatments. Accordingly, there is a need for non-harming practical tools that patients can learn to master so that they can improve the ability to take responsibility for their own health and wellbeing.

Mindfulness-Based Stress Reduction (MBSR) is a group program that employs mindfulness practice to alleviate suffering associated with physical, psychosomatic, and psychiatric disorders. Mindfulness-Based Cognitive Therapy (MBCT) is designed to prevent depressive relapse.

Paper I and II present systematic literature reviews only of randomized controlled trials on MBSR and MBCT. The effect of MBSR has been explored on fibromyalgia in three studies, none of them showed convincing results, but gave some indications as to improvement. The reviews recommended MBSR as a useful method for improving mental health; however, lack of long-term follow-up and active control groups are limitations in most studies. MBCT was recommended as a tool for preventing depressive relapse in recovered, recurrently depressed patients, but the

implication of MBSR and MBCT is problematic, especially due to the lack of well educated mindfulness teachers.

We combined MBSR with cognitive behavioral therapy, CBT, specifically targeted BDS. Paper III provides original data from 119 patients enrolled in a randomized clinical trial, *mindfulness therapy* for BDS. The randomized controlled trial indicates that BDS patients are capable of and willing to engage in *mindfulness therapy*. This thesis showed that *mindfulness therapy* can safely and successfully engage BDS patients in mindfulness practice. Since individual CBT and psychiatric consultation have previously been found to have positive outcomes for BDS patients, we compared *mindfulness therapy* to an active control group entitled *specialized treatment* in which an individual treatment was planned in collaboration between the patient and a MD specialized in BDS, CBT, and psychiatry. *Mindfulness therapy* was comparable to *specialized treatment* in improving the quality of life and the symptoms of the patients with BDS at 15-month follow-up.

For primary outcome physical health (PCS) at 15-month follow-up, different developments over time for the two treatment groups could not be established ( $F(3,2674)=1.51, p=0.21$ ). However, in the *mindfulness therapy* group, PCS significantly changed at the end of treatment and this change remained at 15-month follow-up, whereas no significant change was seen in the *specialized treatment* group until at the 15-month follow-up. In the *mindfulness therapy* group, 26%; CI, 14-38 reported a marked improvement ( $> 1SD$ ) at the end of treatment compared with 10%; CI, 2-18 in the *specialized treatment* group. This amounts to a statistically significant difference between the groups (OR=3.21; CI, 1.05-9.78,  $p=0.04$ ). The results are indicating that *mindfulness therapy* produced greater and more rapid improvements than *specialized treatment*.

*Mindfulness therapy* appears to produce improvements within the range of those reported in the STreSS-1 trial, where CBT was compared with enhanced usual care, and no improvements on the SF-36 scale were observed in the enhanced usual care group. This indicates that the changes accomplished with the two treatments *mindfulness therapy* and *specialized treatment* reflect real changes attributable to the interventions.

The economic effects of *mindfulness therapy* are evaluated in paper IV by the use of original register data from the 119 enrolled patients and a matched control group of 5950 individuals. *Mindfulness therapy* had substantial socioeconomic benefits over *specialized treatment*. The costs incurred to cover permanent health-related benefits, especially disability pension, were significantly lower in the *mindfulness therapy* group than in the *specialized treatment* group over a 15-month follow-up period; 25% from the *mindfulness therapy* group received disability pension compared with 45% from the *specialized treatment* group ( $p=0.025$ ).

The total health care utilization was reduced over time in both groups from the year before inclusion (mean \$ 5.325, median \$ 2.971) to the year after inclusion (mean \$ 3.644, median \$ 1.593) ( $p=0.0001$ ). There was no difference between the two groups.

Five and ten years before their inclusion, the BDS patients were less self-supporting than an age-, gender- and ethnicity-matched population control group; the BDS patients accumulated more weeks of sickness benefit and unemployment. Thus, the included BDS patients may have been ill and in high risk for a social decline five and ten years before they received a proper diagnosis and treatment.

In conclusion, the social and economic consequences of BDS are significant and *mindfulness therapy* may have a potential to significantly improve function, quality of life and symptoms, prevent a social decline, and reduce societal costs.

## Dansk resumé

Vi har udviklet et mindfulness program til behandling af patienter med kroniske og invaliderende fysiske symptomer, der ikke kan forklares ved anden kendt medicinsk eller kirurgisk sygdom. Der er få videnskabelige undersøgelser inden for dette felt, og forskningen er begrænset af diagnostiske uklarheder. Bodily distress syndrome (BDS) eller kropslig stress er en videnskabelig funderet diagnose, der samler forskellige lidelser som for eksempel: fibromyalgi, kronisk træthedssyndrom og somatiseringstilstand.

I indeværende ph.d.-afhandling har vi undersøgt, om det var muligt at engagere BDS patienter i mentaltræning i form af *mindfulness terapi*. *Mindfulness terapi* er et mindfulness program specielt udviklet til patienter med BDS.

Den teoretiske model som er benyttet til at inkludere mindfulness træning i behandlingen af BDS bygger på neurobiologiske forandringer hos disse patienter; neurobiologiske forandringer, som mindfulness muligvis kan ændre. BDS udgør et stort helbredsproblem i samfundet, muligvis associeret med sygdom i immunsystemet, hormonsystemet og det autonome nervesystem. BDS patienter er ofte stigmatiserede, de får sjældent en effektiv behandling, de er overladt til sig selv og er lette ofre for skadelige medicinske og/eller alternative behandlinger. Derfor er der brug for ikke-skadelige metoder, som patienterne kan bruge til at styrke evnen til at tage ansvar for eget helbred og velvære.

*Mindfulness-based stress reduction* (MBSR) er et gruppeprogram, der anvender mindfulness træning til at lindre lidelse i forbindelse med fysiske, psykosomatiske og psykiatriske sygdomme. *Mindfulness-based cognitive therapy* (MBCT) er et forebyggelsesprogram udviklet til personer, der tidligere har haft depression.

Artikel I og II præsenterer en systematisk gennemgang af de randomiserede kontrollerede studier af MBSR og MBCT. Effekten af MBSR er undersøgt for fibromyalgi i tre studier. Ingen af disse viste overbevisende resultater, men gav nogen indikation på forbedring. Oversigtsartiklerne anbefaler, at MBSR er en brugbar metode til forbedring af mentalt helbred, men de fleste studier er begrænset af, at de ikke har længerevarende opfølgingsperioder og aktive kontrolgrupper. MBCT kan anbefales

til forebyggelse af depression, for tidligere deprimerede patienter med tilbagevendende depression. Men implementeringen af MBSR og MBCT er problematisk, specielt pga. mangel på veluddannede mindfulness lærere.

Vi har kombineret MBSR med kognitiv terapi specifikt rettet mod BDS. Artikel III præsenterer således et randomiseret klinisk studie ”*Mindfulness terapi* til BDS”, der inkluderede 119 patienter. Studiet indikerer, at BDS patienter er i stand til og villige til at deltage i *mindfulness terapi*. Afhandlingen viser, at mindfulness terapi sikkert og succesfyldt kan engagere BDS patienter i mindfulness træning.

Da individuel kognitiv terapi og psykiatrisk konsultation tidligere har vist en positiv effekt på BDS patienter, sammenlignede vi *mindfulness terapi* med en aktiv kontrolgruppe, kaldet *specialist behandling*, hvor en individuel behandling blev planlagt mellem patienten og en læge specialiseret i BDS, kognitiv terapi og psykiatri.

*Mindfulness terapi* var sammenlignelig med *specialist behandling* i forbedring af livskvalitet og symptomer ved 15 måneders opfølgning. Primær effektmål fysisk helbred (PCS) ved 15 måneders opfølgning viste ikke en signifikant forskel i udvikling over tid mellem de to grupper ( $F(3,2674)=1.51, p=0.21$ ).

Men PCS var ved afslutningen af behandlingen signifikant forbedret i *mindfulness terapi*-gruppen og denne effekt holdt sig til 15 måneders opfølgning, mens der ikke var signifikant ændring af PCS i *specialist behandlings*-gruppen før ved 15 måneders opfølgning. I *mindfulness terapi*-gruppen opnåede 26%; CI, 14-38 en stor forbedring ( $> 1SD$ ) ved afslutningen af behandlingen sammenlignet med 10%; CI, 2-18 i *specialist behandlings*-gruppen, hvilket er en statistisk signifikant forskel mellem grupperne (OR=3.21; CI, 1.05-9.78,  $p=0.04$ ). Disse resultater indikerer, at forbedringen var større og satte hurtigere ind i *mindfulness terapi*-gruppen sammenlignet med *specialist behandlings*-gruppen.

Mindfulness terapi ser ud til at give forbedringer i samme størrelsesorden som rapporteret fra STreSS-1 studiet, hvor kognitiv terapi blev sammenlignet med sædvanlig lægebehandling, og hvor der ikke var nogen forbedring på SF-36 i gruppen, der fik sædvanlig lægebehandling. Dette indikerer,

at den forskel, der er vist efter de to behandlinger *mindfulness terapi* og *specialist behandling* afspejler en ændring, der kan tilskrives interventionerne.

Den økonomiske effekt af *mindfulness terapi* er evalueret i artikel IV, hvor vi analyserede registerdata for de 119 inkluderede BDS patienter og en matchet kontrolgruppe på 5950 individer. *Mindfulness terapi* havde betydelige socioøkonomiske fordele sammenlignet med *specialist behandling*. Udgifterne til permanente helbredsrelaterede ydelser, specielt førtidspension, var signifikant mindre i *mindfulness terapi*-gruppen end i *specialist behandlings*-gruppen ved 15 måneders opfølgning, hvor 25% fra *mindfulness terapi*-gruppen fik førtidspension sammenlignet med 45% fra *specialist behandlings*-gruppen ( $p=0.025$ ).

Det totale forbrug af sundhedsydelser blev reduceret i begge grupper fra året før inklusion (gennemsnit 28.998 kr., median 16.179 kr.) til året efter inklusion (gennemsnit 19.844 kr., median 8.675 kr.) ( $p=0.0001$ ). Der var ingen forskel mellem de to grupper. Fem og ti år før inklusion var BDS patienterne mindre selvforsørgende end en alders-, køns- og etnisk-matchet kontrolgruppe. BDS patienterne akkumulerede flere uger med sygedagpenge og arbejdsløshed. Derfor har BDS patienterne muligvis været syge og i risiko for at ryge ud af arbejdsmarkedet allerede fem og ti år før de fik en relevant diagnose og behandling.

Det kan hermed konkluderes, at de sociale og økonomiske konsekvenser af BDS er alvorlige, og *mindfulness terapi* kan have et potentiale til signifikant at forbedre funktion, livskvalitet og symptomer, forebygge social nedgang samt reducere samfundsudgifterne.



## References

### Reference List

- Akehurst RL, Brazier JE, Mathers N et al. Health-related quality of life and cost impact of irritable bowel syndrome in a UK primary care setting. *Pharmacoeconomics* 2002;20(7):455-62.
- Alexander CN, Rainforth MV, Gelderloos P. Transcendental meditation, self-actualization, and psychological health: a conceptual overview and statistical meta-analysis. *J Soc Behav Pers* 1991;(6):189-247.
- Alexander CN, Robinson P, Orme Johnson DW, Schneider RH. The effects of transcendental meditation compared to other methods of relaxation and meditation in reducing risk factors, morbidity, and mortality. *Homeostasis* 1994;(34):243-63.
- Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-behavioral therapy for somatization disorder: a randomized controlled trial. *Arch Intern Med* 2006 July 24;166(14):1512-8.
- Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-behavioral therapy for somatization disorder: a randomized controlled trial. *Arch Intern Med* 2006 July 24;166(14):1512-8.
- Anderson JW, Liu C, Kryscio J. Blood pressure response to transcendental meditation: A meta-analysis. *Am J Hypertens* 2008;(21):310-6.
- Arnold IA, De Waal MW, Eekhof JA, Assendelft WJ, Spinhoven P, van Hemert AM. Medically unexplained physical symptoms in primary care: a controlled study on the effectiveness of cognitive-behavioral treatment by the family physician. *Psychosomatics* 2009 September;50(5):515-24.
- Astin JA, Berman BM, Bausell B, Lee WL, Hochberg M, Forsys KL. The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: a randomized controlled trial. *J Rheumatol* 2003 October;30(10):2257-62.
- Baer RA. Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review. *Clinical Psychology: Science & Practice* 2003;10(2):125-43.
- Barsky AJ, Borus JF. Functional somatic syndromes. *Ann Intern Med* 1999 June 1;130(11):910-21.
- Barsky AJ, Ettner SL, Horsky J, Bates DW. Resource utilization of patients with hypochondriacal health anxiety and somatization. *Med Care* 2001 July;39(7):705-15.
- Barsky AJ, Orav EJ, Bates DW. Somatization increases medical utilization and costs independent of psychiatric and medical comorbidity. *Arch Gen Psychiatry* 2005 August;62(8):903-10.
- Baskin TW, Tierney SC, Minami T, Wampold BE. Establishing specificity in psychotherapy: a meta-analysis of structural equivalence of placebo controls. *J Consult Clin Psychol* 2003 December;71(6):973-9.
- Bishop SR. What do we really know about mindfulness-based stress reduction? *Psychosomatic Med* 2002 January;64(1):71-83.
- Bjorner JB, Damsgaard MT, Watt T, Groenvold M. Tests of data quality, scaling assumptions, and reliability of the Danish SF-36. *J Clin Epidemiol* 1998 November;51(11):1001-11.
- Bohlmeijer E, Prenger R, Taal E, Cuijpers P. The effects of mindfulness-based stress reduction therapy on mental health of adults with a chronic medical disease: a meta-analysis. *J Psychosom Res* 2010 June;68(6):539-44.
- Bondolfi G, Jermann F, der Linden MV et al. Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: Replication and extension in the Swiss health care system. *J Affect Disord* 2009 August 8.
- Brandt LJ, Chey WD, Foxx-Orenstein AE et al. An evidence-based position statement on the management of irritable bowel syndrome. *Am J Gastroenterol* 2009 January;104 Suppl 1:S1-35.

- Brazier JE, Harper R, Jones NM et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *BMJ* 1992 July 18;305(6846):160-4.
- Bremner JD, Vythilingam M, Vermetten E, Anderson G, Newcomer JW, Charney DS. Effects of glucocorticoids on declarative memory function in major depression. *Biol Psychiatry* 2004 April 15;55(8):811-5.
- Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003 April;84(4):822-48.
- Brown M. *The Presence Process A healing journey into present moment awareness*. New York: Beaufort books; 2005.
- Buchheld N, Grossmann P, Walach H. Measuring mindfulness in insight meditation (vipassana) and meditation-based psychotherapy: The development of the Freiburg Mindfulness Inventory (FMI). *J Meditation Res* 2001;(1):11-34.
- Buchheld N, Walach H. Achtsamkeit in Vipassanna-Meditation und Psychotherapie. Die Entwicklung des Freiburger Fragebogens zur Achtsamkeit. *Zeitschrift für Klinische Psychologie, Psychiatrie und Psychotherapie* 2002;(50):153-72.
- Busch AJ, Schachter CL, Overend TJ, Peloso PM, Barber KA. Exercise for fibromyalgia: a systematic review. *J Rheumatol* 2008 June;35(6):1130-44.
- Carlson LE, Ursuliak Z, Goodey E, Angen M, Speca M. The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up. *Support Care Cancer* 2001 March;9(2):112-23.
- Carr L, Iacoboni M, Dubeau MC, Mazziotta JC, Lenzi GL. Neural mechanisms of empathy in humans: a relay from neural systems for imitation to limbic areas. *Proc Natl Acad Sci U S A* 2003 April 29;100(9):5497-502.
- Carson AJ, Stone J, Warlow C, Sharpe M. Patients whom neurologists find difficult to help. *J Neurol Neurosurg Psychiatry* 2004 December;75(12):1776-8.
- Carstensen TB. The influence of psychosocial factors on recovery following acute whiplash trauma (PhD thesis) Aarhus University; 2012.
- Carter OL, Presti DE, Callistemon C, Ungerer Y, Liu GB, Pettigrew JD. Meditation alters perceptual rivalry in Tibetan Buddhist monks. *Curr Biol* 2005 June 7;15(11):R412-R413.
- Centre for Mindfulness Research and Practice. Our Mission Statement. Available online: <http://www.bangor.ac.uk/mindfulness> (accessed on 1 November 2011) 2012.
- Chah A. *A Taste of Freedom. Selected Dhamma Talks*. Penang: The Sangha, Bun Wai Forest Monastery, Sukhi Hotu Dhamma Publications; 2010.
- Chambless DL, Ollendick TH. Empirically supported psychological interventions: controversies and evidence. *Annu Rev Psychol* 2001;52:685-716.
- Cherry DK, Woodwell DA, Rechtsteiner EA. National Ambulatory Medical Care Survey: 2005 summary. *Adv Data* 2007 June 29;(387):1-39.
- Chew-Graham C, May C. Chronic Low Back Pain in General Practice: The Challenge of the Consultation. *Fam Pract* 1999 January 2;16(1):47-9.
- Clauw DJ. Potential mechanisms in chemical intolerance and related conditions. *Ann N Y Acad Sci* 2001 March;933:235-53.
- Cohen J. *Statistical power analysis for the behavioral sciences*. Rev. edition ed. Academic Press (New York); 1977.
- Crane C, Kuyken K, Hastings RP, Rothwell N, Williams J.M.G. Training Teachers to Deliver Mindfulness-Based Interventions: Learning from the UK Experience. *Mindfulness* 2012;DOI 10.1007/s12671-010-0010-9.

- Crane C, Barnhofer T, Duggan DS, Hepburn S, Fennel M, Williams JMG. Mindfulness-Based Cognitive Therapy and Self-Discrepancy in Recovered Depressed Patients with a History of Depression and Suicidality. *Cogn Ther Res* 2008;(32(6)):775-87.
- Creed F, Henningsen P, Fink P. *Medically Unexplained Symptoms, Somatisation and Bodily Distress. Developing Better Clinical Services*. Cambridge: Cambridge University Press; 2011.
- Creed F, Barsky A. A systematic review of the epidemiology of somatisation disorder and hypochondriasis. *J Psychosom Res* 2004 April;56(4):391-408.
- Creswell JD, Myers HF, Cole SW, Irwin MR. Mindfulness meditation training effects on CD4+ T lymphocytes in HIV-1 infected adults: a small randomized controlled trial. *Brain Behav Immun* 2009 February;23(2):184-8.
- Curran D, Molenberghs G, Fayers PM, Machin D. Incomplete quality of life data in randomized trials: missing forms. *Stat Med* 1998 March 15;17(5-7):697-709.
- Davidson RJ. Well-being and affective style: neural substrates and biobehavioural correlates. *Philos Trans R Soc Lond B Biol Sci* 2004 September 29;359(1449):1395-411.
- Davidson RJ. Affective style, psychopathology, and resilience: brain mechanisms and plasticity. *Am Psychol* 2000 November;55(11):1196-214.
- Davidson RJ. Affective neuroscience and psychophysiology: toward a synthesis. *Psychophysiology* 2003 September;40(5):655-65.
- Davidson RJ. Toward a biology of personality and emotion. *Ann N Y Acad Sci* 2001 May;935:191-207.
- Davidson RJ, Jackson DC, Kalin NH. Emotion, plasticity, context, and regulation: perspectives from affective neuroscience. *Psychol Bull* 2000 November;126(6):890-909.
- Davidson RJ, Kabat-Zinn J, Schumacher J et al. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Med* 2003 July;65(4):564-70.
- Davidson RJ, Pizzagalli D, Nitschke JB, Putnam K. Depression: perspectives from affective neuroscience. *Annu Rev Psychol* 2002;53:545-74.
- De Lange FP, Koers A, Kalkman JS et al. Increase in prefrontal cortical volume following cognitive behavioural therapy in patients with chronic fatigue syndrome. *Brain* 2008 August;131(Pt 8):2172-80.
- De Waal MW, Arnold IA, Eekhof JA, van Hemert AM. Somatoform disorders in general practice: Prevalence, functional impairment and comorbidity with anxiety and depressive disorders. *Br J Psychiatry* 2004 June;184:470-6.
- Deary V, Chalder T, Sharpe M. The cognitive behavioural model of medically unexplained symptoms: A theoretical and empirical review. *Clin Psychol Rev* 2007 July 17.
- Derogatis LR, Cleary PA. Confirmation of the dimensional structure of the SCL-90: A study in construct validation. *J Clin Psychol* 1977;33(4):981-9.
- Docket KH, Dudley-Grant GR, Bankart CP. *Psychology and Buddhism: From Individual to Global Community*. New York, Boston: Kluwer Academic/ Plenum Publishers; 2003.
- Dunlop SP, Jenkins D, Spiller RC. Distinctive clinical, psychological, and histological features of postinfective irritable bowel syndrome. *Am J Gastroenterol* 2003 July;98(7):1578-83.
- Eisenberg DM, Harris ES, Littlefield BA et al. Developing a library of authenticated Traditional Chinese Medicinal (TCM) plants for systematic biological evaluation--rationale, methods and preliminary results from a Sino-American collaboration. *Fitoterapia* 2011 January;82(1):17-33.

- Engel AK, Fries P, Singer W. Dynamic predictions: oscillations and synchrony in top-down processing. *Nat Rev Neurosci* 2001 October;2(10):704-16.
- Eppley KR, Abrams AI, Shear J. Differential effects of relaxation techniques on trait anxiety: a meta-analysis. *J Clin Psychol* 1989 November;45(6):957-74.
- Escobar JI, Gara MA, Diaz-Martinez AM et al. Effectiveness of a time-limited cognitive behavior therapy type intervention among primary care patients with medically unexplained symptoms. *Ann Fam Med* 2007 July;5(4):328-35.
- Fabrizio Didonna. *Clinical handbook of mindfulness*. springer; 2009.
- Fiddler M, Jackson J, Kapur N, Wells A, Creed F. Childhood adversity and frequent medical consultations. *Gen Hosp Psychiatry* 2004 September;26(5):367-77.
- Fink P. Somatization from a historical perspective. *Nord J Psychiatry* 1996;50:353-63.
- Fink P. Kronisk somatisering Afdeling for Psykiatrisk Demografi, Psykiatrisk Universitetshospital i Aarhus, Universitet; 1997.
- Fink P, Ewald H, Jensen J et al. Screening for somatization and hypochondriasis in primary care and neurological in-patients: a seven-item scale for hypochondriasis and somatization. *J Psychosom Res* 1999 March;46(3):261-73.
- Fink P, Rosendal M. Recent developments in the understanding and management of functional somatic symptoms in primary care. *Curr Opin Psychiatry* 2008 March;21(2):182-8.
- Fink P, Rosendal M, Toft T. Assessment and Treatment of Functional Disorders in General Practice: The Extended Reattribution and Management Model - An Advanced Educational Program for Nonpsychiatric Doctors. *Psychosomatics* 2002;43(2):93-131.
- Fink P, Schroder A. Brug 6901. *J Psychosom Res* 2010 May;68(5):415-26.
- Fink P, Schröder A. One single diagnosis, Bodily distress syndrome, succeeded to capture ten diagnostic categories of functional somatic syndromes and somatoform disorders. *Journal of Psychosomatic Research* 2010;68:415-26.
- Fink P, Sorensen L, Engberg M, Holm M, Munk-Jorgensen P. Somatization in primary care. Prevalence, health care utilization, and general practitioner recognition. *Psychosomatics* 1999 July;40(4):330-8.
- Fink P, Toft T, Hansen MS, Ornbol E, Olesen F. Symptoms and syndromes of bodily distress: an exploratory study of 978 internal medical, neurological, and primary care patients. *Psychosomatic Med* 2007 January;69(1):30-9.
- Fink P, Toft T, Hansen MS, Ørnboel E, Olesen F. Symptoms and syndromes of bodily distress: an exploratory study of 978 internal medical, neurological, and primary care patients. *Psychosom Med* 2007 January;69(1):30-9.
- Fischler B, D'Haenen H, Cluydts R et al. Comparison of 99m Tc HMPAO SPECT scan between chronic fatigue syndrome, major depression and healthy controls: an exploratory study of clinical correlates of regional cerebral blood flow. *Neuropsychobiology* 1996;34(4):175-83.
- Fjorback LO, Ardern M, Oernboel E et al. Mindfulness Therapy for Somatization Disorder and Functional Somatic Syndromes - randomized trial, one-year follow-up, active control. *Submitted* 2012.
- Fjorback LO, Arendt M, Ornbol E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials. *Acta Psychiatr Scand* 2011 April 28.
- Fjorback LO, Walach H. Meditation Based Therapies - A Systematic Review and Some Critical Observations. *Religions* 2012;3:1-18.
- Foley E, Baillie A, Huxter M, Price M, Sinclair E. Mindfulness-based cognitive therapy for individuals whose lives have been affected by cancer: a randomized controlled trial. *J Consult Clin Psychol* 2010 February;78(1):72-9.

- Fredrickson BL, Cohn MA, Coffey KA, Pek J, Finkel SM. Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *J Pers Soc Psychol* 2008 November;95(5):1045-62.
- Garcia-Campayo JJ, Sanz-Carrillo C, Baringo T, Ceballos C. SPECT scan in somatization disorder patients: an exploratory study of eleven cases. *Aust N Z J Psychiatry* 2001 June;35(3):359-63.
- Goleman D. *Destructive Emotions. How can we overcome them? A scientific Dialogue with the Dalai Lama*. New York: Bantam Dell. A division of Random House, Inc.; 2003.
- Grossman P, Kappos L, Gensicke H et al. MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology* 2010 September 28;75(13):1141-9.
- Grossman P, Niemann L, Schmidt S, Walach H. Mindfulness-based stress reduction and health benefits. A meta-analysis. *J Psychosom Res* 2004 July;57(1):35-43.
- Gwee KA, Leong YL, Graham C et al. The role of psychological and biological factors in postinfective gut dysfunction. *Gut* 1999 March;44(3):400-6.
- Hagemann D, Neumann E, Becker G, Maier S, Bartussek D. Resting brain asymmetry and affective reactivity: Aggregated data support the right-hemisphere hypothesis. *Pers Individ Dif* 2005;3(26):139-54.
- Hakala M, Karlsson H, Ruotsalainen U et al. Severe somatization in women is associated with altered cerebral glucose metabolism. *Psychological med* 2002;32:1379-85.
- Hamilton J, Campos R, Creed F. Anxiety, depression and management of medically unexplained symptoms in medical clinics. *J R Coll Physicians Lond* 1996 January;30(1):18-20.
- Hayes SC, Smith S. *Get Out of Your Mind & Into Your Life: The New Acceptance & Commitment Therapy*. Oakland: New Harbinger Publications; 2005.
- Hebert JR, Ebbeling CB, Olendzki BC et al. Change in women's diet and body mass following intensive intervention for early-stage breast cancer. *J Am Diet Assoc* 2001 April;101(4):421-31.
- Henningsen P, Zipfel S, Herzog W. Management of functional somatic syndromes. *Lancet* 2007 March 17;369(9565):946-55.
- Hjollund NH, Larsen FB, Andersen JH. Register-based follow-up of social benefits and other transfer payments: accuracy and degree of completeness in a Danish interdepartmental administrative database compared with a population-based survey. *Scand J Public Health* 2007;35(5):497-502.
- Hofmann L, Walach H. Spirituality and religiosity in psychotherapy--a representative survey among German psychotherapists. *Psychother Res* 2011 March;21(2):179-92.
- Hofmann SG, Sawyer AT, Witt AA, Oh D. The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *J Consult Clin Psychol* 2010 April;78(2):169-83.
- Hollis S, Campbell F. What is meant by intention to treat analysis? Survey of published randomised controlled trials. *BMJ* 1999 September 11;319(7211):670-4.
- Holzel BK, Carmody J, Evans KC et al. Stress reduction correlates with structural changes in the amygdala. *Soc Cogn Affect Neurosci* 2010 March;5(1):11-7.
- Holzel BK, Carmody J, Vangel M et al. Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Res* 2011 January 30;191(1):36-43.
- Holzel BK, Ott U, Gard T et al. Investigation of mindfulness meditation practitioners with voxel-based morphometry. *Soc Cogn Affect Neurosci* 2008 March;3(1):55-61.

- Holzel BK, Ott U, Hempel H et al. Differential engagement of anterior cingulate and adjacent medial frontal cortex in adept meditators and non-meditators. *Neurosci Lett* 2007 June 21;421(1):16-21.
- Hotopf M, Mayou R, Wadsworth M, Wessely S. Childhood risk factors for adults with medically unexplained symptoms: results from a national birth cohort study. *Am J Psychiatry* 1999 November;156(11):1796-800.
- Hotopf M, Wilson-Jones C, Mayou R, Wadsworth M, Wessely S. Childhood predictors of adult medically unexplained hospitalisations. Results from a national birth cohort study. *Br J Psychiatry* 2000 March;176:273-80.
- Ichise M, Salit IE, Abbey SE et al. Assessment of regional cerebral perfusion by 99Tcm-HMPAO SPECT in chronic fatigue syndrome. *Nucl Med Commun* 1992 October;13(10):767-72.
- Jackson J, Fiddler M, Kapur N, Wells A, Tomenson B, Creed F. Number of bodily symptoms predicts outcome more accurately than health anxiety in patients attending neurology, cardiology, and gastroenterology clinics. *J Psychosom Res* 2006 April;60(4):357-63.
- Jackson JL, Kroenke K. Difficult patient encounters in the ambulatory clinic: clinical predictors and outcomes. *Arch Intern Med* 1999 May 24;159(10):1069-75.
- Jackson JL, Kroenke K. Prevalence, impact, and prognosis of multisomatoform disorder in primary care: a 5-year follow-up study. *Psychosomatic Med* 2008 May;70(4):430-4.
- Jha AP, Stanley EA, Kiyonaga A, Wong L, Gelfand L. Examining the protective effects of mindfulness training on working memory capacity and affective experience. *Emotion* 2010 February;10(1):54-64.
- Johansson PA, Farup PG, Bracco A, Vandvik PO. How does comorbidity affect cost of health care in patients with irritable bowel syndrome? A cohort study in general practice. *BMC Gastroenterol* 2010;10:31.
- Joyce J, Hotopf M, Wessely S. The prognosis of chronic fatigue and chronic fatigue syndrome: a systematic review [see comments]. *QJM* 1997 March;90(3):223-33.
- Kabat-Zinn J. Foreword. In: Didonna F, editor. *Clinical handbook of Mindfulness*. New York: Springer; 2009.
- Kabat-Zinn J. Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemporary Buddhism* 2011;12(1):281-306.
- Kabat-Zinn J. Indra's Net at Work: The mainstreaming of Dharma Practice in Society. In: Watson G, Batchelor S, Claxton G, editors. *The Psychology of Awakening: Buddhism, Science, and Our Day to Day Lives*. London: Rider; 1999. p. 226-49.
- Kabat-Zinn J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *Gen Hosp Psychiatry* 1982 April;4(1):33-47.
- Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to face Stress, Pain, and Illness*. New York: Delacourte; 1990.
- Kabat-Zinn J. *Wherever you go, there you are: Mindfulness Meditation in everyday life*. New York: Hyperion; 1994.
- Kabat-Zinn J. Meditation. In: Holland JD, editor. *Textbook of Psycho-oncology*. Oxford: Oxford University Press; 1998. p. 767-79.
- Kabat-Zinn J. *Full catastrophe living: using the wisdom of your mind to face stress, pain, and illness*. New York: Delacorte; 1990.
- Kabat-Zinn J, Santorelli SF. Training Teachers to Deliver Mindfulness-Based Stress Reduction. Available online: <http://www.umassmed.edu/cfm/trainingteachers/index.aspx> (accessed on 1 November 2011) 2012.
- Kanodia AK, Legedza AT, Davis RB, Eisenberg DM, Phillips RS. Perceived benefit of Complementary and Alternative Medicine (CAM) for back pain: a national survey. *J Am Board Fam Med* 2010 May;23(3):354-62.

- Katon W, Sullivan M, Walker E. Medical symptoms without identified pathology: relationship to psychiatric disorders, childhood and adult trauma, and personality traits. *Ann Intern Med* 2001 May 1;134(9 Pt 2):917-25.
- Kirmayer LJ, Robbins JM. Three forms of somatization in primary care: prevalence, co-occurrence, and sociodemographic characteristics. *J Nerv Ment Dis* 1991 November;179(11):647-55.
- Kjøller M, Rasmussen NK, Keiding L, Petersen HC, Nielsen GA. *Sundhed og sygelighed i Danmark 1994 - og udviklingen siden 1987*. København: DIKE; 1995.
- Kleinstaubler M, Witthoft M, Hiller W. Efficacy of short-term psychotherapy for multiple medically unexplained physical symptoms: a meta-analysis. *Clin Psychol Rev* 2011 February;31(1):146-60.
- Kohls NSS&WH. Facets of mindfulness. An online study investigating the Freiburg Mindfulness Inventory. *Personality and Individual Differences* 2009;46:224-30.
- Kolk AM, Schagen S, Hanewald GJ. Multiple medically unexplained physical symptoms and health care utilization: outcome of psychological intervention and patient-related predictors of change. *J Psychosom Res* 2004 October;57(4):379-89.
- Kornfield J. Intensive insight meditation: a phenomenological study. *J Transpersonal Psychol* 1979;11:41-58.
- Kosinski M, Zhao SZ, Dedhiya S, Osterhaus JT, Ware JE, Jr. Determining minimally important changes in generic and disease-specific health-related quality of life questionnaires in clinical trials of rheumatoid arthritis. *Arthritis Rheum* 2000 July;43(7):1478-87.
- Koszycki D, Bengler M, Shlik J, Bradwejn J. Randomized trial of a meditation-based stress reduction program and cognitive behavior therapy in generalized social anxiety disorder. *Behav Res Ther* 2007 October;45(10):2518-26.
- Krasner MS, Epstein RM, Beckman H et al. Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *JAMA* 2009 September 23;302(12):1284-93.
- Kringlen E, Torgersen S, Cramer V. Mental illness in a rural area: a Norwegian psychiatric epidemiological study. *Soc Psychiatry Psychiatr Epidemiol* 2006 September;41(9):713-9.
- Kroenke K. Efficacy of treatment for somatoform disorders: a review of randomized controlled trials. *Psychosomatic Med* 2007 December;69(9):881-8.
- Kroenke K, Price RK. Symptoms in the community. Prevalence, classification, and psychiatric comorbidity. *Arch Intern Med* 1993 November 8;153(21):2474-80.
- Kroenke K, Swindle R. Cognitive-Behavioural Therapy for Somatization and Symptom Syndromes: A Critical Review of Controlled Clinical Trials. *Psychother Psychosom* 2000 July;69(4):205-15.
- Kuyken W, Byford S, Taylor RS et al. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *J Consult Clin Psychol* 2008 December;76(6):966-78.
- Kuyken W, Watkins E, Holden E et al. How does mindfulness-based cognitive therapy work? *Behav Res Ther* 2010 November;48(11):1105-12.
- Kuzminskytė R, Kupers R, Videbech P, Gjedde A, Fink P. Increased sensitivity to supra-threshold painful stimuli in patients with multiple functional somatic symptoms (MFS). *Brain Res Bull* 2010 April 29;82(1-2):135-40.
- Kwiatkiewicz R, Barnden L, Tedman R et al. Regional cerebral blood flow in fibromyalgia: single-photon-emission computed tomography evidence of reduction in the pontine tegmentum and thalami. *Arthritis Rheum* 2000 December;43(12):2823-33.
- Lapate RC, Lee H, Salomons TV, van Reekum CM, Greischar LL, Davidson RJ. Amygdalar Function Reflects Common Individual Differences in Emotion and Pain Regulation Success. *J Cogn Neurosci* 2011 August 23.

- Lazar SW, Bush G, Gollub RL, Fricchione GL, Khalsa G, Benson H. Functional brain mapping of the relaxation response and meditation. *Neuroreport* 2000 May 15;11(7):1581-5.
- Lazar SW, Kerr CE, Wasserman RH et al. Meditation experience is associated with increased cortical thickness. *Neuroreport* 2005 November 28;16(17):1893-7.
- Lembo AJ, Zaman M, Krueger RF, Tomenson BM, Creed FH. Psychiatric disorder, irritable bowel syndrome, and extra-intestinal symptoms in a population-based sample of twins. *Am J Gastroenterol* 2009 March;104(3):686-94.
- Lerdal A, Wahl A, Rustoen T, Hanestad BR, Moum T. Fatigue in the general population: a translation and test of the psychometric properties of the Norwegian version of the fatigue severity scale. *Scand J Public Health* 2005;33(2):123-30.
- Levy RL, Von KM, Whitehead WE et al. Costs of care for irritable bowel syndrome patients in a health maintenance organization. *Am J Gastroenterol* 2001 November;96(11):3122-9.
- Linehan MM. *Skills Training Manual for Treating Borderline Personality Disorder*. New York: Guilford Press; 1993.
- Luders E, Toga AW, Lepore N, Gaser C. The underlying anatomical correlates of long-term meditation: larger hippocampal and frontal volumes of gray matter. *Neuroimage* 2009 April 15;45(3):672-8.
- Lutz A, Brefczynski-Lewis J, Johnstone T, Davidson RJ. Regulation of the neural circuitry of emotion by compassion meditation: effects of meditative expertise. *PLoS ONE* 2008;3(3):e1897.
- Ma SH, Teasdale JD. Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *J Consult Clin Psychol* 2004 February;72(1):31-40.
- MacHale SM, Lawrie SM, Cavanagh JT et al. Cerebral perfusion in chronic fatigue syndrome and depression. *Br J Psychiatry* 2000 June;176:550-6.
- Majumdar M, Grossman P, etz-Waschkowski B, Kersig S, Walach H. Does mindfulness meditation contribute to health? Outcome evaluation of a German sample. *J Altern Complement Med* 2002 December;8(6):719-30.
- McCown D, Reibel D, Micozzi MS. *Teaching Mindfulness*. Springer Science; 2010.
- McHorney CA, Ware Jr JE, Rogers W, Raczek AE, Lu JF. The validity and relative precision of MOS short- and long-form health status scales and Dartmouth COOP charts. Results from the Medical Outcomes Study. *Med Care* 1992 May;30(5 Suppl):MS253-MS265.
- McWhinney IR, Epstein RM, Freeman TR. Rethinking somatization. *Adv Mind Body Med* 2001;17(4):232-9.
- Meerding WJ, Bonneux I, Polder JJ, Koopmanschap MA, van der Maas PJ. Demographic and epidemiological determinants of healthcare costs in Netherlands: cost of illness study. *BMJ* 1998 July 11;317(7151):111-5.
- Moher D, Schulz KF, Altman D. The CONSORT Statement: revised recommendations for improving the quality of reports of parallel-group randomized trials 2001. *Explore (NY)* 2005 January;1(1):40-5.
- Monneyya B. *Teaching and Training: Pa-Auk Forest Monastery*. 4th ed. Kuala Lumpur: Wave Publications; 2009.
- Monti DA, Peterson C, Kunkel EJ et al. A randomized, controlled trial of mindfulness-based art therapy (MBAT) for women with cancer. *Psychooncology* 2006 May;15(5):363-73.
- Moritz S, Quan H, Rickhi B et al. A home study-based spirituality education program decreases emotional distress and increases quality of life--a randomized, controlled trial. *Altern Ther Health Med* 2006 November;12(6):26-35.
- Morone NE, Greco CM, Weiner DK. Mindfulness meditation for the treatment of chronic low back pain in older adults: a randomized controlled pilot study. *Pain* 2008 February;134(3):310-9.
- Mularski RA, Munjas BA, Lorenz KA et al. Randomized controlled trial of mindfulness-based therapy for dyspnea in chronic obstructive lung disease. *J Altern Complement Med* 2009 October;15(10):1083-90.

- Nijrolder I, van der Windt DA, van der Horst HE. Prognosis of fatigue and functioning in primary care: a 1-year follow-up study. *Ann Fam Med* 2008 November;6(6):519-27.
- Norman GR, Sloan JA, Wyrwich KW. Interpretation of changes in health-related quality of life: the remarkable universality of half a standard deviation. *Med Care* 2003 May;41(5):582-92.
- Nuesch E, Trelle S, Reichenbach S et al. The effects of excluding patients from the analysis in randomised controlled trials: meta-epidemiological study. *BMJ* 2009;339:b3244.
- Nyklicek I, Kuijpers KF. Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: is increased mindfulness indeed the mechanism? *Ann Behav Med* 2008 June;35(3):331-40.
- OECD. OECD Health Data 2011. <http://stats.oecd.org/Index.aspx?DataSetCode=SHA> 2011.
- Ost LG. Efficacy of the third wave of behavioral therapies: a systematic review and meta-analysis. *Behav Res Ther* 2008 March;46(3):296-321.
- Ott U, Hölzel BK, Vaitl D. *Brain Structure and Meditation: How Spiritual Practice Shapes the Brain*. 1 ed. 2011.
- Pagnoni G, Cekic M. Age effects on gray matter volume and attentional performance in Zen meditation. *Neurobiol Aging* 2007 October;28(10):1623-7.
- Pagnoni G, Cekic M, Guo Y. "Thinking about not-thinking": neural correlates of conceptual processing during Zen meditation. *PLoS ONE* 2008;3(9):e3083.
- Perera R, Heneghan C, Yudkin P. Graphical method for depicting randomised trials of complex interventions. *BMJ* 2007 January 20;334(7585):127-9.
- Pessoa L, Ungerleider LG. Neuroimaging studies of attention and the processing of emotion-laden stimuli. *Prog Brain Res* 2004;144:171-82.
- Peveler R, Kilkenny L, Kinmonth AL. Medically unexplained physical symptoms in primary care: a comparison of self-report screening questionnaires and clinical opinion. *J Psychosom Res* 1997 March;42(3):245-52.
- Pradhan EK, Baumgarten M, Langenberg P et al. Effect of Mindfulness-Based Stress Reduction in rheumatoid arthritis patients. *Arthritis Rheum* 2007 October 15;57(7):1134-42.
- Praissman S. Mindfulness-based stress reduction: a literature review and clinician's guide. *J Am Acad Nurse Pract* 2008 April;20(4):212-6.
- Price DD. Psychological and neural mechanisms of the affective dimension of pain. *Science* 2000 June 9;288(5472):1769-72.
- Pütz P. *Hypervortisolemic disorders*. Basel: Karger; 2008. p. 39-59.
- RA Baer. *Mindfulness training as a clinical intervention: a conceptual and empirical review*. *Clin Psychol* 10 (2003), pp 125-143 2003.
- Rainforth MV, Schneider RH, Nidich SI, Gaylord-King C, Salerno JW, Anderson JW. Stress reduction programs in patients with elevated blood pressure: a systematic review and meta-analysis. *Curr Hypertens Rep* 2007 December;9(6):520-8.
- Reynolds KJ, Vernon SD, Bouchery E, Reeves WC. The economic impact of chronic fatigue syndrome. *Cost Eff Resour Alloc* 2004 June 21;2(1):4.
- Richard M. *A guide to developing life's most important skill: Happiness*. 2010.
- Rief W, Barsky AJ. Psychobiological perspectives on somatoform disorders. *Psychoneuroendocrinology* 2005 June 13;30(10):996-1002.

- Rief W, Broadbent E. Explaining medically unexplained symptoms-models and mechanisms. *Clin Psychol Rev* 2007 July 17.
- Robinson RL, Birnbaum HG, Morley MA, Sisitsky T, Greenberg PE, Claxton AJ. Economic cost and epidemiological characteristics of patients with fibromyalgia claims. *J Rheumatol* 2003 June;30(6):1318-25.
- Robinson RL, Birnbaum HG, Morley MA, Sisitsky T, Greenberg PE, Wolfe F. Depression and fibromyalgia: treatment and cost when diagnosed separately or concurrently. *J Rheumatol* 2004 August;31(8):1621-9.
- Rosendal M, Bro F, Sokolowski I, Fink P, Toft T, Olesen F. A randomised controlled trial of brief training in assessment and treatment of somatisation: effects on GPs' attitudes. *Fam Pract* 2005 August;22(4):419-27.
- Rosenkranz MA. Substance P at the nexus of mind and body in chronic inflammation and affective disorders. *Psychol Bull* 2007 November;133(6):1007-37.
- Rosenkranz MA, Davidson RJ. Affective neural circuitry and mind-body influences in asthma. *Neuroimage* 2009 September;47(3):972-80.
- Rosenkranz MA, Jackson DC, Dalton KM et al. Affective style and in vivo immune response: neurobehavioral mechanisms. *Proc Natl Acad Sci U S A* 2003 September 16;100(19):11148-52.
- Russell IJ, Orr MD, Littman B et al. Elevated cerebrospinal fluid levels of substance P in patients with the fibromyalgia syndrome. *Arthritis Rheum* 1994 November;37(11):1593-601.
- Santorelli, S. *Heal thyself: Lessons on mindfulness in medicine*. New York: Crown, Random House; 1999.
- Santorelli SF. Mindfulness-based Stress Reduction Professional Training. Curriculum Guide and Supporting Materials. 2007. Ref Type: Unpublished Work
- Sauer S, Lynch S, Walach H, Kohls N. Dialectics of mindfulness: implications for western medicine. *Philos Ethics Humanit Med* 2011;6:10.
- Sauer S, Walach H, Kohls N. Gray's Behavioural Inhibition System as a mediator of mindfulness towards well-being. *Pers and Individual Diff* 2011;50:506-11.
- Sauer S, Walach H, Schmidt S, Hinterberger T, Horan M, Kohls N. Implicit and explicit emotional behavior and mindfulness. *Conscious Cogn* 2011 December;20(4):1558-69.
- Schins A, Tulner D, Lousberg R et al. Inflammatory markers in depressed post-myocardial infarction patients. *J Psychiatr Res* 2005 March;39(2):137-44.
- Schmidt S, Grossman P, Schwarzer B, Jena S, Naumann J, Walach H. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. *Pain* 2011 February;152(2):361-9.
- Schmidt-Wilcke T, Clauw DJ. Fibromyalgia: from pathophysiology to therapy. *Nat Rev Rheumatol* 2011;7(9):518-27.
- Schröder A, Rehfeld E, Oernboel E, Sharpe M, Licht R, Fink P. A novel group CBT based unified treatment for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Br J Psychiatry* 2012;In Press.
- Schroder A, Fink P. Functional somatic syndromes and somatoform disorders in special psychosomatic units: organizational aspects and evidence-based treatment. *Psychiatr Clin North Am* 2011 September;34(3):673-87.
- Schröder A, Fink P. The proposed diagnosis of somatic symptom disorders in DSM-V: two steps forward and one step backward? *J Psychosom Res* 2010 January;68(1):95-6.
- Schroder A, Fink P, Fjordback L, Frosthalm L, Rosendal M. [Towards a unified treatment approach for functional somatic syndromes and somatization]. *Ugeskr laeger* 2010 June 14;172(24):1839-42.

## References

---

- Schröder A, Ørnbøl E, Licht R, Sharpe M, Fink P. Outcome measurement in functional somatic syndromes: SF-36 summary scores and some scales were not valid. *Journal of Clinical Epidemiology*. In press 2011.
- Schröder A, Rehfeld E, Ørnbøl E, Sharpe M, Licht R, Fink P. A novel treatment approach for people with severe functional somatic syndromes (STreSS-1): randomised trial. *Submitted* 2010.
- Schwartz RB, Garada BM, Komaroff AL et al. Detection of intracranial abnormalities in patients with chronic fatigue syndrome: comparison of MR imaging and SPECT. *AJR Am J Roentgenol* 1994 April;162(4):935-41.
- Segal ZV, Bieling P, Young T et al. Antidepressant monotherapy vs sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in recurrent depression. *Arch Gen Psychiatry* 2010 December;67(12):1256-64.
- Segal ZV, Williams JM, Teasdale JD. *Mindfulness-Based Cognitive Therapy for Depression*. 2002.
- Sephton SE, Salmon P, Weissbecker I et al. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum* 2007 February 15;57(1):77-85.
- Shapiro SL, Schwartz GE, Bonner G. Effects of mindfulness-based stress reduction on medical and premedical students. *J Behav Med* 1998 December;21(6):581-99.
- Sharpe M, Carson A. "Unexplained" somatic symptoms, functional syndromes, and somatization: do we need a paradigm shift? *Ann Intern Med* 2001 May 1;134(9 Pt 2):926-30.
- Sharpe M, Mayou R, Seagroatt V et al. Why do doctors find some patients difficult to help? *QJM* 1994;87:187-93.
- Siegel DJ. *The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being*. 2007.
- Silverman S, Dukes EM, Johnston SS, Brandenburg NA, Sadosky A, Huse DM. The economic burden of fibromyalgia: comparative analysis with rheumatoid arthritis. *Curr Med Res Opin* 2009 April;25(4):829-40.
- Simon GE, Revicki DA, Grothaus L, VonKorff M. SF-36 summary scores: are physical and mental health truly distinct? *Med Care* 1998 April;36(4):567-72.
- Simon SD. *Statistical Evidence in Medical Trials: What Do the Data Really Tell Us?* Oxford: Oxford University Press; 2006.
- Specia M, Carlson LE, Goodey E, Angen M. A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Med* 2000 September;62(5):613-22.
- Speckens AE, van Hemert AM, Spinhoven P, Hawton KE, Bolk JH, Rooijmans HG. Cognitive behavioural therapy for medically unexplained physical symptoms: a randomised controlled trial. *BMJ* 1995 November 18;311(7016):1328-32.
- StataCorp. *StataCorp. Stata Multiple Imputation*. Texas: College Station, Texas:Stata Press; 2009.
- Stenager EN, Svendsen MA, Stenager E. Førtidspension til patienter med syndromsygdomme. *Ugeskr læger* 2003;5(165):469-74.
- Streiner DL, Norman GR. *PDQ Epidemiology*. 3rd ed. USA: People's Medical Publishing House; 2009.
- Strigo IA, Simmons AN, Matthews SC, Craig AD, Paulus MP. Association of major depressive disorder with altered functional brain response during anticipation and processing of heat pain. *Arch Gen Psychiatry* 2008 November;65(11):1275-84.
- Swami Janakananda. Tremånaders sadhana retreat. <http://www.yoga.dk/Haaaa-Kursuscenter/Feriekurserne/Tremaaneders-sadhana-kurset> 2012 February 1.
- Swigris JJ, Brown KK, Behr J et al. The SF-36 and SGRQ: validity and first look at minimum important differences in IPF. *Respir Med* 2010 February;104(2):296-304.

- Taft C, Karlsson J, Sullivan M. Do SF-36 summary component scores accurately summarize subscale scores? *Qual Life Res* 2001;10(5):395-404.
- Tang YY, Ma Y, Wang J et al. Short-term meditation training improves attention and self-regulation. *Proc Natl Acad Sci U S A* 2007 October 23;104(43):17152-6.
- Teasdale JD, Segal Z, Williams JM. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behav Res Ther* 1995 January;33(1):25-39.
- Teasdale JD, Segal ZV, Williams JM, Ridgeway VA, Soulsby JM, Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J Consult Clin Psychol* 2000 August;68(4):615-23.
- Tirelli U, Chierichetti F, Tavio M et al. Brain positron emission tomography (PET) in chronic fatigue syndrome: preliminary data. *Am J Med* 1998 September 28;105(3A):54S-8S.
- Toft T, Rosendal M, Ornbol E, Olesen F, Frostholm L, Fink P. Training General Practitioners in the Treatment of Functional Somatic Symptoms: Effects on Patient Health in a Cluster-Randomised Controlled Trial (the Functional Illness in Primary Care Study). *Psychother Psychosom* 2010 April 29;79(4):227-37.
- Toneatto T, Nguyen L. Does mindfulness meditation improve anxiety and mood symptoms? A review of the controlled research. *Can J Psychiatry* 2007 April;52(4):260-6.
- Travis F, Arenander A. EEG asymmetry and mindfulness meditation. *Psychosomatic Med* 2004 January;66(1):147-8.
- Vaeroy H, Helle R, Forre O, Kass E, Terenius L. Elevated CSF levels of substance P and high incidence of Raynaud phenomenon in patients with fibromyalgia: new features for diagnosis. *Pain* 1988 January;32(1):21-6.
- van WD, Maes M. Activation of the inflammatory response system: A new look at the etiopathogenesis of major depression. *Neuro Endocrinol Lett* 1999;20(1-2):11-7.
- Vettese LC, Toneatto T, Stea JN, Nguyen L, Wang JJ. Do mindfulness participants do their homework? And does it make a difference? A review of the empirical evidence. *J Cognitive Psychotherapy* 2009;(23):198-225.
- Vuilleumier P, Chicherio C, Assal F, Schwartz S, Slosman D, Landis T. Functional neuroanatomical correlates of hysterical sensorimotor loss. *Brain* 2001 June;124(Pt 6):1077-90.
- Walker EA, Katon WJ, Jemelka RP. Psychiatric disorders and medical care utilization among people in the general population who report fatigue. *J Gen Intern Med* 1993 August;8(8):436-40.
- Wallace BA, Shapiro SL. Mental balance and well-being: building bridges between Buddhism and Western psychology. *Am Psychol* 2006 October;61(7):690-701.
- Walsh NP, Gleeson M, Shephard RJ et al. Position statement. Part one: Immune function and exercise. *Exerc Immunol Rev* 2011;17:6-63.
- Walwyn R, Roberts C. Therapist variation within randomised trials of psychotherapy: implications for precision, internal and external validity. <http://www.sagepublications.com> 2011; *Stat Methods Med Res*; published online 16 July 2009.
- Ware Jr JE, Kosinski M, Gandek B. *SF-36 Health Survey: Manual and Interpretation Guide*. Lincoln,RI: Quality Metric Incorporated; 2005.
- Ware JE, Jr., Bayliss MS, Rogers WH, Kosinski M, Tarlov AR. Differences in 4-year health outcomes for elderly and poor, chronically ill patients treated in HMO and fee-for-service systems. Results from the Medical Outcomes Study. *JAMA* 1996 October 2;276(13):1039-47.
- Ware JE, Kosinski M. *SF-36 Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: Quality Metric Inc.; 2001.

- Ware JrJ, Snow KK, Gandek B, Kosinski M. SF-Health survey: Manual and interpretation guide The Health Institute, New England Medical Center, Boston; 1993.
- Watanabe N, Stewart R, Jenkins R, Bhugra DK, Furukawa TA. The epidemiology of chronic fatigue, physical illness, and symptoms of common mental disorders: a cross-sectional survey from the second British National Survey of Psychiatric Morbidity. *J Psychosom Res* 2008 April;64(4):357-62.
- White PD, Goldsmith KA, Johnson AL et al. Comparison of adaptive pacing therapy, cognitive behaviour therapy, graded exercise therapy, and specialist medical care for chronic fatigue syndrome (PACE): a randomised trial. *Lancet* 2011 March 5;377(9768):823-36.
- Wiech K, Tracey I. The influence of negative emotions on pain: behavioral effects and neural mechanisms. *Neuroimage* 2009 September;47(3):987-94.
- Wik G, Fischer H, Bragee B, Kristianson M, Fredrikson M. Retrosplenial cortical activation in the fibromyalgia syndrome. *Neuroreport* 2003 March 24;14(4):619-21.
- Wileman L, May C, Chew-Graham CA. Medically unexplained symptoms and the problem of power in the primary care consultation: a qualitative study. *Fam Pract* 2002 April;19(2):178-82.
- Williams JM, Teasdale JD, Segal ZV, Kabat-Zinn J. *The Mindful Way through Depression*. 2007.
- Williams JMG. Mindfulness, Depression and Modes of Mind. *Cognitive Therapy and Research* 2008;(32 (6)):721-33.
- Williams KA, Kolar MM, Reger BE, Pearson JC. Evaluation of a Wellness-Based Mindfulness Stress Reduction intervention: a controlled trial. *Am J Health Promot* 2001 July;15(6):422-32.
- Wilson D, Parsons J, Tucker G. The SF-36 summary scales: problems and solutions. *Soz Präventivmed* 2000;45(6):239-46.
- Wong SY. Effect of mindfulness-based stress reduction programme on pain and quality of life in chronic pain patients: a randomised controlled clinical trial. *Hong Kong Med J* 2009 October;15 Suppl 6:13-4.
- Wood PB. Neuroimaging in functional somatic syndromes. *Int Rev Neurobiol* 2005;67:119-63.
- [www.bangor.ac.uk/mindfulness](http://www.bangor.ac.uk/mindfulness). 2011.
- [www.umassmed.edu/cfm/trainingteachers/index.aspx](http://www.umassmed.edu/cfm/trainingteachers/index.aspx). 2011.
- Yazici KM, Kostakoglu L. Cerebral blood flow changes in patients with conversion disorder. *Psychiatry Res* 1998 September 28;83(3):163-8.
- Yunus MB. Central Sensitivity Syndromes: A New Paradigm and Group Nosology for Fibromyalgia and Overlapping Conditions, and the Related Issue of Disease versus Illness. *Semin Arthritis Rheum* 2008 January 11.
- Yunus MB. Fibromyalgia and Overlapping Disorders: The Unifying Concept of Central Sensitivity Syndromes. *Semin Arthritis Rheum* 2007 March 10.
- Zautra AJ, Davis MC, Reich JW et al. Comparison of cognitive behavioral and mindfulness meditation interventions on adaptation to rheumatoid arthritis for patients with and without history of recurrent depression. *J Consult Clin Psychol* 2008 June;76(3):408-21.
- Zijdenbos IL, de Wit NJ, van der Heijden GJ, Rubin G, Quartero AO. Psychological treatments for the management of irritable bowel syndrome. *Cochrane Database Syst Rev* 2009;(1):CD006442.

# **Appendices**

## Appendix A

**Fjorback, LO. *Mindfulness*. Psykiatrifonden; 2011.**

## Appendix B

**Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials**

Acta Psychiatrica Scandinavica. 2011; Aug; 124 (2): 102-19.

## Appendix C

**Meditation Based Therapies – A Systematic Review and Some Critical Observations**

Religions and Psychotherapies. 2012; 3: 1-18.

# Appendix A

## *Mindfulness*

Lone Fjorback



# MINDFULNESS

BY LONE OVERBY FJORBACK

PUBLISHED BY THE DANISH MENTAL HEALTH FUND, 2011

## **MINDFULNESS**

1st edition, 1st printing

Copyright © 2011 The Danish Mental Health Fund (PsykiatriFonden)

All rights reserved

Mechanical, photographic or any other reproduction of this book is prohibited in accordance with current Danish copyright law.

English translation by Mark Gallacher

Revised by Lone Fjorback and Mark Gallacher

English version layout by Mai McQueen

Cover image Lars Gundersen

Illustrations: cover image extract

Layout: Ivar Nørregaard-Jensen / Og Jensen

Printed by: AKA-Print

Sound production: Adaptor D&D/Serious Radio Business

CD production: Actura Digital Publishing Aps

Music: Whitestream-Music

Editor: Marie Ejlersen

Publisher: © The Danish Mental Health Fund, 2011

Hejrevej 43, DK-2400 Copenhagen NV

Tel.: +45 3929 3909 Fax +45 3929 3915

Giro 028 5528

pf@psykiatrifonden.dk

www.psykiatrifonden.dk

March 2011

ISBN: 978-87-90420-74-1

The book can be ordered from The Danish Mental Health Fund at [www.psykiatrifonden.dk](http://www.psykiatrifonden.dk) or purchased in bookshops.

The Danish Mental Health Fund's mission is to provide information to the public on mental health issues, support research and improve the well-being of people with mental disorders.

The views given in this book are those of the author and do not necessarily reflect the views of the Danish Mental Health Fund.

# INTRODUCTION

<b>Preface</b>	5
<b>Introduction</b>	6
<b>Week 1 – Why mindfulness?</b>	11
<b>Week 2 – Awareness</b>	32
<b>Week 3 – The now</b>	65
<b>Week 4 – To be stuck</b>	83
<b>Week 5 – Thoughts</b>	103
<b>Week 6 – Communication</b>	124
<b>Week 7 – Contemplation</b>	140
<b>Week 8 – Change</b>	148
<b>Week 9 – On-going practice</b>	158
<b>Epilogue</b>	168
<b>Literature</b>	170
<b>Exercises</b>	172



# PREFACE

I have had the pleasure of teaching Lone Fjorback in our Center for Mindfulness Oasis professional practice programs for a number of years, and feel great confidence in her capacity for communicating the essence of mindfulness in her own teaching. This book will be a gift for anyone who wants to understand and practice mindfulness, in order to find healing in the middle of a busy and stressful life.

Lone has been practicing mindfulness personally for over twenty years, and has been committed to finding a way to bring her practice into her work as a physician, psychiatrist and researcher. She teaches not from abstract ideas and theories, but from her deep integration of this practice into every aspect of her life. Her presence is compassionate and straightforward, kind and direct. I recommend this book to anyone who wishes to experience Lone's unique approach to teaching mindfulness with heart and a clear mind.

*Melissa Blacker, MA, Director, Oasis Professional Education and Innovation Associate Director, Stress Reduction Program Center for Mindfulness in Medicine, Health Care, and Society, University of Massachusetts Medical School, USA.*

*The original meaning of doctor is teacher, and patient means to bear suffering. So a doctor can teach a patient to bear suffering, which is an original definition of mindfulness. In practice, mindfulness is an awakening and being your own best friend. Yoga and mindfulness meditation can unite the body, thought and feeling, so that we say yes to life, right now.*

Lone Overby Fjorback

## INTRODUCTION

Life is beautiful. And life is terrible. We all have our struggles. We all share in common the desire to be happy, to love and be loved. But as individuals we experience unique problems and challenges. Things that get on your nerves and things that get on my nerves are not the same. It's a peculiar fact that people are liable to circumvent or get hung up on the same issues over and over. Sometimes for whole generations.

I hurt most when I see unhappy people. It is a strength and a weakness. A strength because I truly want to help others by increasing their joy and diminishing their pain. A weakness because when I fail, a sense of powerlessness opens old wounds.

Yoga, meditation and mindfulness have healed those wounds. I learned yoga and meditation at the Scandinavian Yoga and Meditation School. I participated in my first meditation course in 1989 with the school's founder, Swami Janakananda. Immediately after this, I com-

pleted my first three-month retreat. I lived at the Scandinavian Yoga and Meditation School in Aarhus for four years and I also taught there.

When I practise yoga and meditation I enter a state of increased awareness. I become more present in the now, without having to think about it. I become happier, purposeful and free of apprehension. I am cleansed by yoga and meditation and this allows me to experience the world as it happens around me, rather than be trapped in my own thoughts, feelings and bad habits. I become more empathetic and forgiving of other people, of myself.

I have seen other people share this experience in the countless number of classes I have held or participated in. People arrive in surly and obstinate moods. But if they give themselves enough time, if they stay sitting long enough, something happens. Something or other lets go and a person emerges who is peaceful, awake and attentive. A person who is here and now. I later learned that this is called a state of mindfulness.

I want to help others with this process. I am a doctor, a psychiatrist and a cognitive therapist. I have learned how to use yoga and meditation as part of patient treatment at the Center for Mindfulness in Medicine, Health Care, and Society at the University of Massachusetts Medical School in the USA. The school was founded by professor Jon Kabat-Zinn.

It is clear that when I work in the hospital that in some cases thoughts, feelings and physical symptoms lead to illnesses such as anxiety, depression and functional disorders. The latter being an illness where the body exhibits physical symptoms.

Many people suffer and it is absurd that we create so many problems for ourselves. We forget to value the life

we have. And none of us escape the major and serious problems associated with the fact that everything changes, nothing remains and we all must die.

Without doubt, a person can lead a very fine life without yoga, meditation or mindfulness. But yoga, meditation and mindfulness is my speciality and I want to pass on my expertise. The concepts behind mindfulness are not something I, Jon Kabat-Zinn or Swami Janakananda have concocted. They are based on ancient knowledge found in most cultures and they attempt to answer the question: How can I live and be me without creating more problems than which already exist?

In my current PhD, I am studying the impact of Mindfulness Therapy on patients with severe chronic stress disorders. Almost 100 patients have now undergone Mindfulness Therapy and this book is based on the course material that was used for the treatment. We know that mental health can be achieved by practice just as physical health can be achieved by exercise. And we know we can learn to take responsibility for our own well-being. This book should be used as a practical guide to how this can be done.

One of the Mindfulness Therapy participants explained that he had become extremely happy when he learned that he had been selected to undergo treatment. He had been ill for about five years and he said it felt as if he was a drowning person at sea who had suddenly been pulled into a lifeboat. What surprised him though was that he was immediately given a pair of oars and told he had to row himself to shore. To take responsibility for your own life is a task no-one else can do for you. We arrived alone and we depart alone. It is our responsibility to get the best out of that reality. When life does not go the way we expect it to or the way we want it to, we easily blame ourselves.

I hope that the state that you are currently in can be used to motivate you do something else. Mindfulness is based on the approach that there is more right with you than there is wrong, despite the challenges you face or the problems you are experiencing. Many people tend to think that there is something wrong with them as a person when they suffer. But suffering, like joy, is an inescapable part of life.

Mindfulness practice is not a miracle cure. It is mental practice that strengthens your ability to accept life and to exist in the present. Mindfulness requires persistent practice in the same way you have to practice for a marathon, but unlike physical practice, mental practice does not have limitations. As the practice progresses it becomes clear to us how often we make things difficult for ourselves. You might be wondering how long does the practice of mindfulness take? It's a life-long practice.

The Mindfulness Therapy course consists of a single 3.5 hour meeting, held once a week for nine weeks. During the course we will have trained our ability to observe our bodies and minds. First we practice in how to be in contact with our bodies, then contact with our thoughts, emotions, behavioural patterns and relationships. Gradually we work to gain greater acceptance. We start every meeting with practical exercises followed by a dialogue about the specific experiences during the exercises. During the course the participants will learn how symptoms develop into illnesses and how the way we perceive symptoms and illnesses impacts our health. Participants also carry out 45 minutes practice at home every day.

This book is based on the Mindfulness Therapy course and contains a chapter about the techniques that can be specifically used to tackle stress, anxiety, depression, OCD, pain and functional disorders. All of the instruc-

tions and directions are voluntary; you sense what is best for you.

You can make an individual programme or a group programme. I urge you to follow the programme exactly. A period of daily practice is important but you do not have to complete the course in the assigned nine weeks. You can take longer if you wish. As you read a chapter you may choose to practice with the daily exercises proposed in that chapter. When you are ready, you can then read the next chapter and work with the daily exercises. You can also read the book from cover to cover and carry out the exercises at a later point. Chapter 7 is set apart from the other chapters, because it is written as a mindfulness retreat, i.e. a whole day you have set aside to immerse yourself in the exercises. You can also read the book from cover to cover and carry out the exercises at a later point when you have more time and when you feel you are ready.



= EXERCISE  
AVAILABLE  
ON CD

WWW



= EXERCISE  
AVAILABLE  
ONLINE

I am very grateful to my family, friends, patients, Scandinavian Yoga and Meditation School, Centre for Mindfulness and the Research Unit for Functional Disorders, Aarhus University Hospital for the opportunity to learn and share this work, which has made a significant difference in my life. The book also includes a CD with guided versions of the book's exercises. These exercises are also available at [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness). Exercises in the book which are also available on the CD/online are marked with a CD or on-line icon in the margin.

*Lone Overby Fjorback*

# WEEK 1

## AGENDA:

- WHY MINDFULNESS?
- SMALL MEDITATION
- AWARENESS, MEDITATION, NOW
- ONE STEP AHEAD OR ONE STEP BEHIND
- JON KABT-ZINN AND MINDFULNESS-BASED STRESS REDUCTION
- MINDFULNESS-BASED COGNITIVE THERAPY
- MINDFULNESS THERAPY
- MEDITATION: WHY MINDFULNESS?
- YOGA: MOUNTAIN POSE
- THE RAISIN EXERCISE
- BODY SCAN
- DISCUSSION ABOUT BODY SCAN
- IMPORTANT ATTITUDES AND APPROACHES
- SYMPTOM REGISTRATION
- HOMEWORK

*Don't turn your head. Keep looking at the wounded place. That's where the Light enters you.*

Rumi

*The wounded place is like a stone. Some of those who came before us went around it, while others fell over. We can now place it in the right place and make the way easier for those who have yet to come. Working with mindfulness involves conquering happiness, discovering the magical moments and gaining the strength to be there where the light can enter.*

Lone Overby Fjorback

## WEEK 1

### WHY MINDFULNESS?

Mindfulness practice strengthens your ability to exist in the present and to accept yourself and others. Mindfulness practice can help if you want to be more present in the now, and if you want to learn to be yourself in a good and constructive way – also when life is difficult. Mindfulness practice can make it easier for you to better administer your time, and to focus on what you think is important.

Mindfulness is all about waking up to life, the life you have right now. Not the life you have already lived or the life that may arrive in the future. But waking up to life in the present moment, in a way where you greet yourself affectionately.

Mindfulness has roots in Buddhism. According to Buddhism, humanity's craving for eternal happiness and its simultaneous attempts to avoid pain, leads to frustration, suffering, anxiety and depression. We feel pain because nothing lasts. We all become ill, we decline and we die. And the mind tricks us into believing that life is happening in a much nicer place somewhere else.

### **SMALL MEDITATION**

Sitting in a comfortable sitting position, ideally with your back straight, free of the chair's backrest if you prefer, you may want to look around the room. When you are ready, you can either close your eyes or focus at a point in front of you. Notice how your body breathes. Breathe naturally. Do not alter your breathing. Your body will breathe for you. It has done this your entire life. The only difference is that you now feel it. Feel the air enter and exit from your body. See if you can let everything else fall away and stay focused on your breathing. Every time you find that your attention has drifted to somewhere else, refocus on your breathing. Sit like this for 5–10 minutes.

What did you experience? Were you focused on your breathing all of the time?

---

---

---

---

---

---

### **Awareness**

Mindfulness practice allows you to work with awareness. You notice what happens. And you accept it. In the small meditation you may have noticed that it is not always pleasant thoughts or feelings that arise. Mindfulness means accepting that you see what there is. This does not mean you necessarily like what you see,

Mindfulness practice strengthens your ability to exist in the present and to accept yourself and others.

but whatever you see; accept. In the small meditation shown above, you practice your concentration. You might find it difficult but you cannot do anything wrong. When you realise your concentration is somewhere else, all you have to do is refocus.

### **What is meditation?**

Meditation is the act of consciously concentrating. It originated in India but it is practised in many cultures. Nordic peoples once practised “the darkening”, where they sat still during the sunset. Christian tradition shares many of the maxims that are found in Buddhism, e.g. that you should not worry because “each day has enough trouble of its own”. When you are very still, for example during meditation, you discover your mind generates a constant stream of judgemental thought. How good life would be if only ...

### **Now**

Mindfulness is being aware of the now. But being in the now isn't much fun if you use the actual moment to complain about things: “Why does my neck hurt?”, “Why do I have to use an hour to drive to work for a job I didn't choose?” or “I just need to get through this year and maybe the next.” There are many examples. This is just the way the mind works. The mind constantly throws up ways in which things could be better. Mindfulness is about being in the now without being judgemental. Many people constantly judge themselves or the situation they are in: The stupid computer, the irritating weather, the ridiculous lack of time, ambitious colleagues, thankless children, selfish parents ...

Mindfulness is about being part of the present moment, in a way where you treat yourself with love and affection. To be in the now is a fundamental part of Buddhism, Christianity, Hinduism, Islam, Judaism and Taoist teaching. In other words, meditation does not turn you into a Buddhist.

## One step ahead or one step behind

Many of us fail to take proper care of ourselves. We alternate between crashing around, doing too much or becoming completely drained of energy. We constantly fill our lives with content; food, talk, hectic activity, work, TV – anything to avoid the pain that is also part of being human.

You can test how long you can sit still without scratching your neck, turning around or doing something or other. See how long you can sit still by yourself. You will quickly discover that thoughts arise – like why even bother to sit still? You may discover a basic restlessness, but if you sit long enough, you may also discover a basic spaciousness or acceptance. Impatient thoughts or restlessness are not wrong. But many of us are always one step ahead or one step behind, and we repeatedly miss the precious moment in our lives.

Mindfulness means waking up to life, right now. A lot of people live in the future or the past. We speculate over the things that have happened or we worry about what may happen. We plan and fantasise about how life could be or look for someone to blame for the things that happened and the way they happened. And we usually end up blaming ourselves. It is easy to be part of the now when life is exactly the way you want it. But life is almost never exactly the way we want it. In fact, sometimes when our lives might be considered perfect, we become bored and long for something else.

Mindfulness is about being in the now – whether you like it or not. When you realise you are not in the now, you can use your senses to consciously bring your focus back to it. You can hear, taste, see, feel or smell the moment that is now. Or you can experience the thoughts running through your head, the feelings you have and what is happening in your body. You can experience the moment in a way where you embrace

Many of us are always one step ahead or one step behind, and time and again we miss the precious moment in our lives.

yourself with kindness. Do not just obey thoughts and feelings, but observe them with warmth and ease. When you have a good relationship with yourself, you often stop repeating the same old routines. You take care of yourself and are able to see the richness of every single moment.

### **Jon Kabat-Zinn**

In 1979, biologist and researcher Jon Kabat-Zinn taught anatomy at the University of Massachusetts Medical School. He was an ardent practitioner of yoga and meditation and he thought that what he had learned through yoga and meditation could benefit patients. He developed the Mindfulness-Based Stress Reduction (MBSR) programme and founded the Center for Mindfulness, a stress clinic based at the University of Massachusetts Medical School (UMASS), in Massachusetts USA. MBSR uses mindfulness meditation to manage stress, pain and chronic illness. Jon Kabat-Zinn describes MBSR in detail in his book *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness* (Delta, 1990). The title refers to Nikos Kazantzakis' novel *Zorba the Greek* (originally called *Alexis Zorba*), which was made into a film by Michael Cacoyannis in 1964. In the novel *Zorba* is asked if he has been married. He answers: "Wife, house, children ... the whole catastrophe!"

In other words, life consists of more than just happiness. Everyone experiences elements of 'catastrophe'. For a lot of people it is a regular experience. The Mindfulness-Based Stress Reduction (MBSR) programme is an intensive course in mindfulness meditation. Unlike ordinary yoga and meditation classes, course participants are encouraged to talk about what they experienced during the meditation. This helps the individual to realise that he or she was not the only one who felt pain, boredom, shame, anxiety, etc. Scientific studies have shown that the programme can reduce symptoms

of stress, anxiety and depression and can increase course participants' physical and psychological well-being,

### **Mindfulness-Based Cognitive Therapy**

At the end of the 1990s, a group of psychologists studied at Kabat-Zinn's Center for Mindfulness. They developed an independent programme called Mindfulness-Based Cognitive Therapy, for the prevention (non-treatment) of depression in people who had previously suffered from clinical depression.

Mindfulness-Based Cognitive Therapy is described in "The Mindful Way through Depression Freeing Yourself from Chronic unhappiness"(Guildford Press 2007). Scientific studies have shown that the programme can reduce the risk of depression recurring by 50%, in patients who had previously experienced three or more episodes of depression. These results have meant that the National Institute for Health and Clinical Excellence (NICE), which is part of the British National Health Service, now recommends Mindfulness-Based Cognitive Therapy for the prevention of recurring depressions (NICE, October 2009).

### **Mindfulness Therapy**

As part of my PhD, I have developed and tested a therapy programme called Mindfulness Therapy for Bodily Distress Syndrome. Bodily Distress Syndrome describes physical symptoms which do not result from any known physical or psychological disorder. Symptoms range from well-known general symptoms such as periodic headaches or shoulder pain to chronic long-term illness. Individuals may be diagnosed with fibromyalgia, chronic fatigue syndrome, chronic whiplash, chronic tennis elbow, chronic stress, chronic pain, burn-out or other symptoms that do not have a medical explanation. I chose to use the term Mindfulness Therapy because it is a treatment that doctors can offer to their patients. A lot of evidence suggests that yoga and mindfulness can

help to remedy imbalance in the nervous system which may otherwise be the source of many of the symptoms.

Mindfulness Therapy follows Jon Kabat-Zinn's programme but also includes teaching in and the management of Bodily Distress Syndrome. The initial conclusions of the PhD work show that patients are willing to actively work to improve their health if they just learn the appropriate techniques and the programme can reduce physical symptoms, pain and hypochondria. Many patients say the programme has provided them with the knowledge of what is wrong with them and what they can do. Furthermore, meeting others with the same disorder was a positive experience. The patients felt they were understood and respected, and they had summoned the courage to manage symptoms in a new and non-judgemental way.

**MEDITATION: WHY MINDFULNESS?**

Sitting in a comfortable position, when you are ready you can either close your eyes or look at a point in front of you. Focus your attention on how your body breathes. After a few minutes of focusing, ask yourself: Why am I reading this book? Ask yourself the following questions several times: What is it I want to work on? What do I want to change? What do I want for myself? You can sit like this for 5–10 minutes. Try to be open to the answers that arrive.

If you wish, write some of the answers down.

---

---

---

---

---

### **MOUNTAIN POSE**

Stand (or sit) with your feet positioned in parallel, with your knees slightly bent (so they are not overstretched). Tilt your hip slightly forward, chest pointing upwards and your head balanced on your spinal column. If you imagine a fixed weight is hanging from your tailbone, it will point down to the ground. Feel the way your body breathes. Lift your arms or shoulders, perhaps just a little, and feel your breathing. Lower your arms or shoulders again. Focus on them as you do so. Execute a sideways bend on each side. As you very slowly and carefully bend, notice how the side of your body stretches. Return to your starting position and feel your breathing.



WWW



### **Yoga**

Very young children move around with perfect poise. When they stand or sit they support the spine's natural curve, which in turn provides plenty of space for the stomach and allows for free and unhindered breathing. In Western cultures the spines of the majority of five and six-year olds have already started to compress, shutting their stomachs in. They begin to hide themselves and forget their natural dignity. Posture affects the mind and yoga is an excellent way of maintaining contact with the body.

The mountain posture exercise that you have just carried out aims to teach you how to have natural posture and how to create space for your body. You can do it standing up or sitting down. Some yoga instructors tell their students to imagine it as if they were a monarch who is sitting or standing.

In Western cultures the spines of the majority of five and six-year olds have already started to compress, shutting their stomachs in. They begin to hide themselves and forget their natural dignity.

### **RAISIN EXERCISE**

Taking a single raisin and looking at it as if you had never seen one before, become conscious of your impressions about the raisin. Does it remind you of something? What does it make you think about? See if you can describe your thoughts about the raisin. The raisin did not just appear of nowhere. It has a history. Be conscious of any thoughts or feelings associated with the raisin. What do you feel in your body? Can you describe the raisin without thoughts or feelings? What do you see? Bring the raisin to your ear. Is there a sound? Touch the raisin to your lips. Feel the raisin on your lips. Place the raisin in your mouth. Notice if you feel you want to chew it. Feel the raisin in your mouth. Roll it on your tongue. Bite softly on the raisin and experience its taste. Swallow the raisin and be conscious of your body, which is now one raisin heavier.

What did you experience? Do you normally eat in this fashion?

---

---

---

---

### **The raisin exercise**

The raisin exercise is an eating meditation where you consciously concentrate on eating. Many of us forget to taste and experience food because their attention is elsewhere. You can have a completely different and even more intense eating experience if you consciously concentrate on the food you are eating. You may think focussing or not focussing on a raisin is a trivial matter. But a lot of us go about our day and forget to see our children or our loved ones or hear what they are saying. It is a curious and serious matter that we do not experience our most beloved ones.

## BODY SCAN

Lie on your back with your arms at your sides, your legs uncrossed, your feet splayed apart. If you do not like this position, choose another one that you prefer. Your body's position is not the most important factor here. The energy you put into the exercise is more important. Make sure you are wearing loose-fitting and comfortable clothing, especially around the stomach area. Breathe freely and naturally. View the exercise as an opportunity to receive positive energy and attention. This is your gift to you, where you are completely accepting of who you are. Do not try to change anything. Just give your body as much attention as possible. Be curious about your experience. See your thoughts and feelings. Try to let go of judgemental thoughts, and feel yourself and your body as precisely as it is. Let yourself be you, and to feel what you feel. And also when you are not feeling anything. Start with your breathing. Feel your breathing at your stomach. Precisely as you examined the raisin, focus on your breathing at your stomach. If you wish, place your hand on your stomach and feel your stomach rise and fall as you breathe in and out. Lay your arms by your sides again. Now move your focus to the toes of your left foot. Feel the big toe, little toe and toes in between. You may find it helps to imagine that you are breathing in all the way down to the toes of your left foot. And you can take a deep breath in and let go on the exhalation. Then you can move your attention on to the sole of your left foot. In the same way, you scan your whole body. The top side of your left foot, ankle, lower leg, knee, thigh, right foot, leg, pelvis, lower back, middle of your back, upper back, stomach, thorax, both arms simultaneously, fingers, palms, back of your hands, wrists, forearms, elbows, upper arms, shoulder, throat, neck, face, top of the head, side of the head and back of the head. Finally, be aware of your whole body at once.

What did you notice? What was your experience? Were you aware of your thoughts and feelings? What did your feel in your body? If several of you are doing this exercise, discuss your experiences with each other.

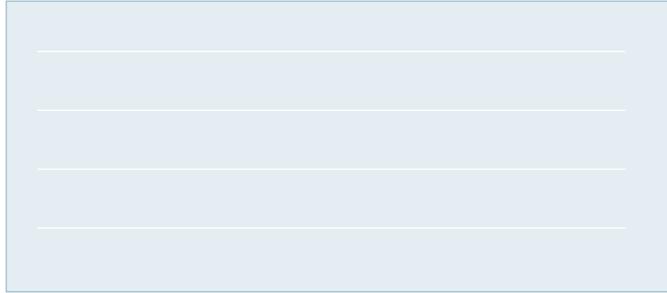
---

---



WWW





Body scan is a meditation exercise, where you direct your attention to different parts of your body. You scan your body.

### **Body scan**

Body scan is a meditation exercise, where you direct your attention to different parts of your body. You scan your body. It is a way of becoming comfortable in your body. You can learn the limits of your body by being aware of your body right now. Sometimes you find calmness, sometimes not. If there are parts of your body that you consider too hurtful, you can instead concentrate on your breathing. It is best that you stay awake, even though this can be quite a challenge. To stay awake during the meditation open your eyes, lift a forearm or even stand up.

#### *Invitation*

*Come, use your senses  
knowing your thoughts and  
feelings, and sense who is  
doing so.*

*Discipline who is doing so to  
face reality always back to  
this moment.*

*Make this moment into an  
experience see it without  
the usual filter  
and you will know your  
way.*

Lone Overby Fjorback

## Important attitudes and approaches

The art of mindfulness practice is to let the exercise work on you. The biggest prejudice against meditation is that you sit still, feign happiness, are self-centred and do not care about the world around you. Sooner or later you will experience restlessness, pain or unpleasantness during the exercises. But if you sit long enough you will also find a basic spatiality. In meditation (as in life) you will experience restlessness, boredom, anxiety, pain, sorrow, happiness, intense joy, irritation, anger or drowsiness.

A lot of people search for theoretical knowledge about the exercises when they first try mindfulness meditation. A lot of people ask questions like “What’s it all about?”, “Why should I do it?” or “How do I do it?”. Your attitude is very important. If you are too negative you may give up very quickly and miss the opportunity to gain new knowledge or new methods to improve your well-being. If you are too positive and your expectations are too high, you may become disappointed because your problems failed to instantly disappear. The best result is achieved if you treat the exercise with natural scepticism. Follow the instructions as well as you can. And wait until the whole programme is completed before you judge whether it worked or not. Mindfulness practice will help you to be non-judgemental, to have patience, to have confidence, to have a fresh mind, to be non-striving, to be accepting, able to let go, to make decisions and to have self-discipline.

### TO BE NON-JUDGEMENTAL

We have a constant stream of conscious and unconscious judgemental thought running through our heads. Judgemental thought is thought where you criticise yourself, others or your situation for being the way it is.

The mind constantly proposes reasons for why the present moment is not good enough. Your mind creates sto-

The mind constantly proposes reasons for why the present moment is not good enough.

Perhaps you are often so wrapped up in your own thoughts that you miss out on the richness of life.

ries about others, for example, “She’s like that because ....” Or you compare your situation with others, for example, “Why don’t I have perfect health?” The mind generates thoughts about what you like or dislike, what you want or do not want. This may be about something you seek or wish to avoid, materially or physically, or the feelings or thoughts you want to have or want to avoid. You might think: “I should be happy. I am a thankless person because I’m never completely happy.”

Your thoughts easily pull you down if you do not treat yourself with affection. Instead of trying to eradicate the world of irritating moments, you can learn to see your thoughts and accommodate your feelings and experience the world. You can open your eyes to the world that is right now instead of being lost in a fantasy. It is not an easy task but you can start by noticing when you are having judgemental thoughts. Do not judge yourself because you have judgemental thoughts. Just be aware of them. For example, when you are sitting still in a meditation, after a while your thoughts may become quiet and you may experience another consciousness.

### TO HAVE PATIENCE

A lot of people say they do not have the patience to meditate. But the practice actually teaches you how to be patient. During mediation it is normal that you start to think about when the session will be over. If you think time is always racing ahead of you, then meditate and you will experience time as if it is standing still. In meditation nothing happens and that is the whole point. You learn to sit by yourself where nothing happens, and gradually you accept this.

A lot of people want to move faster than they are able to. But in mindfulness practice you must not force anything. You have to progress at your own tempo. Allow yourself to have the experiences you have. Be open in

each present moment. Completely accept each moment as if it were the changing of the seasons, which like the moment you have no control over. You can give yourself to meditation and try to be as close to your own experience as possible. You can have the same attitude, for example, in your everyday life. Give yourself to your everyday life and experience as much as possible.

### TO HAVE TRUST

Try as much as possible to have trust in yourself and in your feelings in meditation. Every time you attempt to copy others you will end up moving in the wrong direction. The only thing you can hope for, is to be yourself. You are practicing to take responsibility for who you are. You are learning to listen and to trust yourself. You are learning to give yourself time to listen – and not just to act on the first impulse.

### TO HAVE A FRESH MIND

Having the ability to notice the small things in everyday life means a lot. Perhaps you are often so wrapped up in your own thoughts that you miss out on the richness of life. When was the last time you looked up at the stars in the night sky? Or really listened to another person? The mind tricks you into thinking you know more than you do. “I don’t have to look up. I know what the stars look like,” you may think. Or: “I don’t have to listen to what my partner says. I’ve heard it all before.” Meditation can help you to see everything as if it was for the first time. When you have a fresh mind you are open to positive experiences. You free your mind so you can see the world, instead of only seeing what you expect to see.

Psychiatrist and meditation instructor Mark Epstein, gives an example of how you can miss out on a really huge moment in his book *Thoughts Without a Thinker* (Basic Books, 2004). He described that after a meditation, he looked at his two-month old daughter and she

Meditation requires a lot of effort. Meditation is about doing nothing. The sole aim of meditation is that you be yourself.

smiled at him. It was the first time that he had noticed her love coming back. Up until then he had been too occupied in proving his efficiency at being a good father.

### TO BE NON-STRIVING

Meditation requires a lot of effort. Meditation is about doing nothing. The sole aim of meditation is that you be yourself. Perhaps you are thinking: "I am already myself." Try less and be more. You must not try to change anything or enter into a specific state. Experience and accept where you are right now. This does not mean that you may not have any ambitions or that you cannot be envious of what others do or achieve. But thoughts are not truths and you can just as well accept your thoughts (and also your envy) and let them pass without making them into a big deal. You can neither control your surroundings nor how life turns out but you can learn to accept the present moment, with love and affection for yourself.

### TO BE ACCEPTING

Acceptance frequently come after you have experienced denial, anger and grief. Naturally, there are stages in a healing process when you come to terms with experiences and with things as they are. At the beginning of great life changes we usually enter denial, for example, with illness, redundancy, divorce or other forms of loss. This is followed by anger that it is us who have been struck low, and below the anger, lies grief. Acceptance means that we see things as they are, feel the anger and grief and concede: It is what it is. The most important question is: And what now?

Many of us use energy to deny or to oppose the facts. When you complain about the weather you know that – despite the facts of climate change – you have no influence over the weather. Like a lot of other things you are forced to accept the weather.

On the other hand, acceptance doesn't mean you sit in the rain and do nothing. But it is only when you have really accepted a situation that you can begin to be able to relate to it constructively. You can relate to yourself and the challenges life brings in an affectionate and constructive way.

## TO LET GO

Many of the great meditation instructors say that the most important thing in meditation is to learn to let go. You can let go when you discover your thoughts are revolving like a needle stuck in a groove. You do not have to hold onto your thoughts. Permit yourself to let your thoughts be.

Every time you fall asleep, you let go, so the feeling will be recognisable. But you cannot force yourself to fall asleep. You can only create the right conditions for sleep, and sleep will arrive on its own. Every time we exhale, we also let go. Many people are burdened with years of emotional pain, without realising that they can let it go.

Many people are burdened with years of emotional pain, without realising that they can let it go.

## TO MAKE A DECISION AND TO HAVE SELF-DISCIPLINE

When I am mindful, I am living my life. I do the things I have to do, the things which have meaning for me without making it into a big deal. I always take things lightly and do not easily get hung up on old issues or my own limitations. I complain less about my life. I see the possibilities that exist and I know how to take care of myself, also when my world breaks down now and then.

Mindfulness practice requires 45 minutes of your energy or motivation, at least six days a week. You do not have to like meditating, you just have to do it. Mindfulness can be a way of being which you can use in your everyday life. But you must determine if you are ready

for mindfulness practice. Choose what is important for you and that which puts you in a state where you can be yourself in an affectionate and constructive way.

Choose your own personal goals and decide what is important.

### **THE HARE AND THE TORTOISE**

Even the fastest suffers defeat  
if he doesn't move his feet!  
Let us see what we can learn from  
the hare and the tortoise's run:  
The tortoise said to the hare:  
"Bet you I can finish the next three  
miles before you can. Want to take  
my bet?"  
"Ha!" cried the hare and struck  
the tortoise on the shell.  
"You're talking utter crap.  
You're slower than the slowest.  
I'm faster than the fastest!  
If I accept you'll become a laughing  
stock!"  
"But why don't we make the bet  
anyway?" said the tortoise and stuck  
out a foot.  
"Well hell. OK," thought the hare.  
"So long fool!"  
The hare tore over the hill in the blink  
of an eye.  
It had all the time in the world.  
So it ran and teased the hunters'  
dogs. They tried to catch the lightning-fast  
hare. It hid in the undergrowth.  
It knew winning the race was a piece  
of cake. So it grazed in the heath and  
played in the sun. It rested in the shade  
and even took an afternoon nap, as it  
stretched out on its back.

The competition was much too easy  
as the tortoise slogged along.  
It moved forwards slowly with a lot of  
difficulty and had to stop for air.  
But the hare thinking victory was easy,  
lay on its back, drowsy and tired.  
It rested a day and a night and used  
the time to mess around.  
It ate spinach and drank from the spring  
knowing for certain it would win.  
It thought: "How much ground has the  
tortoise covered?  
I'll beat him for sure."  
But the hare was wrong. The tortoise  
had crossed the finishing line and won.  
The tortoise said: "If you never get going  
you never win.  
No matter how fast you run!  
You sped off like a bat out of hell.  
I toiled every day. And I carried a shell!"

*Jean de la Fontaine*

Write down your personal goals.

---

---

---

Write something positive about you.

---

---

---

### **Symptom registration form for the week**

If there are specific things you want to work with, for example, symptoms of anxiety, stress, obsessive thought or pain, you can note the symptoms down when they occur and rate their severity in the registration form for the week (see page 31). You may also want to work on a bad habit. If I feel that I have been rejected, I often feel insulted. So I behave in a manner that means I am entirely rejected. It is a bad habit that I frequently have to work on.

In the form, each day is divided into four periods: morning, afternoon, evening and night. Write down what you did and the degree of severity of your symptoms on a scale of 0 to 10.

For example: Monday morning: Work busy, already headache 5. Afternoon: Slept all afternoon, headache 3. Evening: Really quiet, relaxed at home, headache 1. Night: Sleep, woke up sometimes but no headache.

Frequently, you think you know all about your symptoms or the things that irritate you. But often, you only know that the symptoms or problems are insufferable.

The form will help you to have an overview of your symptoms. To begin with, you must not try and alter your symptoms. You just need to register when you have them and their severity.

### **Main points in week 1**

- Whatever your problem is, there is more right with you than wrong with you.
- This book will help you to work on your problems.
- Small steps and perseverance are the way to move forward.
- Concentrate on the now. It is the only point in time where you can learn, grow or change some thing.
- To begin with, following the mindfulness course can be stressful.

#### PROPOSAL FOR DAILY PRACTICE IN WEEK 1

- Carry out a body scan meditation at least six times a week
- Eat a meal in a mindful way
- Complete the symptom registration form for the week



# WEEK 2

## AGENDA:

- BODY SCAN
- YOGA
- DISCUSSION ABOUT BODY SCAN
- DISCUSSION ABOUT REGISTRATION OF SYMPTOMS
- THERE WHERE THE LIGHT ENTERS
- THOUGHTS CONTROL BEHAVIOUR
- WAYS OF LOOKING
- THE EIGHT LIES
- SOMETHING PSYCHOLOGICAL
- PHYSICAL AND PSYCHOLOGICAL PAIN ARE INTERRELATED
- PAIN
- STRESS AND BODILY DISTRESS SYNDROME
- ANXIETY
- HEALTH ANXIETY
- DEPRESSION
- OBSESSIVE THOUGHTS
- SLEEP
- REHABILITATION
- SLOW THINGS DOWN AND FEEL WHERE YOU ARE
- SHORT MEDITATION
- HOMEWORK

*Reality is not the problem.  
The problem is that we only see a small part  
of reality through a personal filter. And as-  
cribe a meaning to what we see, a meaning  
that causes us to suffer.*

Lone Overby Fjorback

## WEEK 2 AWARENESS

Week 2 starts with a long body scan and five minutes of yoga. The body scan exercise is available on the CD at the back of this book. A short version of the exercise is available at [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness).



WWW

### **BODY SCAN**

Lie on your back with your arms at your sides, your legs uncrossed, your feet splayed. If you do not like this position, choose another one that you prefer. The energy you put into the exercise is more important than your position. Make sure you are wearing loose-fitting and comfortable clothing, especially around the stomach area. Breathe freely and naturally. View the exercise as an opportunity to receive positive energy and attention. This is your gift to you, where you are completely accepting of who you are. Do not try to change anything. Just give your body as much attention as possible. Be curious about your experience. See your thoughts and feelings. Try to let go of judgemental thoughts. Allow yourself to be who you are and to be aware of what you are feeling. And also when you are not feeling anything. Begin with your breathing. Feel your stomach move as you breathe. Precisely as you examined the raisin, focus on your breathing at your stomach. If you wish, place your hand on your stomach and feel your stomach rise and fall as you breathe in and out.



## To feel the body

I have heard a lot of people make these sorts of remarks after they have carried out body scans for the first week of the mindfulness course:

"I just don't know how to do it."

"It made my body become really painful."

"Staying still really stressed me out."

"I can't even feel my body."

"I fell asleep straight away."

"What is the point of all of this?"

"My body relaxes in a completely new way."

A lot of people think they perform body scans incorrectly, because they do not achieve calmness or relaxation. Other people, perhaps only once, experience a kind of tranquilly that is new to them and they become disappointed when they cannot repeat the experience. There is no correct or incorrect way of carrying out a body scan. The aim of a body scan is to feel the body, as accurately as possible. In this fashion, you learn to know your body. For example, it is important to discover when your body is stressed or tense and to let your body become calm by itself. Trying too hard to relax or to have specific experiences, can have the opposite effect.

## Staying awake

Another and frequent problem people experience, is staying awake during the body scan exercise. In general, a lot of people do not get enough sleep, which makes staying awake much more difficult. Choose a time when you are more likely to stay awake. I prefer body scanning in the morning, when I am freshest.

To carry out a body scan is as if you are awake while you sleep. You let go in the same way as you do when you fall asleep. Frequently, thoughts arise that slip into a dream and so you are about to fall asleep. You must always bring your attention back to your body and to feel the part of your body that you are scanning. If you

A lot of people think they performed a body scan incorrectly, because they did not become tranquil or relaxed

have forgotten a leg (or two), then continue with the body scan from the point that you have reached. I too have had trouble staying awake and when this happens I carry out a body scan standing up.

### **Focusing on the pain**

If you experience a pain that fills your whole consciousness, you can keep your focus on that. You can examine the pain. Accept it, because it will be there under all circumstances. If the pain moves around, you can move your attention with it. If the pain is too intense, you can choose to focus on your breathing.

### **Finding time**

Finding time for body scan can be a challenge in itself. You need to decide that the exercise is important and has a high priority. Some people feel that they are being self-centred when they spend time on themselves. Instead, think about your long-term goal, for example, having good health. Or think about this instruction you get in an airplane: In the event of lack of oxygen, you must first attach your own oxygen mask before you help anyone else.

When after a period of time of exercising yoga, I started to carry out body scans and meditation on a daily basis, my children noticed that I had become much happier. You can carry out a body scan and feel unwell at the same time, but as time goes by you become better at staying with what is difficult. And you have more capacity, perhaps because you are no longer using energy in avoiding thoughts, pain or tensions.

### **Registering your symptoms**

Perhaps registering your symptoms in week 1 was a frustrating experience. Their very existence may make you unhappy or upset. A lot of people try to avoid thinking about them. But if you want to eliminate your symptoms, you have to know when and in what situa-

How did registering your symptoms go?

---

---

---

---

---

---

---

---

tions they arise. Remember, registering your symptoms also reveals those times when your symptoms are gone and when you are feeling better.

There are a lot of everyday things we cannot change and likewise it can be frustrating to look at a symptom or problem that persists. But there can also be things that are relatively easy to change but which you perhaps were not aware of. When I filled the form out, I discovered that I felt worst when I was on a night shift and best when I saw a Christmas television series with my children.

*Keep your gaze fixed on the wounded place,  
for it's here where the light enters.*

Rumi

### **There where the light enters**

You are reading this book because it is highly likely there is something you want to change. We feel Rumi's "wounded place" differently. I often feel it like a stone in

Mindfulness is not psychotherapy. Mindfulness cannot help to explain the way your life has developed in a particular fashion.

the stomach or a tightness in the chest. It may be that you are experiencing symptoms of stress, anxiety or depression. Perhaps you are ill, have chronic pain or are experiencing a heavy sorrow. Perhaps you think you lack enthusiasm or direction in your life or have undesirable habits you want to work on.

Mindfulness is keeping your gaze fixed upon the wounded place. It seems completely illogical to feel that which you would rather avoid feeling, and some people immediately think that spending your time in this way is to engage in suffering. But there are only two options: You can either feel the wounded place or you can put it away. As Rumi says, keeping your gaze fixed on the wounded place lets you see the place where the light enters. When you have held your gaze long enough, you discover there are other things in the centre of the pain, for example, happiness, spaciousness, creativity, humour and thankfulness.

### **Thoughts control behaviour**

The way you perceive your problems or pain is an important factor in determining how you react. If you think: “This is ruining my life.”, it most likely will do just that. A lot of people speculate about situations or events that have gone wrong. Through psychotherapy you can examine new and old conflicts and the reasons for why you repeat the same undesirable reaction patterns. In cognitive behavioural therapy, you work with the thoughts that lead to disability, low self esteem and disorder-driven behaviour. If a person who is suffering from anxiety thinks: “This is ruining my life, so I’m avoiding any kind of social interaction.”, therapy will focus on changing the thought process and behaviour by practice the person in social interaction.

When there is a lot of symptoms, it is difficult to find a cause and even though you change your thought process and practice your behaviour, the symptoms may persist.

This is where mindfulness can help, as the technique can increase your acceptance of the symptoms that are impossible or difficult to change.

To accept life, as it is right now, can involve denial, anger and sorrow. Mindfulness lets you see these feelings and continuously actively work on acceptance: Such is life - what do I do? How do I best look after myself?

Mindfulness is not psychotherapy. Mindfulness cannot help to explain the way your life has developed in a particular fashion. Instead, you have to be aware of now and accept it as it is. Through meditation you learn to be aware of feelings and see the way the mind creates thought and meaning. With mindfulness meditation, you leave the thoughts, feelings and pain alone, while you interestedly observe what happens.

#### **TEST YOUR AWARENESS**

You Tube has a 'test your awareness' film. Viewers are instructed to count the number of passes a team makes while a gorilla moonwalks across the court. Almost every viewer fails to notice the gorilla. Watch the gorilla and you can't count the number of passes. It is highly likely that you already know that you tend to automatically see what you expect to see in your everyday life. You unconsciously see the gorilla or count the number of passes and a whole lot of other things that take place in your field of view.

#### **Ways of looking at things**

Through our five senses we are continuously affected by the world around us, for example by other people, the weather, radio and computer. We are also affected internally: by the body and the mind. Psychiatrist and brain researcher Daniel Siegel describes the ability to feel your body as being like a sixth sense, an ability that can promote intuition and decision making. He proposed that the ability to observe the mind (thoughts,

feelings, dreams, hopes and meaning) is a seventh sense, which promotes empathy and insight, while the ability to sense one's relation to oneself and others is an eight sense, which can promote social skills.

The impact or information from Siegel's eight senses are processed in the brain. And the way we perceive the effects determines how we react. Previously, it was believed that information entered a person's field of awareness as a passive process. Today brain researchers suggest that the selection of the perceived information is an active process. It is a general feature of human beings that they attribute meaning to themselves or to a situation, this meaning is crucial for our individual reaction patterns, but it can be both deficient and wrong.



As the classic illustration of the old/young woman shows, it can be extremely difficult to see a thing or a situation in a new perspective. It is almost impossible to see both at the same time. In his book *Peace Is Every Step* (Bantam Books 1991), the Zen Buddhist monk Thich Nhat Hanh, writes that flowers and rubbish are equal. Flowers become rubbish and rubbish transforms into flowers. You can practise to see the rubbish in the flower and the flower in the rubbish. In the same way you can see periods with many symptoms or problems as perhaps being just as valuable as those periods where you have no symptoms of problems.

### **The eight lies**

*The eight lies* is originally a North American folk tale, rewritten in modern English by the American poet Angeles Arrien. The folk tale explains how people deceive themselves by believing they have to be something else.

There is nothing wrong in wishing for the eight things named. The question is, is it not possible to value life as

it is right now? In Western cultures we are taught we have to fight for success in our careers, finances, family and leisure time. We do not learn how to accept ourselves, independent of how much money we earn, what job we have, if we have a job, how many children we have, if we have children, our physical appearance or if we are ill or healthy.

### **THE EIGHT LIES**

If only I were rich, then I would be happy.

If only I were famous, then I would be happy.

If only I could find the right person to marry, then I would be happy.

If only I had more friends, then I would be happy.

If only I were more attractive, then I would be happy.

If only I weren't physically handicapped, then I would be happy.

If only someone close to me hadn't died, then I would be happy.

If only the world were a better place, then I would be happy.

Do you believe that? Or can you wake up to your life right now?

You can be successful and still feel empty. And you can own nothing and feel wealthy. The ability to feel comfortable and give others the space to be themselves, is the ability most people admire the most in others. Despite this, only a minority of people practice themselves in this ability. Instead, most people spend their time chasing external values. When successful people moan about their lives, it can be difficult for everyone else to accept. We think: "If that was me I'd be happy." The point is, it is your mind that believes that it would be much easier if you were ...

Mindfulness is a method to learn to accept yourself and find peace with yourself. Independently of whether you are successful or not.

### **'Something psychological'**

Symptoms can be synonymous with that there is something wrong with the body. Stomach pains can be a symptom of appendicitis, joint pains can be a symptom of arthritis and cramps can be a symptom of epilepsy. Previously, doctors would conclude that if you had a lot of physical symptoms but no disorder, then it was due to 'something psychological'. If a psychiatrist could not put forward a psychological diagnosis, the conclusion was that the symptoms were caused by something 'physical'. And whenever there is no known physical or psychological disorder involved, the category 'something psychological' is typically used.

#### **CHARCOT AND HYSTERIA**

Symptoms can be seen as a person's way of expressing distress. The French neurologist and professor Jean-Martin Charcot worked on what he called hysteria in women in the middle of the 19th century. The theory at the time was that hysteria was caused by previous unresolved conflicts. It is roughly equivalent to the explanation "something psychological" people use today.

We do not know what Charcot's female patients were exposed to but we do know that every individual reacts to excessive physical, psychological or social distress with physical or psychological symptoms. Physical distress can be a cancer, broken leg, etc. Psychological distress can be from having a sick child or from being exposed to bullying, etc. Believing your life is not how it should be can also cause psychological distress. Divorce, unemployment, job insecurity or poor finances are all forms of social distress.

### **Physical and psychological pain are interrelated**

To divide symptoms into physical and psychological categories is an obsolete approach. We do not know why people who suffer from the same disorder can have many or few symptoms. At the same time, we have discovered that many physical disorders also have a psychological component that forms part of the causal

explanation. For example, the way a person manages feelings, thoughts and stress, plays a part in the course and development of very many disorders. Studies have shown that repressed anger is linked to an increased risk of early death, independent of age, gender, education, smoking or obesity. Studies of diaries written by nuns starting from when they were 22 years old, has shown those who had a forgiving God and a high level of emotional satisfaction, 40 years later had a lower risk of dying than those nuns who had low levels of emotional satisfaction and whose God was a punishing deity.

### **RENÉ DESCARTES**

In 1637, the French philosopher René Descartes introduced the idea of dualism; that the mind is independent of the body. From then on people looked on the body as a machine, which physicians could study and repair and the mind as something that was determined by ourselves and which was separate from the body. Today, we know this to be incorrect. We cannot just decide to have a headache, palpitations, to be tired or to have difficulty in concentrating. We do not have this power over our bodies.

### **Pain**

During a crisis, you can experience physical pain. The last time my world broke down, I was convinced that I had destroyed all of my inner daemons, forgiven everything and everyone and I was at one with my life. But that was not the case. In a crisis situation, we may experience that life is not what we think and may be forced to rewrite our own narrative. It hurts. I experienced it as a physical pain that ran behind my left eye, up over my head and down my left shoulder and arm, down through the left side of my back to my left buttock area. I can actually evoke the pain just by thinking about it. The pain existed for four to six months, a period of time when I had to cancel many things and use the time to lick my wounds. Luckily, thanks to yoga and meditation, I know how to look after myself.

### THE BODY REMEMBERS PAIN

If the body has experienced violent pain it remembers it. In this way, pain can become a way of reacting to things. Children who have experienced extreme earache when they were small can feel pain in their body, for example in the legs, in reaction to something that is distressing them. Perhaps the distress is caused by hunger, lack of sleep, too many leisure activities or conflicts in school. There is nothing actually wrong with the child's legs but the child's reaction to the distress causes pain in his/her legs.

*Pain affects mood. I have read that there is no greater joy than when a person is suddenly freed from pain.*

Lone Overby Fjorback

The intensity of pain varies over time. Negative thinking makes pain worse, for example, thinking the pain will never get better or thinking it will definitely get worse from now on. The mind cannot concentrate for a particularly long period of time, neither can it concentrate on pain. If you really focus your concentration on the pain, your attention moves, exactly as it does when you try to keep your concentration focused on your breathing. You can try to place a hand on where it hurts and say to yourself: "I'm taking care of this."

A lot of Mindfulness Therapy course participants say they do not experience any difference in the first 5–8 weeks. But by the end of the course they are surprised to find that they have either completely stopped or use considerably less painkillers. The on-going results of my PhD studies also show that the therapy course can reduce pain. After 8–9 weeks of daily mindfulness practice where participants focus on examining their pain, many of them find that the pain moves or changes.

People react differently to distress. Some people develop physical or psychological symptoms, while others develop some form of abusive or self-harming behaviour.

What symptoms do you experience?

---

---

---

When you are experiencing symptoms, you can ask yourself:

- Do my symptoms have a meaning?
- Do I look after myself well enough?
- Am I so busy that my body has difficulty keeping up?
- Am I getting enough rest?
- Am I eating properly?
- Am I getting enough exercise?
- Do I drink or smoke too much?
- Is there anyone I can talk to?
- Do I share my thoughts or problems with others?
- Am I more vulnerable in this period of my life?
- Do I have a lot of judgemental thoughts about my life?
- Am I living life as I would wish?

**AFFECTION EXERCISE**

Imagine someone is in distress, a person whom you have deep affection for. For example, a child who is hurt. Write down what you would say in the situation and describe what your posture would be.

---

---

---

You most likely ask yourself: "Are you unwell?", "Is there something I can do to help?", "Come and get a hug" or "Dear thing, what has happened?" In other words, you show care, understanding, acceptance and affection. Perhaps you lean forwards and open your arms. Perhaps you blow on/touch where it hurts. Why do you do that? Because it helps!

Imagine right now that you are in distress. How do you talk to yourself and what is your posture?

---

---

---

---

---

---

When it is yourself who feels poorly, perhaps you reproach yourself. Perhaps you say: "How could I have been so stupid?", "Pull yourself together", "Why can't I handle that when everyone else can?" At the same time, perhaps you squeeze your stomach, tense your muscles and tighten your throat. Why reproach yourself? Because you want to be seen in a good light. You want to be loved and the mind traps you into thinking if you were perfect it will be easier for others to love you.

The next section looks at when symptoms become a disorder. It provides case examples of specific disorders where patients have used mindfulness.

### **Stress and Bodily Distress Syndrome**

Functional disorders are conditions where patients suffer from physical symptoms that cannot be attributed to any known medical or surgical disorder. Anyone can

experience physical symptoms which do not result from any known physical or psychological disorder. You can say that the body is reacting to stress. You do not have to feel that you are stressed. But if you have a lot of symptoms, it is a sign of too much strain. In most cases the symptoms go away again, especially if you change some feature of your life.

Overall, you can do two things: reduce the strain or increase your resources. For some people, the symptoms are so serious and long-lasting that they develop into a disorder. Individuals may be diagnosed with fibromyalgia, chronic fatigue syndrome, chronic hypermobility syndrome, chronic whiplash, chronic tennis elbow, chronic stress, chronic pain, burn-out or other symptoms that do not have a medical explanation.

Studies have shown that these syndromes have uniform symptoms and it is impossible to categorise them into separate disorders. In 2007, the Research Clinic for Functional Disorders (Forskningsklinikken for Funktionelle Lidelse) studied the symptoms of 900 patients with functional disorders. The symptoms were split into four groups:

- Heart and circulation symptoms, which resemble the physical symptoms from panic attacks
- Stomach symptoms that are equivalent to irritable bowel syndrome
- Muscle symptoms that are equivalent to fibro-myalgia
- General symptoms, equivalent to chronic fatigue syndrome

Doctors working in each specialist field were asked what in their opinions were the cause of the symptoms. Their answer was stress. Subsequently, the research clinic devised a new scientifically-based diagnosis: Bodily Distress Syndrome.

### PHYSICAL REACTIONS TO STRESS AND DISTRESS

You have Bodily Distress Syndrome if you have at least three symptoms from at least three of the following groups. The condition must have been present for at least two years and must affect the individual's ability to function.

---

Heart & circulation 'Autonomous'	Hot sensations or cold sweats Shakes or tremors Dry mouth Palpations or irregular heartbeat Upset stomach or 'butterflies' Flushes or blushes Constricted chest Out of breath for no apparent reason Shortness of breath with fast and deep breathing
-------------------------------------	---

---

Stomach & intestine	Loose stools Stomach pain Bloating, feeling of tenseness or heaviness Diarrhoea Heartburn or regurgitation Constipation Queasiness or discomfort Vomiting Burning feeling in chest or top of stomach
---------------------	--

---

Muscle & joints	Pain in arms and legs Muscle pain and joint pain Feeling of paralysis or weakness Back pain Pain that moves Unpleasant feeling of numbness or spinning
-----------------	---

---

General symptoms	Tiredness Difficulty remembering things Difficulty concentrating Tension headache Dizziness
------------------	---

### **PHYSICAL REACTIONS TO STRESS AND DISTRESS**

Depressive reactions	Nervous reactions
Dejection	Tendency to worry
Weepy	Restlessness and disquiet
Isolation	Tiredness
Loss of interest and ability to feel happy	Overly-sensitive to noise
Feelings of guilt	Irritability
Reduced self-confidence	Tension and feeling of being under pressure
Feeling of hopelessness thinking about future	Muscle tension
Thoughts of suicide/death	Tension pain (e.g. headache, back pain)

To date, there is no official Danish-language term for Bodily Distress Syndrome, though it is roughly translated as “chronic stress condition”.

#### **WHY DO YOU GET BODILY DISTRESS SYNDROME?**

Health anxiety (previously called hypochondria and illness-anxiety), long-term stress and strain, and too many unnecessary medical examinations and treatments increase the risk of a person developing Bodily Distress Syndrome. Inherited factors, the environment, diet, smoking, exercise and stress factors can also increase this risk, in the same way as a series of other disorders do, for example, cardiac disorders, depression and cancer.

#### **BRAIN ACTIVITY**

A study took patients suffering from Bodily Distress Syndrome and subjected them to pain stimuli while their brains were scanned in a PET scanner. The same procedure was carried out on healthy test subjects. The study showed the brains of the patients suffering from

Bodily Distress Syndrome reacted differently to the pain stimuli. The healthy individuals had activity in many areas of the brain while the brains of the patients suffering from Bodily Distress Syndrome had activity in only a few areas. Brain researchers claim the results demonstrate that the brains of patients suffering from Bodily Distress Syndrome have a reduced ability to process pain stimuli.

#### **DEFINITION**

The Research Clinic for Functional Disorders gives the following definition:

"Bodily Distress Syndrome is a chronic disorder with symptoms from several organ systems and has a moderate to severe impact on everyday activities. The prognosis for untreated Bodily Distress Syndrome is generally poor quality of life and ability to function but there is no proof of any increases in the mortality of the disorder. Some sufferers retire early. Only a small number of sufferers engage in full-time employment while avoiding frequent sickness absence."

Perhaps the reduced sensitivity to pain is due to the fact that the person only feels pain when he or she has become overly distressed.

#### **HIGH PAIN THRESHOLD**

Paradoxically, the brain studies also showed that the patients had a higher pain threshold than healthy individuals. Perhaps the reduced sensitivity to pain is due to the fact that the person only feels pain when he or she has become overly distressed.

It is also thought that many of the physical symptoms of Bodily Distress Syndrome occur because the sufferer's brain is 'playing a trick'. The brain is giving signals that it hurts even though there is no injury in the part of the body where it hurts, exactly like phantom pain, where a person feels pain in a missing arm or leg.

One theory is that patients suffering from Bodily Distress Syndrome have a diminished ability to filter signals from the body. They register signals that healthy individuals are unaware of. At the moment when the

body's signals reach consciousness, they are in all likelihood interpreted as distress. People who suffer from health anxiety (see page 54) have an increased risk of developing Bodily Distress Syndrome. This is because the signals coming from the body cause more pain if the individual thinks, for example, that they are due to cancer and not lack of sleep.

### **BODILY DISTRESS SYNDROME AND OTHER DISORDERS**

Once diagnosed with Bodily Distress Syndrome, a lot of people fret over whether they will be offered medical examinations in the future. Will every symptom be interpreted as part of this disorder? Bodily Distress Syndrome sufferers have the same right to be treated as any other patient. They are as susceptible to ill-health and are as mortal as the next man.

#### **WHAT TRIGGERS BODILY DISTRESS SYNDROME?**

Long-term stress can trigger Bodily Distress Syndrome. For some people, it starts with a death in the family or an accident they have been involved in. When the particular person is examined, it is frequently discovered that they have been under strain for a long period of time before the accident occurred.

A lot of unnecessary medical examinations can themselves trigger Bodily Distress Syndrome. It is extremely distressing waiting to find out if you have cancer, sclerosis or a cerebral haemorrhage. Unfortunately, both thoughts and examinations can negatively affect health. Often the supposed solution – pondering over the symptoms and several examinations – can become a part of the problem.

It can be incredibly difficult to accept that you have Bodily Distress Syndrome, if you were already convinced you had something else.

A lot of unnecessary medical examinations can themselves trigger Bodily Distress Syndrome.

### **CASE: STRESS**

I remember a woman who for 15 years, worked as a night cleaner and looked after her three children (two boys and a girl) during the day. The boys had ADHD and the girl was diagnosed with schizophrenia. Their mother had escaped a violent marriage and now lived with a loving partner with three children of his own, who stayed in the house every other week. Her sons were violent and her daughter self-harmed. She said she never had a quiet moment. To an outsider the situation was intolerable, but after the Mindfulness Therapy course, she said: "I've realised my worries won't let me have a single quiet moment. When I can't do anything, for example when I'm in the class, I find a space where I can let myself relax, one moment at a time." She took this home with her and discovered many more moments where she could relax.

### **DISORDER BEHAVIOUR**

Patients suffering from Bodily Distress Syndrome relate very differently to their symptoms. Some people completely ignore the symptoms and for many years they consume a lot of pain-relief medication to be able to work. They are frequently ill during their vacations. They cannot alter a state of affairs where they are continuously over straining themselves. Others cease to work or cease to engage in sport or stop seeing their family and friends, for fear their condition will worsen. Every time the person has visitors, he/she gets worse, which leads the person to believe that: "Now I can't even do that." These two reactions represent extremes and are equally inappropriate.

Mindfulness meditation can help people who suffer from Bodily Distress Syndrome to feel their pain, to examine it and in that way to work with it. It is important to learn your limits. To begin with, you do this by carrying out body scans and registering your symptoms. It helps if you take a friendly approach to noticing your symptoms and to see your thoughts as thoughts, not truths.

### **CASE: BODILY DISTRESS SYNDROME**

Five months after Mindfulness Therapy, a course participant wrote: "I can't understand that I feel SO much better in a just a few months. I was a diligent and positive student. Fully-committed to becoming well – and it seems I've succeeded. Feeling how I am, has become second nature – stop, one thing at a time, not be perfect, go slowly and feel the ground beneath my feet, etc. I've become excellent at 'discovering' if my mind is too busy with 'other' things while I am doing routine tasks. I challenge my limits by seeing how much I can, and gradually I've become very secure with the situation – I feel more and more that I have gotten my life back! I can go on and on ... a lot less pain, six weeks between migraines; which are milder, a lot of faith in the future, I have a social life again ..."

### **Anxiety**

Anxiety is a normal reaction to situations that are dangerous or experienced as dangerous. The physical symptoms of anxiety can be, for example, palpitations, nausea, sweats, tremors and dizziness. Anxiety becomes a disorder when the body's natural ability to feel anxiety occurs in safe situations and prevents the person from being alone, using forms of transport, holding down a job, participating in leisure activities, etc.

### **Two Cavemen**

There were two cavemen: one was very anxious and the other was very adventurous. Whenever the adventurous caveman proposed something, the anxious one replied: "No. No. It's much too dangerous." The point being, we are all the descendants of the anxious primitive man, because our adventurous ancestors died out long ago.

**CASE: ANXIETY**

A woman with severe panic disorder participated in the Mindfulness Therapy course. She suffered panic attacks whenever she boarded a train. She managed to think: "You can do the usual thing and let the panic win and not get on the train, or you can find your seat, sit down and focus on your breathing." To her great surprise, the panic attack stopped. All that she had done was focus on her breathing. She usually avoided using the carriage toilet because the gazes of other people could trigger a new panic attack. She said very proudly: "I went to the toilet 5-6 times just to show myself that I could."

**Health anxiety**

Health anxiety is an anxiety where people fear that they have a serious disorder. They do not want to be ill. A lot of people who suffer from health anxiety have pre-

**CASE: HEALTH ANXIETY**

I taught a course participant who cried the first five times we met. She despaired that she had all of the symptoms of multiple sclerosis but was not being treated for the disease. I repeatedly invited her to feel her anxiety and see the thought: "I have undetected multiple sclerosis." I asked her to notice where in her body she felt the anxiety and the feelings that were associated with it. She felt a suffocating sensation in the chest and stomach and a great sorrow, because, as she put it: "I have been like this my entire life and I'm not stupid. I clearly see that it is ruining my life." Being able to give herself space and acceptance was a new experience for her. She used a lot of energy being ashamed of herself. During meditation she felt a warmth in her body that felt "as though my mother was comforting me." The warmth expressed the fact that she had contacted a love that is accessible to everyone. She was able to see the other aspects and richness of life. She continued to have a fear of having multiple sclerosis but it no longer took up so much of her attention.

viously experienced that they or their parents were seriously ill, and it was not taken seriously. Because of this, the individual has become very aware of the danger of not reacting to something in time. The fear has become a phobia, where the person completely avoids the subject of ill health and seeks therapists who can provide reassurance. Unfortunately, the reassurance is short-lived. Thus, the treatment of anxiety is to look at the unfortunate behavioural pattern. Mindfulness meditation can practice you to see thoughts as thoughts and to work on your awareness, so that your health anxiety becomes lessened and manageable.

### **Depression**

To be depressed is one of the most unpleasant things you can think of. Self-reproach, feelings of guilt, less energy and desire, sadness and difficulty in sleeping are typical symptoms of depression and it is important that depression is diagnosed and treated. Often, people who have had a severe depression say that it is the worst thing they have ever experienced and they will do anything to avoid it. But the fear of developing new depressions can cause you to constantly check your state of mind. You can become scared of being unhappy. It is important to see a moment of ordinary sadness, as just a moment with sadness and not as a sign of a failed life.

A bad mood can easily become a vicious circle, and feeling guilty because you are unhappy, with the fear that this state of affairs will never end and being frightened by possible suicidal thoughts. As stated earlier, it is not your feelings or thoughts that are the problem, but the way you relate to them. At the same time, it is crucial that if you are depressed, you start to receive the correct treatment.

### **Obsessive thoughts**

Obsessive Compulsive Disorder (OCD) is a form of anxiety where the individual is plagued by obsessive thoughts

and compulsions. People who suffer from OCD are afraid of their own thoughts. The majority are aware that their obsessive thoughts and compulsive behaviour is absurd. You can develop the perception that your thoughts are truths that you must comply with. For example, you perceive yourself as a bad person because you have 'bad' thoughts. You try to avoid the thoughts because they involve anxiety. All of us, even those who do not suffer from OCD, are afraid of our thoughts to one degree or another. We cannot decide the nature of our spontaneous thoughts. They arise without our influence. But thought is not inherently dangerous.

#### **CASE: SEVERE DEPRESSION**

A yoga instructor reproached herself because she could not use yoga and that she was hospitalised for depression. Her condition declined over a two-year period, until she could no longer get out of bed, wash, clothe or feed herself. With the correct medication, she made a rapid recovery.

Mindfulness is a prevention programme, not a treatment. Mindfulness or psychotherapy should not play a role in the treatment of severe depression that requires hospitalisation. I have seen many patients who have talked to therapists about all of the sad things in their lives; e.g. difficult relationships with parents. But once they receive the correct medication and are no longer depressed, all of the sad things are no longer a problem.

Mindfulness practice can trigger a lot of emotional reactions. Looking at things you would rather not see is difficult. For many healthy people this can involve a lot of tears. So practice requires professional guidance. The techniques must not be used to treat severe depression. Depression causes patients to focus on everything that has gone wrong in their lives.

### **CASE: OBSESSIVE THOUGHTS**

I once treated a woman who was persecuted by obsessive thoughts about being a good person, which ordered her to follow in the words of Jesus. but as she put it: "The most ridiculous thing is, I'm not even religious." If she passed someone on the street she would think the person was bad and there was no end to what she would do to remedy the thought. A bad thought meant she had to go back and start all over and hope she did not meet anyone, which would cause new thoughts. Sometimes it took forever to get to work. Her treatment involved meditation on sound. Sound surrounds us constantly. We choose to notice it or we ignore it. For example, we ended every consultation by first meditating on sounds and then talking about the spontaneous thoughts. The woman did not like the spontaneous thoughts but she experienced calm when she meditated on the sound. In this way, she could always focus on the sounds whenever she had negative thoughts. The next step was to view the thoughts in the same way as the sounds.

### **Sleep**

A lot of people have difficulty sleeping. Some people find it difficult to fall asleep, others wake up several times during the night and lie awake for a long time. Some people feel constantly tired or need to sleep a lot. Too little sleep and too much sleep are equally bad for you. A lot of people have an unrealistic idea of how many hours are needed for a good night's sleep. Most people require between six and nine hours of sleep every night and no sleep during the day. It is normal to wake several times during the night. Most of us do not notice this or quickly fall asleep again. Very few people sleep like a stone for eight hours.

Without doubt, sleeping badly affects our moods, pain threshold and thoughts. An adult can easily cope with a few nights of poor sleep. But long-term sleep problems are damaging. Sleeplessness has many causes, for

*A lot of people today live in a paradoxical situation where they are half asleep when they are awake and half awake when they are asleep.*

Erich Fromm

example, stress, depression, bad eating habits or sleeping habits. If you lie in bed and think that you cannot sleep, it is difficult to fall asleep. The body gets used to a pattern, where time in bed is 'worry time'. Sleeping during the day instead of at night, is a vicious circle.

If you sleep poorly at night, it is important that you go to bed late and avoid sleeping during the day. On the first nights, you might go to bed at 01:00. When you begin to sleep at night, start to go to bed fifteen minutes earlier. You have to teach your body new habits. If you cannot sleep, focus on your breathing. If you do not fall asleep after 15 minutes, get out of bed and only go back to bed when you are feeling tired again. In this fashion, your body learns that your bed is to sleep in.

#### **SLEEP HYGIENE**

Go to bed late at night and get up at the same time every morning, no matter how much sleep you got.	Get up and go into another room if after 15 minutes you have not fallen asleep. Go to bed again when you are drowsy.
Lie down only to sleep, when you are drowsy.	Repeat the above if you cannot sleep (several times if necessary).
Use your bed only for sleep and sex.	Avoid falling asleep during the day.
Avoid tobacco, coffee, alcohol and soft drinks before bed.	Avoid taking sleeping medicine over longer periods.
Exercise during the day on a daily basis.	You can control your waking hours – not your sleep hours.

## CAUSES OF SLEEPLESSNESS

### Poor sleep hygiene

Stimulants (coffee, tobacco, soft drinks)  
Light, sound, food, exercise late at night

### Physical disorders

Nocturnal urination  
Pain  
Chronic bronchitis  
Reduced cardiac function

### Learned sleeplessness

Poor sleeping habits  
Unrealistic expectations of sleeping hours  
Lack of knowledge

### Circadian rhythm disorders

Shift work  
Jet lag  
Chronic bed rest  
Senility

### Psychological disorders

Stress, anxiety and depression

### Medicine and alcohol

### Unexplained sleeplessness

## Rehabilitation

Rehabilitation following stress, Bodily Distress Syndrome, anxiety or depression follows the same principles as rehabilitation after a broken limb or a sports injury. Correct and regular rehabilitation results in fewer complications and fewer relapses. Breaking from the rehabilitation principles (forcing rehabilitation and

## THE STAIRCASE MODEL

Life consists of good days and bad days. Your mood will be affected if you are sick, are in pain, have a depression or anxiety. A lot of people do not think about the fact that their mood continues to swing, just at a lower level. When a lot of people are in a good mood, they think: "I better get out and do something." And so they over stress themselves and become even worse. They have started a vicious circle. The trick is to find out how bad you are in the bad days and to accept this and to slowly practice yourself up from there, one step at a time. This is what is known as the staircase model.

ignoring warning signs) results in a 'jagged' process, with large swings in outcome, which can prevent a person from becoming well.

### **Slow things down and feel where you are**

You do not know what the future will bring. The only thing you can control is where you focus your attention here and now and how you relate to it. Meditation is about being yourself and knowing who you are. And seeing that here and now impacts on what happens next. If you want to go in a specific direction, you need to find out where you are right now. You need to slow things down, so you can feel where you are. This is what we do in meditation.

You will certainly have discovered that your thoughts tend to fly around when you meditate. That's just the way the mind works. Holding your concentration for a long time is difficult. You become distracted by sounds, thoughts, feelings or signals from your body. Accept it and keep working, again and again, bringing your attention back into focus. The goal is to consciously work on attention. It is important not to suppress thoughts or feelings. You must not try to enter into a specific state.

When you meditate, you must not force anything. Your task is to feel what there is. No matter what you experience, it is your experience. If you are bored, you are bored. If you hurt, you hurt. If you have anxiety, you have anxiety. Be conscious of your experience and accept it as it is.

No matter what you have experienced in your life, it has already happened. The most important question is: And what now? This moment is the only thing you can work with, no matter if you like it or not. Frequently, we forget that we are here right now. It is as if you charge around and lose contact with yourself and your options.

Frequently, you forget that you are here right now. It is as if you charge around and lose contact with yourself and your options.

You enter a kind of robotic state, where you see, think and do all the usual things – without sensing anything. Most people have experienced the situation where they have been driving in their car and suddenly realise that they have travelled a good distance without registering it. Their attention was elsewhere. It is a dangerous state to be in (not just when driving), because it means you are not able to take care of yourself. This state is popularly called “going into automatic pilot”. Mindfulness is about switching off your automatic pilot and being completely present in your life.

In the coming weeks you can become aware of the good experiences in your everyday life, by completing the registration form for the week on page 63.

#### **SHORT SITTING MEDITATION**

Sitting in a comfortable position, with your back straight, free of the chair's backrest if you prefer, you may want to look around the room. When you are ready, you can either close your eyes or focus at a point in front of you. Notice how your body breathes. Breathe naturally. Do not alter your breathing. Your body will breathe for you. It has done this your entire life. The only difference is that you now feel it. Feel the air being inhaled and exhaled through your body and try to let go of all other things and just be with your breathing. Every time you find that your attention has drifted to somewhere else, refocus on your breathing. Sit like this for 5–10 minutes.



## **Main points in week 2**

- You see reality through a filter – frequently you see only a small part of reality. Your interpretation can be incorrect or insufficient.
- The way you look at your disorder, pain or symptoms, determines how you react. And the way you look at the exercises and the discipline required to carry out the exercises, determines how you react.
- When you give your body positive energy and attention, you can help yourself to come into contact with the body's ability to heal itself.
- When we cease to remove ourselves, for example from pain or a situation, a whole new way of learning opens up to us.

### **PROPOSAL FOR DAILY PRACTICE IN WEEK 2**

- Carry out a body scan meditation at least six times a week
- Meditate sitting down for at least 10–15 minutes every day
- Use mindfulness as part of your routine activities (when you brush your teeth, take a shower, read to your children, empty the bin, etc.)
- Complete the symptom registration form for the week
- Complete the good experiences registration form for the week



## GOOD EXPERIENCES REGISTRATION FORM FOR THE WEEK.

You can try and be aware of good experiences or events every day, while they happen.

Complete the form.

	<b>Situation</b> What did you experience?	Were you aware of the bad experience WHILE it happened?	<b>Body</b> What did you feel in your body while it happened?	<b>Thoughts</b> What thoughts did you have?	<b>Feelings</b> What feelings did you have?	<b>Now</b> What thoughts and feelings are you having as you write this now?
Day 1						
Day 2						
Day 3						
Day 4						
Day 5						
Day 6						
Day 7						

# WEEK 3

## AGENDA:

- SITTING MEDITATION
- DISCUSSION ON SITTING MEDITATION AND MINDFULNESS ON ROUTINE ACTIVITIES
- FORMAL AND INFORMAL PRACTICE
- WALKING MEDITATION
- BREATHING
- MINDFULNESS YOGA
- MEDITATION ON A GOOD EXPERIENCE
- WHAT MAKE SOMETHING A GOOD EXPERIENCE?
- DEEPER CONTENTMENT CAN BE TRAINED
- WE ARE ALL THE SAME
- IT IS HAPPENING NOW!
- PLACE ENERGY IN THE NOW
- MEDITATION
- NEW HOMEWORK

*Sometimes happiness is a blessing - but generally it's a conquest. The magic moment of the day changes us and makes us take off in the direction of our dreams.*

Paulo Coelho

## WEEK 3 NOW



Week three starts with a short sitting meditation. You can also do the exercise lying down. The goal is to feel your breathing, as it is. When you discover that your attention has moved, bring it back to your breathing, without reproaching yourself. When you sit still in meditation, you can easily get the urge to move. You are not forbidden from moving but if you do, do it mindful, you can also remain sitting still and examine what happens. Perhaps you come into contact with a physical pain. You cannot injure your body by sitting still.

### **SHORT MEDITATION SITTING DOWN**

Sitting in a comfortable position, with your back straight, free of the chair's backrest if you prefer, you may want to look around the room. When you are ready, you can either close your eyes or focus at a point in front of you. Notice how your body breathes. Breathe naturally. Do not alter your breathing. Your body will breathe for you. It has done this your entire life. The only difference is that you now feel it. Feel the air being inhaled and exhaled through your body and try to let go of all other things and just be with your breathing. Every time you realise your attention has drifted to somewhere else, refocus on your breathing. Sit like this for 5–10 minutes.

How did the exercises in week 2 (short sitting meditation and mindfulness of routine activities) go?

---

---

---

---

---

---

### **Formal and informal practice**

A course participant asked me how it would her good to be fully-present while she brushed her teeth. The answer is that we practice our ability to experience the moment and to be aware of the here and now.

Mindfulness practice can be both formal and informal. Formal mindfulness practice is the time you have allocated to daily meditation. Informal practice is all the other times you meditate. You can use formal meditation to become more conscious of the moment in your everyday life. To live right now. To eat while you eat, work while you work, be family when you are with your family, and friend when you are with your friends.

In his book *The Art of Loving* (Harper 1956), Erich Fromm states that both important and unimportant things “assume a new dimension of reality”, when we focus our full attention on what we do.

Meditation instructor Larry Rosenberg, names five ways to systematically bring mindfulness into your everyday life:

1. As much as possible, do only one thing at a time
2. Fully concentrate on what you are doing
3. When you lose your concentration, bring it back
4. Repeat step three several times
5. Examine whatever it is that is distracting you

#### **WALKING MEDITATION**

Start to walk. Feel how your weight presses down one foot as you lift the other foot. Feel what happens in the ankle, the whole foot and the whole body. Feel how and when the foot touches the ground again and how your weight is placed on the other foot. Try to look ahead and not look down. Examine your body's incredibly complicated and amazing ability to walk. Walk quite slowly, to and fro in a straight line (just 2–4 metres), for around five minutes. Notice that when you concentrate on walking it can suddenly become quite difficult. Remember, you are used to walking without thinking about it.

Most of us cover a lot of ground every day. To bring mindfulness to your gait, is another way to become aware of the now.

#### **Walking meditation**

Most of us cover a lot of ground every day. Using mindfulness as you move is another way to become aware of the now. Walking meditation is walking normally at a slower tempo. Your body naturally knows how to walk – what is new is that you examine how it does it. I frequently use walking meditation in my work as a doctor, when I am preparing to meet the next patient. Every step can be a reminder to be present in the here and now.

#### **Breathing**

Breathing is constantly with us. It offers you a way of being in touch with yourself and your life, right now. Every single breath is different and the way you breathe reflects your state of mind. If you are busy, stressed or afraid, your breath is quick and shallow. If you are relaxed, it is deep. Actually changing the way you breathe changes your state of mind.

Breathing is known as the bridge between the conscious and the unconscious, because we have a measure of control over our breathing, unlike the rest of the autonomic nervous system, which controls heart rhythm, blood pressure, digestion, body temperature, etc. The body controls our breathing 99% of the time, and if we should forget to take a breath, our body will quickly take over. By examining how our own body breathes, we can contact our unconscious, or that which happens of itself. Focussing on breathing and allowing it to relax is a very important way of relaxing the body and mind.

#### **YOGA**

Carry out different yoga exercises. Decide for yourself if you want the yoga session to be short or long.



WWW



### **Mindfulness yoga**

Mindfulness yoga is exercises, where you feel your body by using your breathing and focusing your attention. It is about being as close as possible to your breathing and body; exactly as with body scanning. You learn to respect the body' limits and relax tense muscles. Yoga cultivates suppleness, balance and strength, all at once. You can do yoga standing up, sitting down, on your back, in a bed or in a wheelchair. All that is required of yoga, is that you breathe and make some kind of voluntary movement.

Yoga should be done in tandem with meditation. This means you keep focused on the now. Do not try to be somewhere else. Allow yourself to be, as you are. Let go of self-judgemental thoughts. See your thoughts and feelings and accept them, e.g. frustration over what your body cannot do, or the habit of trying to overreach yourself. You are your own expert, so move carefully.

If there are exercises you are not ready to do, lie in a comfortable position, close your eyes, feel your breath-

It is a misconception, that yoga is the same as fitness practice. Yoga is not about stressing the body and using energy. It is about balancing the energy.

ing and imagine you are doing the exercises. You must work with your body, so try and do as much of the exercise as possible, so you can feel something happening. You must examine your body's limit and respect it, so that you do not overreach. You are the only one who can feel where your limit is. You can use your breathing as a pathfinder. If you hold your breath and tense your face, then you have overreached. Go back a little, breathe freely and concentrate on feeling the exercise. You can also notice if you have begun to compete with yourself or others.

The most important yoga exercise is called the "Corpse Pose". You lie on your back with your arms by your side, legs straight out and feet splayed apart. You concentrate on being completely still and feeling your body in this position. You are so still and you let go completely, as if you were dead.

#### YOGA IS NOT FITNESS

The word yoga can be translated 'to unite or to create harmony between the body and the mind or between physical and mental energy.' It is a misconception to think that yoga is the same as fitness practice. Yoga is not about stressing the body and using energy. It is about balancing the energy. It cannot be emphasised enough, that the aim of yoga is to feel the body. If you are good at yoga, you are good at feeling your body. You explore the limits of your body and keep your focus exactly there.

One day my back just completely locked up. A lot of my usual exercises became impossible to do. There was nothing I could do but skip those exercises and work on a few modified ones. You can only work with your body as it is now. Not as it was or will be.

When you work with the body over a longer period, your body's capabilities will change. You can practise yoga

your whole life and still be able to explore the exercise further. The body changes all the time. So it can feel as though you continuously must live in a new body. The experience can be quite shocking if the body changed because of illness, but the natural ageing process also changes the body.

Doing yoga is about trying to be as close to your body and breathing as possible. You register thoughts and feelings and continuously return to the body and breathing. "There's not much to these wee exercises. I need something else, something more to happen, if it's going to be any use." This is a typical remark made by people who do a lot of sport and it frequently involves feelings of irritation, boredom or restlessness.

"The exercises are too difficult. I can't do them," say others who are not used to moving, perhaps because of pain. Their remark may involve feelings of hopelessness, frustration, fear, anger, sorry or perhaps envy. Because we are so used to aligning ourselves to our automatic thinking, it can be difficult just registering thoughts and feelings.

Every situation offers interesting experiences and help. It is about seeing and letting go of fixed conceptions of what you want right now.

A course participant told me that she refused to feel her body before "it felt better." Sounds logical enough but is highly damaging in the long-term. Research shows that which you cannot bear, you get more of, be it feelings, thoughts and bodily signals. If you deny feeling anxiety, you will suffer more anxiety. If you deny feeling pain, you will suffer more pain.

So you must practise in feeling or bearing what there is to feel or bear. When you struggle to avoid painful experiences, the struggle makes the experiences even more

Frequently, I conclude a yoga session by asking participants to feel the contact they have with their bodies. At that moment you are immersed in your body and you fill your whole body with your awareness.

painful. You could say that the solution becomes the problem. My own experience is that when I shut out pain, I also shut out happiness and all of the good things in my life. And you cannot decide that you will only have the good feelings and the good experiences.

#### YOGA CAN UNITE BODY, THOUGHT AND FEELING.

Many yoga traditions, e.g. tantra yoga, are practised in silence. By way of introduction, the yoga instructor will explain how an exercise is to be carried out, but will not name any expected effects. In this fashion, you experience what happens rather than wait for an expected experience.

Yoga can create harmony. Your whole body is your instrument. It is about feeling and experiencing you and the world with the whole of your body, rather than just being in your thoughts, which is a very limited part of your resources as a human being.

Frequently, I conclude a yoga session by asking participants to feel the contact they have with their bodies. At that moment you are immersed in your body and you fill your entire body with your awareness. It can be a very pleasant experience. The contact and balance created with the body is not like a closed room, where you sit and are satisfied with yourself. On the contrary, it is a room where all of the doors and windows are wide open, so you have the opportunity to create real contact with the world around you.

#### YOGA AND BODILY DISTRESS SYNDROME

Very many disorders or conditions, cause the body to unconsciously tense; stress, depression, sorrow, Bodily Distress Syndrome, etc. This causes pain. Some people experience actual weakness or paralysis.

I was extremely happy when I first began teaching yoga to patients suffering from Bodily Distress Syndrome.

"Now we are going to do something that will make them feel well." I had previously taught retired senior citizens and patients suffering from schizophrenia and my experience was that these people often arrived annoyed and tired but left happy. Releasing bodily tensions has a positive impact on a person's mood. Unfortunately, my Bodily Distress Syndrome patients left frustrated and even more tired and sad than when they had arrived. I realised that many Bodily Distress Syndrome patients had a kind of body phobia. All of their bodily signals told them the exercises were dangerous and they would become ill. I experienced that the patients' reactions represented two extremes. One group would not move while another group would move too much and over strain their bodies.

The technique I use now, which functions well, is to get the patients to feel their body and to make their own decision about how much they can move. That they get going at their own pace and become assured with the exercises works best. It is clear that the individual's way of carrying out the exercise is more important than my instructions.

#### YOGA AND PAIN

When you have a lot of pain you rarely feel like you want to lie down on a mat and give your pain all of your attention. You can become scared of being touched and feeling the part of you that hurts the most. Because of pain and discomfort, many people avoid physical activity or strain. Some lose the desire to use their body if they have previously overstretched its limits. But if we do not use our body we lose it. You become ill if you do not use your body, not because you use it.

When you have a lot of pain you rarely feel like you want to lie down on a mat and give your pain all of your attention.

### **USE THE BODY**

Historically, patients who had suffered a heart attack were encouraged to stay in bed for three months. Now they are encouraged to be active as quickly as possible. People lose muscle mass when they have been inactive for just a short period of time. Lack of exercise is the cause of many illnesses while regular exercise is an important way of maintaining and improving health. For example, studies show that half of all women in Denmark will suffer from osteoporosis. Physical activity is the best way of avoiding osteoporosis.

### **Good experiences**

We shall now work with good experiences. We begin with a meditation.

#### **MEDITATION: A GOOD EXPERIENCE**

Sitting (or lying) comfortably, feel your breathing and try to think about a good experience you have had during the day or the week. If you cannot, then think about what you believe was the most pleasant. Can you remember if you were aware of the good experience while it lasted? What did you feel in your body? What were you thinking? What were your feelings? What thoughts and feelings do you have as you recall the experience? What do you feel in your body now? Return your attention to your breathing and be conscious of your breathing for the next few breaths. And now leave the small meditation.

Afterwards, you can describe your experience. What did you feel in your body? What were your feelings? What thoughts and feelings do you have now? It does not matter what your good experiences were.

If you are part of a group, you can form pairs and discuss the same questions. You must not tell each other what the good experiences were, but talk about how you experienced the experience – your thoughts, feelings and what you felt in your body.

Thoughts:

---

---

---

Feelings:

---

---

---

The body:

---

---

---

What thoughts and feelings do you have now?

---

---

---

---

---

---

You can compare what you have written in the good experiences registration form (page 63) to what you have just written and ask yourself: Is there a pattern?

---

---

---

---

---

---

---

---

---

---

### **What makes something a good experience?**

Frequently, we have the same thoughts, feelings and sensations in the body when we have a good experience. Talking with a friend or enjoying a cup of coffee is not the important factor. What is important is contact, connection and sense of community. When you feel that you are in contact with yourself, others, animals and nature, you feel better. It is the same with a feeling of connection and community. Fellowship is a great basis for a good experience.

### **Deeper contentment can be trained**

There is a difference between pleasure and deeper joy or contentment. Pleasure is transitory. You can enjoy a piece of cake, but if you eat ten pieces, your enjoyment will likely turn to nausea. In contrast, deeper joy or contentment is much more stable. It is a condition that can be trained.

The sea can be used as a metaphor. The surface of the sea may be stormy while its depths are still and peaceful. Yoga and meditation helps you to reach the quiet depths and feel rested tranquility.

### **We are all the same**

The Dalai Lama says that we are all the same. He means that our primary goal is to be happy and to avoid suffering. Human beings are social animals. From the moment we are born, we try to connect with others. Meditation is a way of connecting with yourself. The more you are anchored in yourself, the easier it is to connect with others and to value the connection. We know that a lack of intimacy in childhood can create deep wounds. The first step to healing these wounds is to discover them and to listen to yourself and connect with yourself and the body with positive energy and attention. This is what you do when you meditate.

#### **THE THREE FS**

Doctor Joan Borysenko in her book *Inner Peace for Busy People* (Hay House 2003) talks about the importance of the three Fs: faith, family and friends. Faith, family and friends are the things that are important. Faith does not necessarily mean religious or spiritual faith, but belief in things will turn out OK. Most people experiences are that when they do something that extends beyond themselves, it is a positive experience.

*If thou wilt be observant and vigilant, thou wilt see at every moment the response to thy action. Be observant if thou wouldst have a pure heart, for something is born to thee in consequence of every action.*

Rumi, translated by Coleman Barks

You miss out on so much more than you realise by not being in the now. Pleasure and enjoyment lie in the actual moment.

#### IT IS HAPPENING NOW!

Now matter if you are meditating, washing up, at a meeting or interview, your degree of conscious intimacy is crucial to how mindful you are. To have what Rumi calls 'a pure heart' means to be at peace with oneself. 'That we are receiving something as a consequence of every action, can mean that in every single moment we have the possibility of being so much in the now that the past and the future disappear and the possibility of deeper joy is present everywhere.

When you are aware, your decisions and actions are influenced. When you are exhausted and complain about how busy you are, it is not because you are too busy. Exhaustion arises because you are everywhere else but right here. You plan, that life must be enjoyed and you must relax just as soon as you are finished with ... But you miss out on so much more than you realise by not being in the now. Pleasure and enjoyment lie in the actual moment.

The American writer Henry David Thoreau lived in simple wooded seclusion for many years. In his book *"Walden, or, Life In The Woods"* (1854) he wrote about the pleasure of simple being and experiencing the moment and described times when the moment itself was so beautiful that he could not sacrifice it to any kind of manual or intellectual work. He wrote: " I grew in those seasons like corn in the night, and they were far better than any work of the hands would have been. They were not time subtracted from my life, but so much over and above my usual allowance."

Thoreau, like many of us, had difficulty in permitting himself to enjoy the moment. We may even suspect that we are wasting our time. Many of us believe that when we take a break or meditate we lose time. But frequently, when you set time aside for rest and meditation, you

gain time. The old expression "to get the Sabbath day" is about just that.

The mind easily pulls us away from the moment. This is mainly because as adults we are used to imagining the future and evaluating the past. As American choreographer and dancer Martha Graham says, "Make the moment vital and worth living. Do not let it slip away unnoticed and unused."

### **Place energy in the now**

Sometimes you have to put energy into good experiences. You can use a couple of minutes to really see and hear the people you are with or to taste the food you eat. It becomes a whole other experience. The mind's logic the feeling that something more interesting has to happen soon. Boredom is the result of not having the will or not knowing how to put energy into the now, to make this moment into something special.

#### **TO MAKE YOUR OWN DECISIONS PROLONGS LIFE**

A group of elderly care home residents were encouraged to make their own decisions, for example, when to visit the cinema or have guests. A second group was encouraged to let the staff make all of the decisions. The individuals in each group were given a plant. The first group had to look after their plants. The second group were told that the staff would take care of their plants. After 18 months the two groups were examined to see how many of them had died. The total number of people who had died in the second group in that period was in line with the norm for the home. But in the first group, whose members made their own decisions and were responsible for their own plants, the number of people who had died was halved in that period. The study concluded that being able to make decisions and feeling connected to something or someone had a positive impact on physical and psychological well-being and thus longevity.

Frequently, when we notice signals from the body or have specific thoughts or feelings, we lose focus and turn on our automatic pilot. In the coming week you will practice at becoming aware of what causes you to lose focus, and notice what you least want to look at. You can learn about your bad experiences by registering them in the bad experiences form on page 81.

#### **SHORT MEDITATION**

Sitting in a comfortable position, feel your breathing, if required take some deep breaths (5–10 minutes).

### **Main points in week 3**

- You can find energy and joy in the now. Make the moment worth living. Do not let it slip away unnoticed and unused.
- Yoga can unite body, thoughts and feelings, so we can say yes to life
- Be aware if you are losing good moments perhaps you are only focusing on the bad?
- See if you can succeed in valuing what you have, without striving for something else
- You can have positive moments, even when you are in pain or in a crisis

#### **PROPOSAL FOR DAILY PRACTICE IN WEEK 3**

- Carry out a body scan every other day and do yoga every other day
- Carry out a sitting meditation for 10–15 minutes every day
- Complete the symptom registration form for the week
- Complete the bad experiences registration form for the week
- Capture the moment during the day
- Be conscious of the situations where you go into automatic pilot. What distracts your focus?
- What do you least want to focus on?

## BAD EXPERIENCES REGISTRATION FORM FOR THE WEEK

Be aware of bad experiences or events each day while they happen.

You can record them later in the form and describe how you experienced it.

	<b>Situation</b> What did you experience?	Were you aware of the bad experience WHILE it happened?	<b>Body</b> What did you feel in your body while it happened?	<b>Thoughts</b> What thoughts did you have?	<b>Feelings</b> What feelings did you have?	<b>Now</b> What thoughts and feelings are you having as you write this now?
Day 1						
Day 2						
Day 3						
Day 4						
Day 5						
Day 6						
Day 7						



# WEEK 4

## AGENDA:

- YOGA (5 MINUTES)
- SITTING MEDITATION (30 MINUTES): BREATHING, BODILY SENSATIONS, THE BODY AS A WHOLE
- DISCUSSION ABOUT HOMEWORK: WHAT DO YOU SEE, FEEL, AND LEARN – IF ANYTHING
- MEDITATION ON A BAD EXPERIENCES
- WHAT MAKES SOMETHING A BAD EXPERIENCE?
- STRESS
- MANAGE BAD EXPERIENCES WITH MINDFULNESS
- BASIC MODEL
- MEDITATION (5-10 MINUTES)
- NEW HOMEWORK

*Bird Wings*

*Your grief for what you've lost lifts a mirror up to where you're bravely working.*

*Expecting the worst, you look, and instead you see the joyful face you have been longing for.*

*Your hand opens and closes, and opens and closes. If it were always a fist or always stretched open, you would be paralysed.*

*Your deepest presence is in every contraction and expansion, the two as beautifully balanced and coordinated as bird wings.*

Rumi

## WEEK 4 TO BE STUCK

Week four begins with yoga exercises followed by long sitting meditation.

The meditation can be structured like this: 15 minutes of sitting meditation followed by 5 minutes of walking meditation followed by another 15 minutes of sitting meditation.

### **MOUNTAIN POSE**

Stand (or sit if you prefer) with your feet parallel and your knees slightly bent. Tilt your hip slightly forward, chest pointing upwards and head balanced on your spinal column. If you imagine a fixed weight is hanging from your tailbone, it will point down to the ground. Feel the way your body breathes. Lift the arms or shoulders and feel your breathing. Lower your arms or shoulders again. Focus on them as you do so. Execute a sideways bend on each side. As you very slowly and carefully bend notice how the side of your body stretches. Finally, stand in the mountain pose again and feel your breathing.

### **BALANCE POSE**

Concentrate on feeling the sole of your right foot. Shift your weight onto your right leg. Inhale and simultaneously lift your left foot and leg out to the left while you lift both arms out to the side, horizontal if you want. Lower both arms and leg when you exhale. Switch to the other side. You can carry out the exercise by following your breathing from side to side. You can also hold this position for a couple of minutes while you breathe, and then you can change to the other side. If you find keeping your balance is quite difficult, then you can instead lift your foot just a little. If needed, you can use a wall to support yourself. Afterwards, return to the mountain pose.

### **SPINAL ARTICULATION**

The feet are parallel, the knees are slightly bent. Shoulders, hips and ankles are pointing straight ahead. Look over your right shoulder. Breathe freely and feel your breathing in your thorax. Return to the mountain pose. Change to the left side. Let your hips and ankles point straight ahead. Look over your right shoulder and let your shoulder turn with you. Change to the left. For the last time, look over your right shoulder. Let your shoulder and hip turn with you, so that your body turns from the ankles. Change to the left. All of the exercises can be done in a sitting position. Stand in the mountain pose again.

### **BENDING POSE**

Bending pose: Stand again with knees slightly bent (if standing up). Let your head and arms fall forwards. Completely relax head, neck and arms. Feel your breathing. Rise slowly, one vertebrae at a time. Lastly, lift your head. If you become dizzy when you come up, then hold your breath in. Stand still in the mountain pose and feel the whole body at once.



WWW





### **SITTING MEDITATION**

The exercise last for 30 minutes and consists of three steps: breathing, what you feel in your body and your body as a whole.

1. Sit in a comfortable position. When you are ready, observe your breathing. Stay focused on your breathing (approx. 5–10 minutes).
2. What do you feel in your body? Are there places on your body that you feel particularly intensely? Perhaps you feel a pain or something unpleasant in your body that occupies your concentration when you sit for a longer period of time. If this happens you can work in one of two ways. You can either consciously change position or move automatically. Or you can work with the pain by concentrating on it. See if you can relate to the pain by examining it, by being inquisitive and accepting towards it. Where did you feel it? What quality does it have? Is it a throbbing or burning sensation? Is the pain accompanied by thoughts and feelings? If the pain moves, move your attention with it. Normally we tense up around a pain and try to seal it off. See if you can open up to where it hurts. If needed, you can focus your breathing on the pain (5-10 minutes).
3. Concentrate on feeling your body as a whole (5–10 minutes).

What did you experience in the sitting mediation? How did you work with it?

---

---

---

---

---

*The instructor's foremost task is to awaken the student to experience and bring the student out of the captivity of being judgemental, out of all that the student fears or craves, which causes the student to forget himself/herself and lose the moment.*

Swami Janakananda

You have now practised yoga, body scanning and sitting meditation for some time. And you have registered your symptoms in the form several times.

What have you noticed? Did you capture the moment?  
What do you want least of all to see?

---

---

---

---

### **In harmony with yourself**

When I begin a yoga class, I always say that to be good at yoga is to be good at feeling your body. Some people believe that highest achievement in yoga is being able to control your thoughts, which is the most difficult skill you can learn. The physical yoga exercises are the key to coming into contact with your body. It allows you to balance the energy, so that the physical impulses generated by the body are in harmony with the mind, which subsequently becomes calm. You can feel the impulses coming from your body and the 'noise' coming from your mind. Perhaps you start to get bored, feel irritation and resistance. If you practise yoga for one to two hours you register the whole spectrum of responses: "When will it end?", "I can't do this", "I can't be bothered", "Its bor-

Mindfulness is both very simple and very difficult. A lot of people find that weeks 3–7 are particularly tricky.

ing", "It's too big a task for me", "It's too little a task for me." Finally, you let your thoughts go and your expectations of what the exercise should be and you will feel your body intensely, as it is.

When you balance, there where there is no mental noise or bodily impulses, you are in harmony with yourself and your experience. This is the state we practice ourselves in.

Mindfulness is both very simple and very difficult. A lot of people find that weeks 3–7 are particularly tricky. They think that they have to spend a lot of time on something that they have difficulty seeing the point of. It can take some time before you feel the effect of the exercises, so be patient.

It is important that your practice has a goal. It requires discipline to feel your body and yourself daily, especially when it is unpleasant. Every single moment can be the beginning of your practice.

### **Bad experiences**

We shall now work with bad experiences. You can start with a meditation.

#### **MEDITATION: A BAD EXPERIENCE**

Sit in a comfortable position or lie down. Feel your breathing. See if you can think about a bad experience. Were you aware of the bad experience while it lasted? Can you remember what you felt in your body? What were you thinking? What were your feelings? What thoughts and feelings do you have as you recall the experience? What do you feel in your body now? Return your attention to your breathing and be conscious of your breathing for the next few breaths. And now leave the small meditation.

Afterwards, you can describe your experience. What do you feel in your body? What were your feelings? What thoughts and feelings do you have now? It does not matter what your bad feelings were.

If you are part of a group, you can form pairs and discuss the same questions. You must not tell each other what the bad experiences were, but talk about how you experienced the experience – your thoughts, feelings and what you felt in your body.

Thoughts:

---

---

---

Feelings:

---

---

---

The body:

---

---

---

What thoughts and feelings do you have now?

---

---

---

---

---

You can compare what you have written in the bad experiences registration form (page 81) to what you have just written and ask yourself: Is there a pattern?

---

---

---

---

---

---

### **What makes something a bad experience?**

People's reactions to bad experiences are often surprisingly the same. Most people react with anger, grief, hopelessness, loneliness, powerlessness, anxiety, shame or fear. Anger is an emotion that makes you defend yourself. Arm muscles tense, hands become fists and heart rate accelerates. You sweat and may even become dizzy. Large volumes of blood go to the muscles and brain, while blood stops flowing to the stomach.

Grief and powerlessness can be felt in the body as a total lack of energy. Grief makes us want to be with our nearest and dearest, so someone can take care of us while we grieve. In contrast, anxiety makes us want to flee and can be felt as difficulty breathing, palpitations and hyper arousal. The bodily signals related to bad experiences resemble bodily reactions triggered by stress and strain (see page 48).

Bad experiences, like good experiences, have a series of common features:

#### **THOUGHTS**

- The mind is inherently critical and judgemental. These are vital tools that enable you to carry out a task, but when you use those tools towards yourself

and your feelings, and compare yourself to others, your experience can easily become bad.

- Negative thoughts can cause unpleasant feelings, which can lead to maladaptive behaviour.
- Negative thinking affect the body. In his book *Change Your Brain, Change Your Life*, neuroscientist and psychiatrist Daniel G. Amen writes that your body reacts to your thoughts. Negative thinking sends electrical signals through the brain that release chemical substances that cause a series of physical symptoms, such as headaches, muscle pains, stomach pains, etc.
- You are prone to negative thinking when you are tired, sad or have symptoms.
- You are not in the now, when the mind induces an internal dialogue about how good or bad a person you are. When you are mindful, you are just you, no more, no less.
- There is a connection between your expectations to a situation and your reaction, if the situation develops differently to what you had hoped. We may have more good experiences when we notice what life brings, instead of comparing it to our expectations.

## BODY

- Pain, stress, anxiety or lack of energy affect one's experience. The symptoms initiate thoughts about the cause and what those symptoms may mean for the future. In this fashion we lose focus on the now. It is overtaken by speculation of the past and worry for the future, which amplifies the symptoms and has an even greater impact on your mood.

## FEELINGS

- Situations are easily experienced as bad ones when we believe that we have to be happy all of the time. When life is difficult, it is almost second nature to think something is wrong. It is easy to blame oneself when you feel lonely, sad, ashamed or angry.

- When your thinking goes off on the wrong track and the pain or the difficulty is experienced as a personal failure, your suffering is amplified. The task is to take responsibility for the original pain, feel it and let it pass. Do not try to ignore or amplify the pain.
- Difficult periods are a part of life. It is precisely these periods that offer us a chance to learn something new. The search for happiness and avoidance of pain can prevent the joy that arises by itself.

## BEHAVIOUR

An experience can easily become bad:

- When you behave in a way you didn't want to.
- When you shut the world out because you feel rejected or threatened. Shutting the world out is a way of protecting yourself, but it is a short-term solution. The majority of us want to be in close relationships with others. When we shut the world out, we are actually moving in the opposite direction.
- When you nag yourself (and others).
- When you consciously avoid doing the right thing. Perhaps you avoid working with something that is difficult. A lot of people say that they will begin to live the life they really want as soon as they have more confidence, when they are in a good period in their life, when the anxiety has gone or when the children are older.
- When you find yourself in a waiting position. A lot of people imagine, perhaps even unconsciously, that life will be good if they just become richer, smarter or more successful. At some point this attitude changes to one of longing for the things in the past that at the time were not valued.
- When you cross your own limits and strain yourself.
- When you don't accept life as it is. "It's not how well you are but how well you deal with it" goes an old saying. This may sound a little judgemental. But it should be understood as the ability to live life as it is, whatever it brings. This is mindfulness. It is an abili-

ty in others we often praise and an ability we can practice and improve.

- When you do not manage to say no. A lot of people believe you always have to say yes, so sometimes when they say yes they mean no. If you always say yes out of sense of duty, you can lose desire and longing for another person, writes family therapist Jesper Juhl in his book *Kunsten at sige nej* (The Art of Saying No) Apostrof, 2006). When you learn to say no, you are actually saying yes to yourself.

## **Stress**

A bad experience can trigger a stress reaction that puts the body into emergency mode, preparing it to fight, flee or 'freeze'.

Stress is an organism's reaction to extreme situations. Both the body and the nervous system are affected, muscles, blood pressure, blood flow, hormones and power of concentration. The reaction is a natural and necessary tool for survival. Both external influences (an accident or being laid off, etc.) and internal influences (pain, illness, thoughts or emotions) can trigger stress reactions.

I was told of two scientists, who when hiking together in the Canadian wilderness to study the flora, encountered a bear with her cubs. One of the scientists collapsed on the ground as if he was dead and the other gave a wild mighty roar. The bear seemed to shrug its shoulders a little and disappeared. Frequently, our immediate reaction to a critical or bad experience is to roar, flee or be as still as death. We still experience these fight, flee, or freeze reactions even though we will almost certainly never come face to face with a wild bear.

### **THE AUTONOMIC NERVOUS SYSTEM**

The autonomic nervous system consists of two systems. One of these is called the sympathetic nervous system and it allows us to react to stress. It mobilises blood flow to the brain and muscles, increases the body's heart and respiratory rates, so that we are ready to react. The other system – the parasympathetic nervous system – is responsible for relaxing the body. We need both systems and yoga can be used to balance these systems.

Stress can be short-term (acute) or long-term (chronic). The thing or event that triggers the stress reaction is called the stressor or stress stimulus. Most people have experienced how the same situation can sometimes be very stressful, yet at other times not be stressful at all. This is because the way we tackle a situation is crucial to how we experience it.

### **WHEN STRESS BECOMES CHRONIC**

When the body has been exposed to stress for a long time, it cannot recover. The body's natural 'feedback system' responsible for making us react quickly in dangerous situations or to situations perceived as dangerous, is constantly active. Chronic stress takes the form of chronic weariness, chronic muscle pain (e.g. face, shoulders, lower back and hands), palpitations, digestive problems, difficulties in concentration and feelings of hyper alertness. When you are stressed, you often exhibit maladaptive behaviour. Perhaps you eat incorrectly, drink too much, work too much, take medication, stop exercising and avoid listening to your body. This can lead to food, medication, caffeine, alcohol, drug or work dependence and it can in extreme cases, cause illness or death.

It has been shown that mindfulness practice prevents memory and concentration difficulties usually experienced in highly stressful situations. It is a well-known

It has been shown that mindfulness practice prevents memory and concentration difficulties usually experienced in highly stressful situations.

<p><b>IGNORING</b> (Ready – start)</p> <p>You react automatically without asking yourself if this is the most appropriate approach. Perhaps you are well aware that you are stressing yourself beyond your capabilities, but you ignore your body's distress signals. This is how acute stress can become chronic stress.</p> <p><b>Symptoms of chronic stress</b></p> <ul style="list-style-type: none"> <li>• Raised blood pressure</li> <li>• Stomach problems</li> <li>• Chronic pain</li> <li>• Sleep disruptions</li> <li>• anxiety and depression</li> </ul> <p><b>Maladaptive behaviour</b> Overwork, overeating, hyperactivity, etc.</p> <p><b>Dependence</b> Food, medicine, alcohol, tobacco, caffeine, etc.</p> <p><i>Breakdown of the body illness and death.</i></p>	<p><b>MINDFULNESS</b> (Ready – prepared – start)</p> <p>An acute stress reaction is not inherently dangerous. Instead of reacting automatically, you can get an overview of the situation by introducing a "prepared" state. You quickly scan your body, a small meditation with focus on your breathing or a walking meditation.</p> <p><b>Register stress reaction</b> See the threat and be aware of:</p> <ul style="list-style-type: none"> <li>• The Body</li> <li>• Muscle tension</li> <li>• Breathing</li> <li>• Thoughts and feelings</li> </ul> <p><b>Look for options</b> Use STOP: Stop, Take deep breaths, Observe, Persevere</p> <p><i>Regain equilibrium and mental balance.</i></p>
--	---

fact that when you are stressed your performance suffers and you have less capacity. For example, other people find you more irritable and touchy.

As the table on this page shows, you can either ignore acute feelings of stress or you can react mindfully.

### **Manage bad experiences with mindfulness**

You can practise in reacting mindfully to stressful or bad situations. In the first instance, register your reactions. Value your thoughts and feelings, Try to get an overview of the whole situation and see the 'threat'. Be aware of your breathing, your body and any muscle tensions. Afterwards, examine your options.

An emotional strategy may be to see the emotion, to be in it and to let it pass. A problem-solving strategy may be to get an overview of the situation: On the basis of my long-term goal, what can/must I do right now?

You can regain your mental balance by focussing on your breathing before you react.

A mnemonic rule (special word) for dealing with stress is STOP: S for stop! T for take deep breaths! O for observe! P for persevere!

#### **TO BE STUCK**

In a Brothers Grimm fairy tale, three brothers have to find water for their dying father. The oldest brother is the cleverest and he tries first. He meets a dwarf who asks him where he is going. The oldest son is too preoccupied to answer. He thinks he knows the way and marches past. But he ends up getting stuck. The same thing happens to the second brother. Finally, the youngest and least-clever brother tries. He too meets the dwarf. "Where are you going?" asks the dwarf. The son answers: "I have no idea. I'm looking for water for my dying father." The dwarf knows where there is water and shows the way.

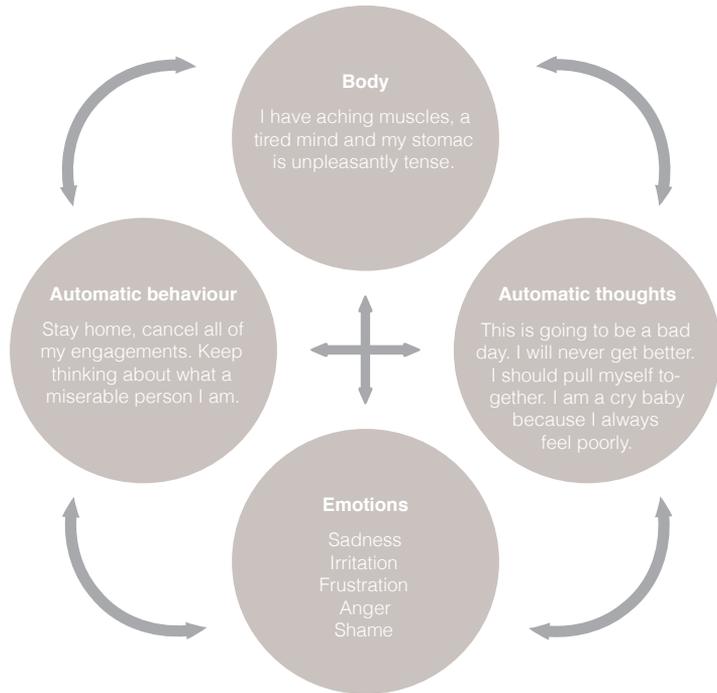
The three brothers can be seen as one and the same person. Sometimes you are unwilling to learn by your mistakes; repeatedly encountering the same problems. And sometimes you have to admit, like the first two brothers, you do not know the way.

Imagine you are driving to work and are stuck in traffic. Your hands are on the steering wheel, the other cars are driven by terrible and selfish drivers and it's becoming more and more obvious that you are going to be late for work. How does this affect your blood pressure, breathing, muscles, stomach and immune system?

Now imagine that you remember this mindfulness course you participated in. You can choose to react as you usually do when stuck in traffic or you can focus on your breathing, body, thoughts and feelings. You can enjoy the view, listen to good music or look at the other upset drivers. You might even manage to smile, realising you were just like them a moment ago. How does this affect your blood pressure, breathing, muscles, stomach?

### **Basic model**

In the next few weeks you can work with the basic model. The basic model is used to register thoughts, feelings, behaviour and signals from the body and allowing you to analyse difficult situations. Thoughts often arise spontaneously. When you have pain or feel that everything is hopeless, you easily succumb to thinking about all the other times when you felt you were inadequate. You can stop this stream of thought or alter your behaviour when you discover that it is inappropriate. A situation could be one where: I have woken early and have slept badly.



### SHORT MEDITATION

Sitting in a comfortable position, feel your breathing, if required take some deep breaths (5–10 minutes).

### Main points in week 4

- Sometimes we think we know more than we actually know.
- Perhaps you race ahead without really knowing what you are doing.
- It is necessary to slow down, so you can determine where you are, before you react.
- Stress is not the problem. How we react to stress is the problem.

## AUTOBIOGRAPHY IN FIVE SHORT CHAPTERS

1)

I walk down the street.  
There is a deep hole in the side-  
walk.  
I fall in.  
I am lost ... I am helpless.  
It isn't my fault.  
It takes forever to find a way  
out.

2)

I walk down the same street.  
There is a deep hole in the side-  
walk.  
I pretend I don't see it.  
I fall in again.  
I can't believe I am in this same  
place again.  
But, it isn't my fault.  
It still takes a long time to get  
out.

3)

I walk down the same street.  
There is a deep hole in the  
sidewalk.  
I see it there.  
I still fall in ... it's a habit ...  
but,  
my eyes are open.  
I know where I am.  
It is my fault.  
I get out immediately.

4)

I walk down the same street.  
There is a deep hole in the  
sidewalk.  
I walk around it.

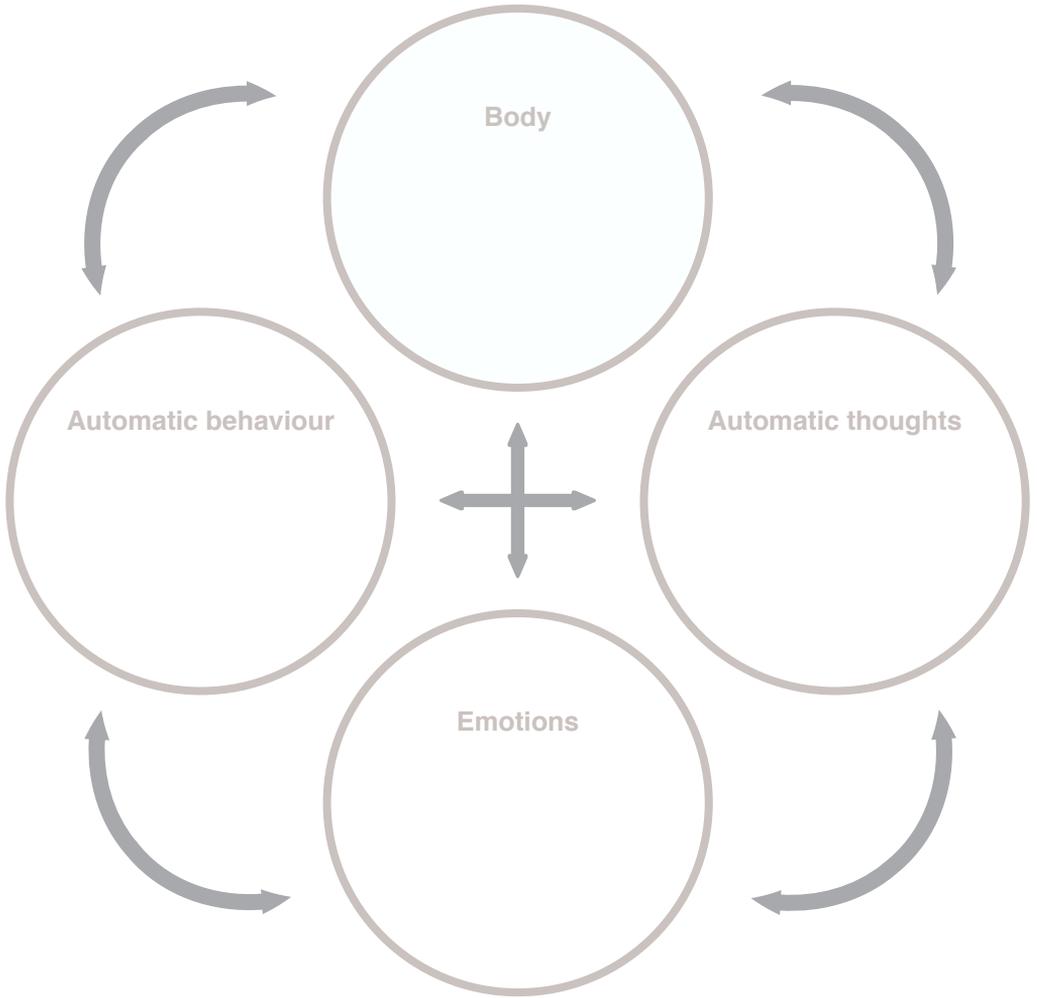
5)

I walk down another street.

Portia Nelson

#### **PROPOSAL FOR DAILY PRACTICE IN WEEK 4**

- Carry out a body scan every other day and do yoga every other day
- Carry out sitting meditations for twenty minutes every day, with focus on breathing and the body as a whole
- Complete the symptom registration form for the week
- Complete the basic model on the next page
- Be aware of your stress reactions without changing them
- Notice when you feel you stuck or shut things out



***Complete the model***



# WEEK 5

## AGENDA:

- YOGA (10 MINUTES)
- MEDITATION (30 MINUTES)
- THOUGHTS
- MIDWAY EVALUATION: WE ARE NOW HALFWAY THROUGH THIS COURSE!
- OUT OF THE HEAD AND INTO LIFE!
- THOUGHTS ARE NOT TRUTHS
- A CHALLENGE TO SIT STILL
- LET THE FEELING PASS
- DAILY PRACTICE
- MINDFULNESS AT WORK
- TO OPEN AND SHUT IN
- PATTERNS OF BEHAVIOUR
- THE BASIC MODEL
- MEDITATION
- NEW HOMEWORK

*The breeze at dawn has secrets to tell you.  
Don't go back to sleep.  
You must ask for what you really want.  
Don't go back to sleep.  
People are going back and forth across the  
door sill, where the two worlds touch.  
The door is round and open.  
Don't go back to sleep.*

Rumi

## WEEK 5 THOUGHTS

Week five begins with yoga exercises followed by long sitting meditation. You can also use the yoga exercise guide on the CD or online at [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness).



### **MOUNTAIN POSE**

Stand (or sit with) your feet positioned in parallel, with your knees slightly bent (so they are not overstretched). Tilt your hip slightly forward, chest pointing upwards and head balanced on your spinal column. If you imagine a fixed weight is hanging from your tailbone, it will point down to the ground. Feel the way your body breathes. Lift your arms or shoulders, perhaps just a little, and feel your breathing. Lower your arms or shoulders again. Focus on them as you do so. Execute a sideways bend on each side. As you very slowly and carefully bend, notice how the side of your body stretches. Finally, stand in the mountain pose again and feel your breathing.

### **IMAGINARY CHAIR EXERCISE**

Stand with your feet in parallel, about a foot apart. Lift your arms out in front of you. Bend your legs as if you will sit down on an invisible chair. Keep your back as straight as possible. Feel your breathing. Imagine that as you inhale you gain strength and energy and when you exhale you let go of tiredness and tension. Stay standing in this position for a while. Then return to the mountain pose. Perhaps you can feel your heartbeat. Let your body naturally return to a resting state. Feel your whole body.

### **THE TREE**

Concentrate on feeling the sole of your right foot. Focus all of your attention down into the sole of your right foot. Let your weight press down in the sole of your right foot. Lift your left foot, perhaps just a little. If you can, place the sole of your left foot on the inner side of your right leg. Or place it along the ankle, lower leg, knee or thigh. If you can, join your hands together (palms flat) and hold them in front of your chest. You can choose to avoid joining your hands and instead keep your balance by using the wall as a support. If holding your balance is easy, then raise your arms up above your head. Feel your breathing. Stay standing in this position for a while. If your arms are raised above your head, keep them straight while you lower them along the side of your body. When they are horizontal, lower your leg. Perhaps you can make a "three-point landing", where the arms and left foot 'land' at the same time. Switch to the other side. Once again, feel your whole body in the mountain pose.

### **MEDITATION CHANGES THE BRAIN**

Brain scan studies carried out at Harvard Medical School (Sara Lazar, 2005), have shown that individuals who meditate regularly have thicker regions in the areas of the brain that control reason and decision making in comparison to the brains of individuals who did not meditate. A Danish research group has also found structural changes in the brains of individuals who meditate. It seems that the long-term practice of meditation can change the structure of areas in the brain that control pulse and respiration, which may explain meditation's positive impact on cognition, emotions and the immune system.



### **SITTING MEDITATION (LONG)**

The following meditation has six steps. The focus is on breathing, the body, sounds, thoughts, feelings and being aware of what is there.

1. Begin with your breathing. Feel the way your body breathes.
2. Expand your awareness, so that it takes in the whole body. What do you feel in your body? Are there places that hurt? Or are there areas that you feel particularly intensely?
3. Notice sound. Listen to the sounds, perhaps all of the sounds at once. Listen to the silence between the sounds. Examine the sounds. You do not need to identify the sounds; that was a car, etc. You just have to listen. You do not have to decide whether you like the sounds or not. Your task is solely to listen to what is there.
4. Notice your thoughts, especially thoughts that arise by themselves. You can for example, think in images. But the thoughts can also be expressed by signals from the body. Perhaps now at the moment when you are to concentrate on your thoughts, no thoughts arise. This is also a thought. Perhaps memories arise or expectations about the future. It can be planning, thoughts about food, meditation or something else. The contents of your thoughts are not important. It is important that you observe your thoughts without taking a position on whether you like them or not. That you experience the thoughts that are there.
5. Be aware of your feelings. Perhaps you know that the body can have an "emotional stone". How are you right now? Feel yourself. And again – be aware of what you feel. Do not try and change anything. You may even say to yourself: "I'm taking care of this."
6. Feel what there is to feel, without having a specific focus. If your breathing is the most conspicuous thing, then stay with that. If your thoughts are the most conspicuous thing, then hold focus there. The same applies to feelings and pain. Just feel what there is to feel.

What did you experience in the sitting mediation? What was difficult? How did you work with it?

---

---

---

---

---

---

---

---

## Thoughts

Thoughts tend to go round in circles. Visually speaking, when your thoughts have to explain how you are feeling, you change between two or three records: "It's because my husband is such a so and so", "It's because I don't have a partner", "It's because I have to do everything" or "It's because I'm sick, poor and lonely." Meditation is a way of seeing these thought patterns. i.e. seeing the record that's being played.

Perhaps you discovered during meditation that the mind has a life of its own. Your goal was to stay focused on your breathing for 30 minutes but you only managed to momentarily stay focussed on your breathing. You were occupied by your thoughts the rest of the time. If a person has offended us, the mind has prepared a long series of thoughts about how terrible it is. A tone of voice, a movement. It does not take much for the mind to have a whole novel ready.

You decide yourself what you will use meditation for. You can continue to do what you have usually done or you can try something new and just for a moment cease

fighting yourself. Is it possible to exist in the moment without having to change anything? You cannot think yourself into 'being yourself.' It is a feeling. Remember, you are you and only you and that is good. It sounds banal, but most people forget this in practice.

In her book *The Self-Healing Human* (Holistic Wellness Publishers, 2003), Susanna Ehdin writes that if food is nourishment for the body, then thought is nourishment for the soul. Your mind starts to resemble your most frequent thoughts. And thoughts can drain you of energy. The thoughts you have today are probably the same thoughts you had six months or a year ago. It is worth thinking about what you put your thoughts and energy into.

### **Three stonemasons**

In the Middle Ages, three stonemasons were working on a cathedral. Each was asked what they were doing. The first answered: "Clearly you can see, I'm cutting stone." The second answered: "I'm earning my and my family's bread and butter." The third answered: "I'm building a wonderful cathedral." It is not too difficult to guess which of them was having the most fun.

To become conscious of the negative thoughts that are controlling one's life, is an important step towards improving one's well-being.

### **Midway evaluation**

You are now midway through the mindfulness course. What have you learned about yourself?

---

---

---

To become conscious of the negative thoughts that are controlling one's life, is an important step towards improving one's well-being.

---

---

Are you making changes

---

---

---

---

---

---

Are you participating as best you can?

---

---

---

---

---

---

What benefit, if any, have you noticed so far?

---

---

---

---

---

---

## THE GUEST HOUSE

*This being human is a guest house.  
Every morning a new arrival.*

*A joy, a depression,  
a meanness,  
some momentary awareness comes  
as an unexpected visitor.*

*Welcome and entertain them all!  
Even if they are a crowd of sorrows,  
who violently sweep your house  
empty of its furniture,*

*still, treat each guest honourably.  
He may be clearing you out for some new  
delight.*

*The dark thought, the shame, the malice.  
Meet them at the door laughing  
and invite them in.*

*Be grateful for whatever comes.  
Because each has been sent  
as a guide from beyond.*

Rumi, translation by Coleman Barks

What challenges are there in

Body scan:

---

---

---

---

Yoga:

---

---

---

---

Meditation:

---

---

---

---

Do you manage to do the exercises? How often?

---

---

---

---

---

Will you continue to work with mindfulness?

---

---

What will you do differently in the rest of the practice course?

---

---

---

---

---

See, if you can let the end of the first half be a new beginning. Let every moment be a new beginning!

### **Out of the head and into life!**

In my experience, the most difficult with mindfulness is not taking your thoughts seriously. We are used to just existing in our thoughts and frequently we do not discover the other, bigger and more interesting reality.

The first time I returned home after a three-month yoga and meditation course, I was perplexed by how difficult it was making eye contact with people in the street. People go about their business with furrowed brows and brood. Thought is one of the biggest resources people have but it also one of their biggest limitations. This is because of our perceptions of our surroundings (what we see) and our impression of it, which is determined by what we expect to see.

Thoughts affect our emotions and emotions affect our thoughts. Research has shown that the more well-

See, if you can let the end of the first half be a new beginning. Let every moment be a new beginning!

developed our emotions are, the better we can exploit our thought capacity.

### **Thoughts are not truths**

Your heart beats automatically, without you consciously willing it. So too do thoughts arise. You can easily begin to believe that thoughts are truths that must be obeyed. Sometimes it can help if you give the thoughts a name, for example, worry, planning, daydream, prediction, comparison, judgement or storytelling. You can learn to see the moments when you are experiencing sorrow, hopelessness or loneliness as moments with sorrow, hopelessness or loneliness and not an expression of a whole life that has gone wrong.

### **A challenge to sit still**

One of my meditation teachers said that meditation first starts when it gets seriously difficult. It is here, where it becomes interesting. And it is here where you can observe yourself and your reactions.

Sitting still during meditation can be difficult. The impulse to do something else arises quickly, and thoughts about how difficult or pleasant sitting here is. You may also feel emotions like anxiety, boredom, restlessness, sorrow, nervousness, deep happiness and thankfulness. Every emotion has a physical expression. At the same time, you can feel something in the body that starts to put thoughts, emotions and impulses into action. It is about becoming interested in the process. Examine: "What is it that is so interesting about breathing?", "What is it I feel in the body?" or "Are there feelings or thoughts connected to this?"

### **Let the feeling pass.**

If I become restless or feel pain or have negative thoughts during my morning meditation, I observe it. Afterwards, I experience that the restlessness affects me less during the rest of the day. And if I become restless, I notice it quicker.

Sometimes it can help if you give the thoughts a name, for example, worry, planning, daydream, prediction, comparison, judgement or storytelling.

During meditation you may discover emotions, thoughts or tensions that you otherwise were unaware of. Do not try and explain to yourself why you are overwhelmed by a feeling. Let the feeling pass. A lot of people believe they have to find an explanation for their emotions or tensions. But that will frequently trigger even more thoughts.

Once on a course, I became very emotionally affected. The other participants were interested to hear what had triggered my reaction. Their thoughts revolved around wanting to know what I had been through. But it was nothing. It was just a moment where I had been overwhelmed by deep thankfulness.

#### **WE CONSTRUCT OUR OWN REALITY**

The philosopher Kant revolutionised philosophy with the realisation that we construct reality. We do not perceive reality through the senses. What we sense is filtered in the nervous system and made into the representation we call reality. This representation is in reality a fiction, one that emanates from our term and category forming minds. Kant meant that we are not able to see something as it actually is in reality. Hence an objective, exact reality does not exist. Our perception of reality is dependent upon how the senses and the brain perceive reality. Previous experiences and thoughts filter the information we receive at any moment in time. In this manner, we are limited by our thoughts. We see certain things while overlooking other things.

In Buddhism, it is said: "If you have opened your mouth, you have already said the wrong thing." It eloquently describes how mindfulness is about stepping into the experience in a non-thinking way, which is much greater than words.

#### **Daily practice**

You must practise mindfulness daily, as a matter of life, says Kabat-Zinn – because in a way it is. I meditate

every morning, without exception. It provides me with strength of will and the energy I need to get me through the day. When I am mindful, my thoughts, feelings and actions are in accordance with my long-term goals. That is to say, meditation is not about sitting in your own wee closed harmonious circle. Mindfulness lets you be part of an open circle, where there is harmony between the inner and external world.

#### **IT WON'T LAST**

Karen Blixen was once given a letter and told that she must only open the letter when she was very sad or very happy. She opened the letter when she was very sad and the letter said: "It won't last."

Harmony is not a permanent state of being. Harmony must be created and recreated, again and again. This is why daily practice is so important.

#### **Mindfulness at work**

Mindfulness practice can help you to be more present in the now in every situation - including work. Breathing is with you all the time and you can use mindfulness in every step you take.

For example: You become aware that you have a headache. You are tired and your whole body is tense. Your body is telling you to go home and rest. You want to look after your body to avoid chronic stress. On the other hand, you want to do your best at work. You think that to go home is to admit defeat. What is the best thing you can do, if you think about your long-term goals?

A lot of people have a "all or nothing" mentality and will quickly conclude: "Either I quit my job or I work on." But there are several options. You can start by letting yourself take a rest there and then. You can use

To put it crudely, there are three possibilities in every situation. You can accept the situation. You can change it. Or you can get out of the situation.

this break to give yourself positive energy and attention. Then you can carry out the tasks you are able to do and talk with yourself or your manager about what you can realistically accomplish during a day, a week or a month.

To put it crudely, there are three possibilities in every situation: acceptance, change the situation or get out of the situation. If you find yourself in a situation you can neither change nor escape from, then just accept it. It is not easy but meditation can help. Paradoxically, acceptance can change one's life. You must love your sufferings, because that is the way to remove them, says Swami Janakananda. This applies to everything, no matter if there is pain, anxiety or fixed ideas about how the world should be.

### **To open and shut in**

Most people at some point need to shut the world out. Reality can be so hard that we cannot confront it. It can be difficult to endure, when we or others are in difficulties. The technique of shutting out is as old as the technique of opening up. When you meditate, you can imagine awareness as a door that can be opened or closed. You work with the limit. The door must not be wide open all of the time. Feel when it is enough, and close the door again. You are awake the whole time and are conscious of when you are opening and closing the door. Perhaps this is what Rumi refers to in the poem *The breeze at dawn*, on page 104.

#### **ONE STEP AHEAD**

The body is often one step ahead of our consciousness. For example, I pinch my fingers when something irritates or annoys me. My fingers are agitated before I know that I am restless. As soon as I become aware of my fingers, I try to find out what is going on. If I can get my fingers to be still, then my mind also quiets and I can concentrate on whatever it is I'm doing.

### **WITH NEW EYES**

American automotive executives regularly visited Japan at the start of the 1980s to find out why Japanese factories were outperforming American ones. One of the executives reported that he was unimpressed. The Japanese had not shown him the genuine factories. They had put together some phoney set-ups. He had seen a lot of conveyor belts and all of the locations he visited did not have any storage capacity. In just a few short years, he was proved wrong. The executives had been shown examples of the Just-In-Time production but their own understanding had blinded them. They could not conceive an assembly plant without huge warehouses. Their understanding limited them, so they could not see with a fresh perspective. It is a universal problem. But we can practise to see the world, thoughts and feelings with a fresh perspective.

Mindfulness is an invitation to be conscious of when you are opening up or shutting out. The intention is not for you to feel all of your pain all at once. You must feel a little pain and be conscious of when it is enough. You learn your own limits. It is important you practice in being sensitive to yourself. You can have both physical and psychological pain. The technique is the same. The majority of people have a habit of avoiding anything that hurts. It is a completely understandable reaction. But pain is a part of life. Every human being will experience pain and we will all die. But if you shut out pain you also shut out joy. Thus, the invitation: You must feel a little pain and be conscious of when it is enough. When you are ready, feel a little more.

### **Patterns of behaviour**

We get into the same difficulties, again and again. This is because we think, act and react in the same specific ways. Feeling something in your body may trigger specific thoughts that lead to specific actions. This is what is called a pattern. If you frequently think that you have experienced a situation or feeling before, you are

seeing one of your patterns. You can look for patterns. Seeing the patterns is a way of learning about yourself and it can be the first step in changing.

How did it work out with the basic model in week 4?

### The basic model

With the help of the basic model, you may have noticed that thoughts, feelings, bodily signals and actions affect each other. Frequently, you give a situation a degree of importance that is out of all proportion. Perhaps it is a sore point. Perhaps you react by getting a suffocating sensation in the chest and stomach. Once you are aware of your reaction and that it is out of proportion, you can act differently.

#### **EMOTIONS ARE A BRIDGE BETWEEN THE BODY AND THE PSYCHE**

According to American researcher and professor Candace Pert, who wrote the book *Molecules of Emotions – Why You Feel the Way You Feel* (Scribner, 1997), emotions are biochemical molecules that form a bridge between the body and the psyche. For example, if you are incapable of feeling anxiety, you cannot take care of yourself. If you cannot feel anger you cannot take care of yourself or your children. If as children we are not seen, we die. Jealousy and envy can be a part of the means of being seen. The energy in anger, restlessness, jealousy and envy can be used constructively, so you can pursue your dream and live the life you want. So emotions have an important function. Happiness and contentment shall curb negative thinking, for example, so we can cooperate and love, which enables us to form bonds and to look after each other.

### **HOW TO WORK WITH THOUGHTS LESSON**

"Experience yourself, sit and experience your thoughts, feelings, opinions and notions as an observant and neutral observer. What are you thinking right now? You must analyse the thoughts and not the meaning. You are neither happy nor annoyed by your thoughts. Your task is to let every thought flow freely and uninhibited, no matter how provocative or tempting it is. The same applies to your feelings. What are you thinking right now? And now? Now? Persist, without influencing. Whatever happens permit it, accept it, experience it. You are not the thoughts. You are what sees the thoughts. If you realise that you are speculating and forgetting the meditation, or if you are stuck in a thought, then say: What did I think? See the thought and continue.

The most crucial thing is that you experience thinking. How many or how few thoughts or feelings are there, or which of the thoughts and feelings are the least difficult. There are many ways to think: with images, emotions, words. As an observant observer, look at the thoughts. Note if there are worries that fill the mind, opinions about yourself and what you may or should do. Are there things you may not think? Experience particularly the spontaneous thoughts that arise. Experience them as an observer, set your mind free.

There are no such things as good or bad thoughts. Be careful, do not become introverted or search for anything specific, just experience what happens. Let go. Stop letting thoughts decide for you. But at the same time, allow things to influence you. You may only be carried by and experience the liberating effect by letting it happen and anyway – deep down – observantly observe the whole. You are not the thought. You are not the feeling. You are the experienter."

Swami Janakananda

A course participant with Bodily Distress Syndrome told me that the course had made her aware of a typical reaction pattern. If she was tired when she was with her friends she tended to go home. This led her to believe she was different and not part of the group. She became more upset and even more tired. With the basic model she became aware that she could explain to her friends that she was tired, she would take a rest and

then join the company again. She felt she had become better at taking care of herself and that her friends cared for her.

### **Difficult communication**

Many people find it difficult to communicate. Next week, you will work with exercises that are about difficult communication. You can already try to complete the difficult communication registration form for the week, on page 123.

#### **SHORT MEDITATION**

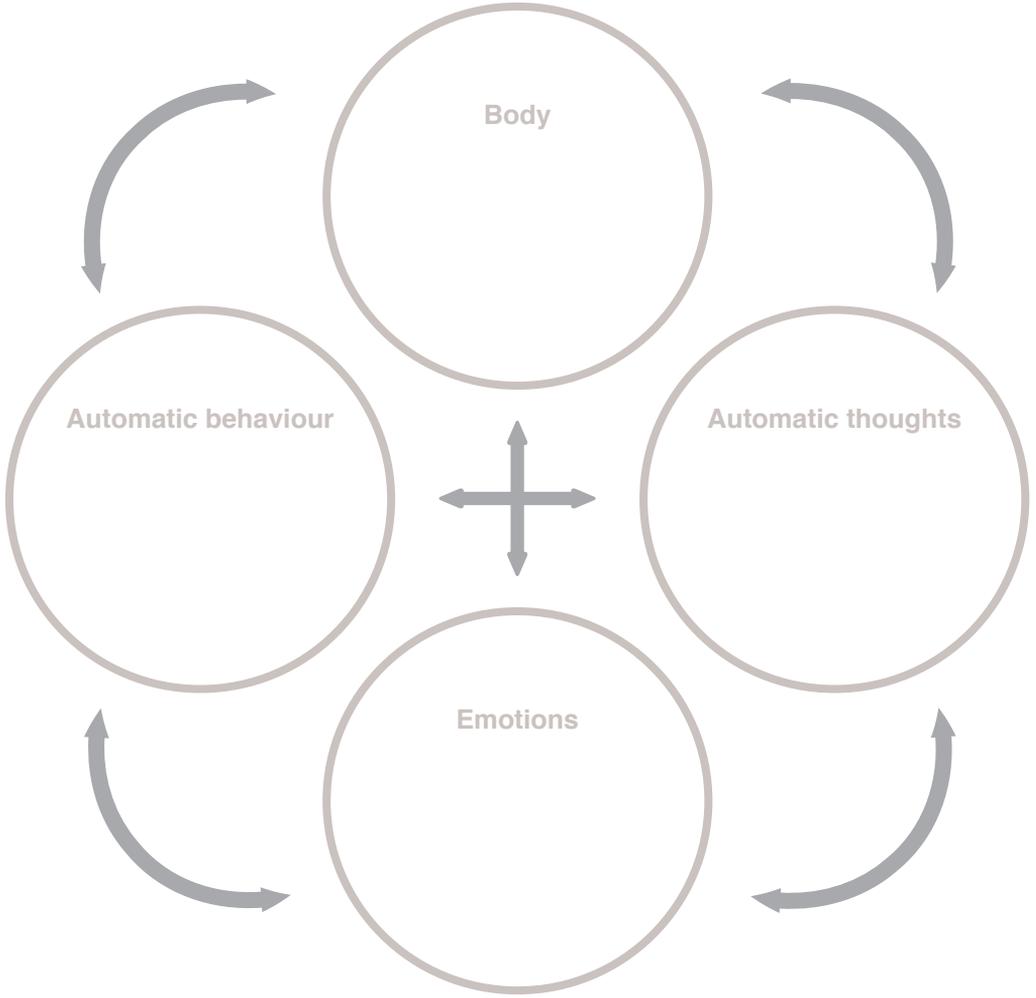
Sitting in a comfortable position, feel your breathing, if required take some deep breaths (5–10 minutes).

### **Main points in week 5**

- You can learn to know yourself better and to contact feelings and reactions through mindfulness practice.
- I am not a feeling or a thought. I am that which is experiencing.
- I value my thoughts and feelings. It is important for my survival.

#### **PROPOSAL FOR DAILY PRACTICE IN WEEK 5**

- Meditate sitting down one day, body scan or practise yoga the next day
- Complete the symptom registration form for the week
- Complete the basic model below
- Keep an eye on your patterns
- Complete the week's difficult communication form



***Complete the model***



**DIFFICULT COMMUNICATION REGISTRATION FORM FOR THE WEEK**

	<b>Situation</b> What did you experience?	Were you aware of the bad experience WHILE it happened?	<b>Body</b> What did you feel in your body while it happened?	<b>Thoughts</b> What thoughts did you have?	<b>Feelings</b> What feelings did you have?	<b>Now</b> What thoughts and feelings are you having as you write this now?
Day 1						
Day 2						
Day 3						
Day 4						
Day 5						
Day 6						
Day 7						

# WEEK 6

## AGENDA:

- YOGA (10 MINUTES)
- MEDITATION (30 MINUTES)
- DISCUSSION ABOUT HOMEWORK
- COMMUNICATION PRACTICE
- DIFFICULT COMMUNICATION
- EXPRESS YOURSELF CLEARLY AND CONSTRUCTIVELY
- THREE TYPES OF COMMUNICATION
- THE ART OF LISTENING AND DOING NOTHING
- IMAGE OF ME
- MEDITATION
- NEW HOMEWORK

*Out beyond ideas of rightdoing  
and wrongdoing  
There is a field.  
I will meet you there.  
When the soul lies down in that grass,  
the world is too full to talk about  
language, ideas, even the phrase each other  
doesn't make any sense.*

Translated from Rumi

## WEEK 6 COMMUNICATION

Week six begins with yoga exercises followed by long sitting meditation. You can also use the yoga exercise guide on the CD or online at [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness).



WWW



### YOGA

*Cross-legged pose:* Sit on the floor. Bend your legs. Bring your soles against each other. Fold your hands around your feet, and slowly pull them in to your body, as far as possible. Feel your seat bones: Straighten your back without being stiff. Push the hip forward, as in the mountain pose. Let the knees fall out to the side and make small tilting motions with the legs. You must not press down on your knees. But if you relax the thigh muscles and the pelvic floor, the knees will gradually lower by themselves. The body is still, only the legs move.

*Back stretch:* Stay sitting on the floor, with your legs stretched out (you can also do this on a stool). Take a deep breath. Let your body sink over your legs as you exhale. Let your head and arm hang freely. How far you sink is not important. Feel the position and stay this way for a few minutes. Concentrate on your breathing. You must not force this position, let your body find the position.



### SITTING MEDITATION

1. Sit in a comfortable position. When you are ready, observe your breathing. Stay focused on your breathing (approx. 5–10 minutes).
2. What do you feel in your body? Are there places on your body that you feel particularly intensely? Perhaps you feel a pain or something unpleasant in your body that occupies your concentration when you sit for a longer period of time. If this happens you can work in one of two ways. You can either consciously change position or you can work with the pain by concentrating on it. See if you can relate to the pain by examining it, by being inquisitive and accepting towards it. Where did you feel it? What quality does it have? Is it dull or burning? Is the pain accompanied by thoughts and feelings? If the pain moves, move your attention with it. Normally we tense up around a pain and try to seal it off. See if you can open up to where it hurts. If needed, you can focus your breathing on the pain (5-10 minutes).
3. Concentrate on feeling your body as a whole (5–10 minutes).

What did you experience? What was easy? What was difficult? How did you work with it?

---

---

---

---

---

---

---

---

### **MEDITATION: DIFFICULT COMMUNICATION**

Sit comfortably. Feel your breathing. Think about a difficult communication. Try to recall a time when you were not seen or heard. It is memory now.

Who was it with? What was it about? Why was it so difficult? What did you want from the other person? What did you get? What did the other person want? What did you feel in the meantime? What do you feel now? Has the problem been solved? How can it be solved?

Feel your breathing again. And when you are ready, slowly come out of the meditation.

### **Difficult communication**

We shall now work with communication. You can begin with a short meditation (5–10 minutes).

The following communication exercise is for two people.

Sit down side by side. If you prefer, you may have eye contact or not. Choose which of you will be the listener and which will be the speaker. The listener must be completely still and not say a word. Not even if there is a lull. The listener must also as much as possible avoid nodding, etc., to what the speaker says. The listener can offer his or her time and attention to the speaker. Only the speaker decides what he/she will talk about. The speaker can also choose to say nothing.

1. The speaker starts by explaining why a specific communication was difficult. Do not explain the exact content. Just describe: What did I want? What did I get? What did the other person want? What did I feel in the meantime? What do I feel now? Has the problem been solved? How can it be solved? The listener concentrates on listening without saying anything (first part lasts for three minutes).
2. It is now the listener's turn to speak and explain what he/she heard. Not one word is to be repeated,

but the message or essence of what was said is explained (second part lasts for three minutes).

3. The speaker now once again talks about a difficult communication. It may be the same one as in step 1 or a new example. Once again, the listener is completely still. This time the listener must notice the speaker's body language (third part lasts for three minutes).
4. The listener explains his/her observations of the speaker's body language (fourth part lasts for three minutes).

Now swap roles and repeat the exercise.

What was it like being the listener? Did you suffer from performance anxiety? Did your partner's words cause you to think in a certain way? Did your mind try to conceive what the speaker's talk was about? Did you know specifically what the other had to do in the difficult communication situation?

---

---

---

---

---

---

What was it like being the speaker? What was it like talking about difficult communication for three minutes while another person listened? Did you notice something new, about yourself or your body language?

---

---

---

---

---

You can look at what you have written in the difficult communication registration form and ask yourself: Is there a pattern?

---

---

---

---

---

---

### **AN UNUSUAL CHARACTERISTIC**

"Little Momo could listen in a way that nobody else could. That's nothing unusual, some might say, everybody can listen.

This is not true. There are only a very few people who can really listen. And the way in which Momo listened was absolutely unique.

When Momo listened, stupid people suddenly got bright ideas. Momo could listen so that inarticulate folk suddenly came out with bright ideas. It wasn't anything that she said or asked that brought such ideas out of the other person; no, it wasn't that. She simply sat there and listened with full concentration, completely involved. While she gazed at them with her huge dark eyes, others felt unique ideas (which they had never guessed were there) suddenly surfacing from deep within.

She could listen so well that restless or undecided people suddenly realized exactly what they wanted. The timid unexpectedly felt free and bold. Those who felt unlucky or

depressed exuded confidence and joy. And if somebody felt that something was missing from his life, which had become meaningless (that he was only one of the teeming masses; that he could not manage and would be discarded like a broken jar) - then he would go and tell little Momo all about it. While he spoke about it, it would become clear in some secret hidden way, that he was basically mistaken; that there was only one of him, that he was unique, and because of that, he was important to the world.

How Momo could listen!"

Michael Ende

### **Express yourself clearly and constructively**

Communication can be stressful, especially in periods that are already marked by acute or chronic stress. Some people experience that their relationship to another person or to them self is actually a stress factor. Perhaps you feel that other people, to some degree or another, have a negative influence on your life. Or perhaps you have experienced that you damage your own or someone else's life.

Many of us react in a specific way when we are not heard or seen.

You can learn to express your feelings in a constructive way. You can also become aware when you cause poor communication. When someone steps on your toes or if you step on someone's toes, frequently is because you have misread a situation or have oversimplified things.

There are times when you are not heard or where you want to communicate but cannot. Many of us react in a specific way when we are not heard or seen. Perhaps not expressing yourself has become a habit. e.g. not saying what you are feeling or thinking. Perhaps another pattern is that you cannot say no to a specific person, or without realising it, you hurt others because you do not listen to them.

If a relationship with another person is to last and to grow, then you need to be able to solve conflicts. And to

bear the duality, so that you and the other can be loving and resisting. Frequently, the more you learn about mindfulness, the more clearly you see the reactions and habits that you unconsciously bring into your relationships.

### **Three types of communication**

Bad communication is frequently experienced as an attack. You feel ‘trampled on’ or ‘driven over’, which triggers a stress reaction.

The martial art Aikido trains you to keep your balance during an attack and to use the attacker’s energy without hurting the attacker or yourself. This requires that you have to have physical contact with your attacker. A lot of people completely avoid contact with people they do not like. Aikido’s goal is to create contact, without hurting anyone.

You can respond to an attack in three ways: passive, aggressive or assertive. The three types of response are demonstrated in this exercise for two people - where the attacker moves forward with arms out and pushes the ‘victim’. If you do not have the opportunity to do this exercise with another person, try and imagine the different situations.

#### **PASSIVE RESPONSE**

The attacker scolds at you. You become annoyed, but do not manage to resist. You give in by lying down on the floor and saying: “It is my fault! Sorry!” You turn away so that the attacker cannot make eye contact. Observe what thoughts and feelings you have. What do you feel in your body? The majority of people dislike these roles but know them well from their own experiences. The attacker frequently feels as frustrated as the victim.

Repeat the exercise. This time you manage to run away. In all certainty, the attacker becomes even more frus-

You can respond in three ways: passive, aggressive or assertive.

trated. But perhaps you feel slightly better. At the very least, you were not trampled over. The problem is, we can rarely react this way because then we would be constantly running away or avoiding others.

#### AGGRESSIVE RESPONSE

Repeat the exercise. This time you resist by pushing back against your attacker. You both stand your ground and fight: "I'm right. You're wrong." Now close your eyes and observe what you feel in your body. What emotions are you experiencing? Frequently, it feels good to fight for your cause. But it is also no good, because the situation is unresolved. Usually it will drag on forever or until one side gives up. Perhaps with the thought: "It's me who is saving the relationship" or "I can't ever do anything right."

#### ASSERTIVE RESPONSE

The assertive response is the equivalent of a mindful reaction to a stressful situation (see page 95). You realise that the attacker is a stressor. You try to stay in control and to see the situation without losing your head.

You move towards the attacker. Stand to the side of the attacker and hold your attacker by the wrist. You are now using the attacker's energy without injuring anyone, and both of you are looking in the same direction. There is close contact. You signal that you are willing to work on the conflict. You are willing to see the situation

#### **EXAMPLE OF AGGRESSIVE/ASSERTIVE COMMUNICATION**

You are scolded. Instead of counter-attacking, you respect the other person by saying: "I understand you are angry. I was not aware that I had hurt you. What I mean is.." in this way you can reach a common understanding – in other words look the same way, without necessarily agreeing.

<b>Passive</b>	<b>Assertive</b>	<b>Aggressive</b>
<p><b>LANGUAGE:</b> You avoid saying what you want, think or feel. When you do say what you want, think or feel, you do it in a way that belittles you. You frequently use apologetic words with hidden meanings. A smokescreen of vague terms or silence. For example, "Well... I mean....I think...I guess... sorry." You let others choose for you.</p>	<p><b>LANGUAGE:</b> You speak honestly, about what you want, think and feel in a direct and helpful way. You make your own decisions. You communicate with tact and wit. You use "I", e.g. "I am angry." Your words are clear and well-chosen.</p>	<p><b>LANGUAGE:</b> You say what you want, think and feel, even if it hurts others. You use patronising words. You use "you", e.g. "You irritate me" and judge and categorise people. Your language is full of threats and accusations.</p>
<p><b>ACTION:</b> You use actions instead of words. You hope that someone guesses what you want. Your voice is unsure, hesitant and weak. You whisper in monotones. You look down or to the side. You nod to almost everything that is being said. You sit or stand with as much distance as possible between you and the other person. You do not know what to do with your hands. Your hands tremble and shake. You exude that you have poor meeting skills, are tense or inhibited.</p>	<p><b>ACTION:</b> You listen carefully. Your manner is calm and confident. You communicate with empathy and strength. Your voice is warm, confident and expressive. You look directly at the other person without staring. You meet the other person. Your hands are relaxed. Your hand is held high and you lean slightly forwards to the other person. You exude calmness.</p>	<p><b>ACTION:</b> You demonstrate your strength. You have no respect for anyone. You behave in a superior manner. Your voice is tense, high, cold and commanding. You can be completely still. Your eyes are cold, small and staring. You almost look straight through people. You take a macho conflict approach. Your hands are on your hips. You stand very close to the other person. Your hands clenched or you point directly at the other person. You have an angry and tense tone.</p>
<p><b>GOAL:</b> To please people so that they will like you.</p>	<p><b>GOAL:</b> To communicate and be respected.</p>	<p><b>GOAL:</b> To dominate and humiliate.</p>
<p><b>FEELINGS:</b> You feel anxiety. You feel that you are ignored, hurt, manipulated and are disappointed by yourself. You are frequently angry and offended afterwards.</p>	<p><b>FEELINGS:</b> You feel confident and successful. You are comfortable with yourself when you are communicating and afterwards. You feel in control. You have self-respect and are target-orientated.</p>	<p><b>FEELINGS:</b> You are self-righteous and superior. You are controlling. Sometimes afterwards you are embarrassed or egoistic.</p>

THE SITUATION YOU FIND YOURSELF IN:	WHAT YOU SAY AND DO:
1. You are watching a film but the people in front of you are making too much noise.	You shush and clear your throat repeatedly.
2. You are at a meeting and someone interrupts you while you are speaking.	You look at the person directly and say: "Excuse me. Let me finish."
3. You want a wage increase.	You walk into your boss's office and say: "Was there any chance of.... oh, can I have a raise?"
4. You tell your boss a good idea about how the office work can be organised. He agrees it is a good idea and says he will ask someone else to implement it.	You put your hands down by your side and shout: "It was my idea. I won't let another person take the honours for it."
5. You look forward to a quiet evening by yourself. A relative phones and asks if you can babysit for them.	You say in a friendly but strong manner: "I have reserved tonight for myself. So, I cannot babysit."
6. Your parents or in-laws phone and say they will visit. You are busy.	You say in a high voice: "You always ring two minutes before you arrive and expect me just to drop everything."
7. Two colleagues speak privately. The work is piling up. Other colleagues have complained about the situation. You are their superior.	You call them over and lean towards them and say: "I know how easily time passes when you're relaxing and talking with friends, but the work is piling up, so I would prefer can you use your twenty-minute break for personal matters"
8. A close friend always arrives late. You have not spoken in several weeks.	When your friend arrives you are ready to explode. You say: "You are always late!"
9. A fixed date and time is set for a weekly meeting. The time is inconvenient for you. It is impossible for you to regularly attend the meeting.	When you are asked about the time, you look down and whisper: "It's OK. I won't be able to turn up regularly but if it suits the rest of you, then it's OK with me."
10. You are the only woman in a group of men (or vice versa). You are asked to be the secretary at the meetings.	You answer: "I'll gladly do my part and take notes this time. I also want everyone else to take their turn too."

CORRECT ANSWER: 1.P 2.AS 3.P 4.AG 5.AS 6.AG 7.AS 8.AG 9.P 10. AS

from the attacker's viewpoint. You also communicate that you are not afraid of contact, at the same time, you do not allow your attacker's energy to overwhelm or injure you. There are now more options. For example, you can wait until the attacker has calmed down and explain the situation to him.

The confrontation becomes like a dance. The anger or frustration that the other brings, can be used as energy in the relationship. It widens both persons horizons. Assertive communication is experienced as the most pleasant of the three forms of communication, because there is contact and both parties end up looking in the same direction.

Several examples of communication are shown on page 134. Determine each kind of communication assertive (AS), Passive (P) or aggressive (AG) communication. The correct answers are shown at the bottom of page 134.

### **The art of listening and doing nothing**

When you meditate, you listen to yourself. It is completely natural that you want your efforts to produce results that you can see or feel, e.g that pain or anxiety disappears. There is always a result, but it is not always the result you had expected. Pain or discomfort changes. Everything changes. Nothing stays the same. It is the basic human condition.

Buddhist monk Matthieu Ricard, who has participated in research into the effects of mindfulness in the brain, says that the essence of mindfulness is an empathetic awareness that can be improved throughout your life (unlike physical practice). He thinks that genuine happiness is love of life. And to love oneself is to love life. Unfortunately, we seek happiness outside of ourselves, so our search for happiness fails. To love yourself is an ability that can be trained by working with your inner self.

## Image of me

In some parts of Africa, people like to hold their most prized possessions when they are being photographed, e.g. a chicken or a watch. We create the same self image in the West. I am a doctor, I have three children and travel a lot. If I am uncertain and I need to regain my confidence, it is frequently this presentation of myself that I use – even when I think it is embarrassing to revert to such labelling.

Seeing yourself as the owner of prized possessions (chickens, watches, big houses, etc.) is meaningless when it comes to yoga and mindfulness. That would just show that you do not know who you are. You can all too easily link your personality to brands, titles or actions. And not just in a positive way. Perhaps you take on the role of a victim: “I have a terrible fate, illness, childhood, anger, family or body.” An illness or fate can be difficult or sad, but it does not determine who we are.

### SHORT MEDITATION

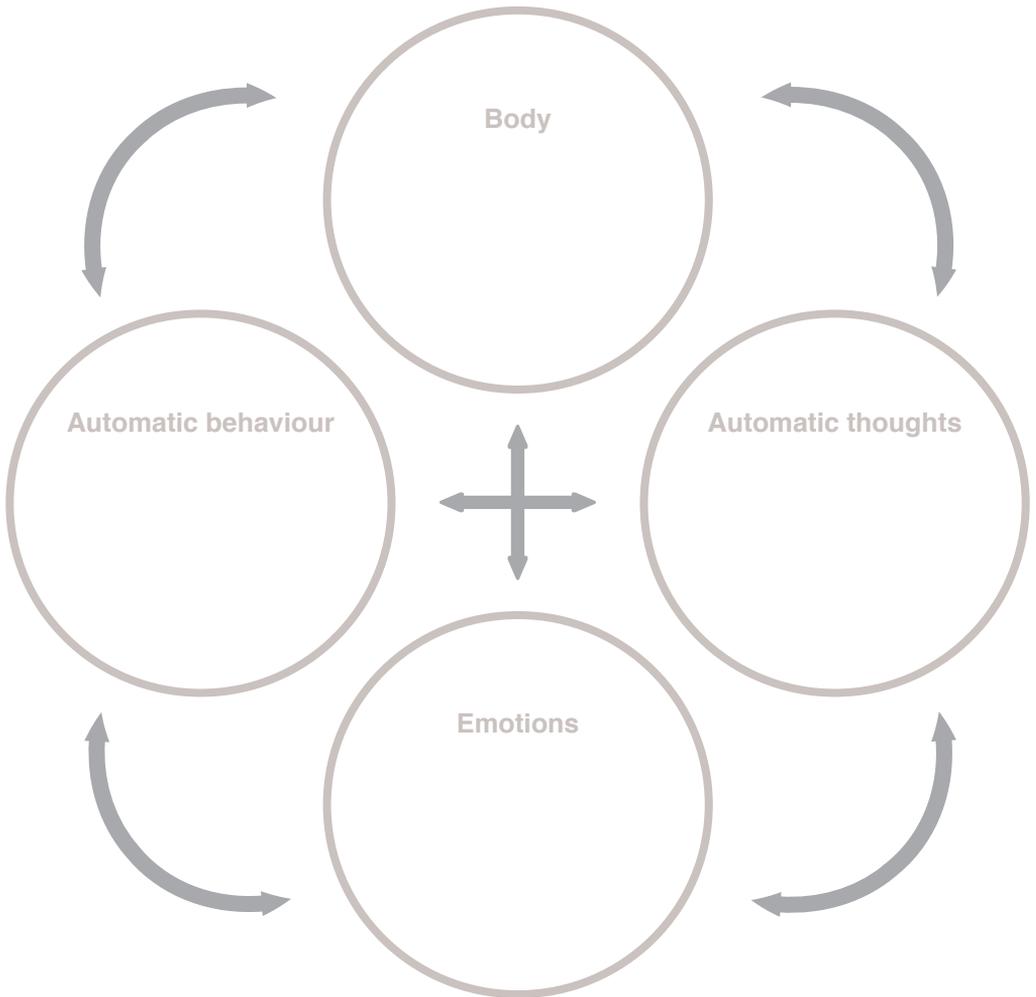
Sitting in a comfortable position, feel your breathing, if required take some deep breaths (5–10 minutes).

## Main points in week 6

- Communication can be a stress factor. You can practice your communication skills.
- A lot of people believe that they are the only one who feels wrong. That they have no value.
- The brain cannot know the difference between how you treat yourself and others. If you judge others, you judge yourself.

### PROPOSAL FOR DAILY PRACTICE IN WEEK 6

- Alternate on a day to day basis between meditation, body scan or yoga
- Complete the symptom registration form for the week
- Complete the basic model below
- Afterwards, examine your patterns



***Complete the model***

## KINDNESS

Before you know what kindness really is  
you must lose things,  
feel the future dissolve in a moment  
like salt in a weakened broth.  
What you held in your hand  
what you counted and carefully saved,  
all this must go so you know  
how desolate the landscape can be  
between the regions of kindness.  
How you ride and ride  
thinking the bus will never stop,  
the passengers eating maize and chicken  
will stare out the window forever.  
Before you learn the tender gravity of kindness,  
you must travel where the Indian in a white poncho  
lies dead by the side of the road.  
You must see how this could be you,  
how he too was someone  
who journeyed through the night with plans  
and the simple breath that kept him alive.  
Before you know kindness as the deepest thing inside,  
you must know sorrow as the other deepest thing.  
You must wake up with sorrow.  
You must speak to it till your voice  
catches the thread of all sorrows  
and you see the size of the cloth.  
Then it is only kindness that makes sense anymore,  
only kindness that ties your shoes  
and sends you out into the day to mail letters and  
purchase bread, only kindness that raises its head  
from the crowd of the world to say  
it is I you have been looking for,  
and then goes with you every where  
like a shadow or a friend.

Naomi Shihab Nye



# WEEK 7

## AGENDA:

- CONTEMPLATION IN PRACTICE:
  - SILENT MEDITATION (5 MINUTES)
  - RULES (5 MINUTES)
  - SITTING MEDITATION (15 MINUTES)
  - YOGA AND BODY SCAN (60 MINUTES)
  - WALKING MEDITATION (10 MINUTES)
  - SITTING MEDITATION (15 MINUTES)
  - WALKING MEDITATION (10 MINUTES)
  - “LOVE AND KINDNESS”- MEDITATION (30 MINUTES)
  - CHANGE FROM SILENCE TO DIALOGUE
  - GROUP DISCUSSION
- YOUR EXPERIENCE
- TO HOLD PAIN AT A DISTANCE
- SILENCE
- MEDITATION
- NEW HOMEWORK

*You have to be able to be aware of yourself before you can be aware of others; feeling good about yourself is a necessary precondition for being capable of forming relationships with others.*

Erich Fromm

## WEEK 7 CONTEMPLATION

Week 7 gives you the opportunity to contemplate formal practice (mindfulness practice). You can take a whole day or use 4-5 hours to work with the techniques you have learned. If you are part of a group, you can do the exercises together and stay together in silence for the day. You can concentrate on the practice, without talking and while avoiding eye contact. In this manner you permit each other to have a couple of hours on their own, without having to relate to another person. The exercises end with a "Loving-kindness meditation", which is available in the book and on the CD. You should only use the instructions in this meditation if they feel right for you. Afterwards, you can reflect upon your experience. If you are part of a group, you can discuss your experiences.



WWW



### **MEDITATION IN SILENCE**

Sit or lie down comfortably and meditate in silence for 10 minutes. Choose the type of meditation that you prefer.



### **SITTING MEDITATION**

1. Once you are sitting comfortably, when you are ready, observe your breathing. Stay focused on your breathing (approx. 5–10 minutes).
2. What do you feel in your body? Are there places on your body that you feel particularly intensely? Perhaps you feel a pain or something unpleasant in your body that occupies your concentration when you sit for a longer period of time. If this happens you can work in one of two ways. You can either consciously change position or you can work with the pain by concentrating on it. See if you can relate to the pain by examining it, by being inquisitive and accepting towards it. Where did you feel it? What quality does it have? Is it dull or burning? Is the pain accompanied by thoughts and feelings? If the pain moves, move your attention with it. Normally we tense up around a pain and try to seal it off. See if you can open up to where it hurts. If needed, you can focus your breathing on the pain (5-10 minutes).
3. Concentrate on feeling your body as a whole (5–10 minutes).

**YOGA** (30 minutes)

**BODY SCAN** (30 minutes)

**WALKING MEDITATION** (15 minutes)

**SITTING MEDITATION** (15 minutes)

**WALKING MEDITATION** (15 minutes)



**LOVING-KINDNESS MEDITATION** (30 minutes)

- You can start by feeling your breathing.
- And start to think about a person who has touched you, one, who has been kind to you. Perhaps you can think about a situation, where you felt you were truly seen for who you really are. It may be a person who was kind to you. It does not have to be a person. It may also be an animal. If you cannot think about a person or an animal,

you can perhaps imagine how it would be if someone showed you kindness. Think about that person and notice what your body feels. Perhaps you can feel it in the heart.

If you prefer, you can say to yourself:

"May the person be safe"

"May the person be happy"

"May the person be healthy"

"May the person be free from outer and inner harm."

You may prefer other words. use the words you prefer.

- You can wish the same for other people.
- Now you can think about yourself and say the same things. It can be very difficult to say and wish it for yourself.
- You can think about a person who you were in conflict or disagreement with. See, if you can wish the same for this person.
- You can think about the others in the room, the building, the town, the country or even the whole world.
- Lastly, you can return to your breathing.

### **Your experience**

What have you learned, if anything? Did you discover some patterns? What was difficult? How did you work with it? What did you learn about yourself?

---

---

---

---

---

---

---

### **To hold pain at a distance**

Through meditation I have become aware that part of what motivates me to help others is to hold my own pain at a distance. When the pain is kept at a distance,

it becomes an armour against vulnerability. Through meditation, a lot of people discover that suffering and vulnerability are fundamental conditions that change, and which are shared by everyone.

We need a sensitive point where we can feel ourselves and the depths of life deep into our cores.

We need both strength and vulnerability. We need a sensitive point where we can feel ourselves and the depths of life deep into our bones and where we learn humility, thankfulness and true kindness a moment at a time and from this gain the strength to move in the direction that is important for us.

Vulnerability is the opposite strength; we are able to receive and learn completely new things when we can open up to life and to love.

### **Silence**

For some people silence is liberating, for others it is artificial or difficult. Some people miss communicating or become provoked by having to spend time by themselves. Some people find that meditating in silence is educational, others become disappointed because they do not experience anything. It cannot be emphasised enough, that there is no correct answer to the exercises. Perhaps you had thoughts about how you managed the exercise. No matter what the thoughts are about, they pull our attention from the now. Mindfulness is to feel a place below the changing thoughts and feelings, a place that is still. It is like diving into a stormy sea and discovering all is still just a couple of metres below the surface.

On several occasions, I have spent a whole month in silence. To begin with, the mind is often very noisy. It can be busy with, for example, thoughts about the past or the future. It can also feel as though you will go mad from boredom or frustration. But suddenly you begin to feel the interesting nature of breathing. And perhaps you discover that it is not breathing itself that is so interesting but the energy or sensitivity you put into it.

During silence and longer periods of meditation, the mind gradually becomes tranquil. You let go of something. You give up ‘the fight’ against yourself and live life one breath at a time. The senses become sharper, almost as if you can hear the grass grow.

It is important that you make the practice your own. The week’s exercises are without the CD. Use what you have learned, as well as you can. Practise for 45 minutes everyday. It is here where you feel where you are and how you are feeling. You accept and acknowledge how you are feeling, Perhaps you say to yourself: “I’m taking care of this.” In this way, you give yourself positive energy and attention. You can use the rest of the day for informal practice. Practise the whole time in being present in the moment. Precisely as in the formal practice, your attention wanders, so you go into “automatic pilot’ mode. Your task again and again, is to come back to the single moment, the one moment you can live in, the moment right now.

#### **SHORT MEDITATION**

Sitting in a comfortable position, feel your breathing, if required take some deep breaths (5–10 minutes).

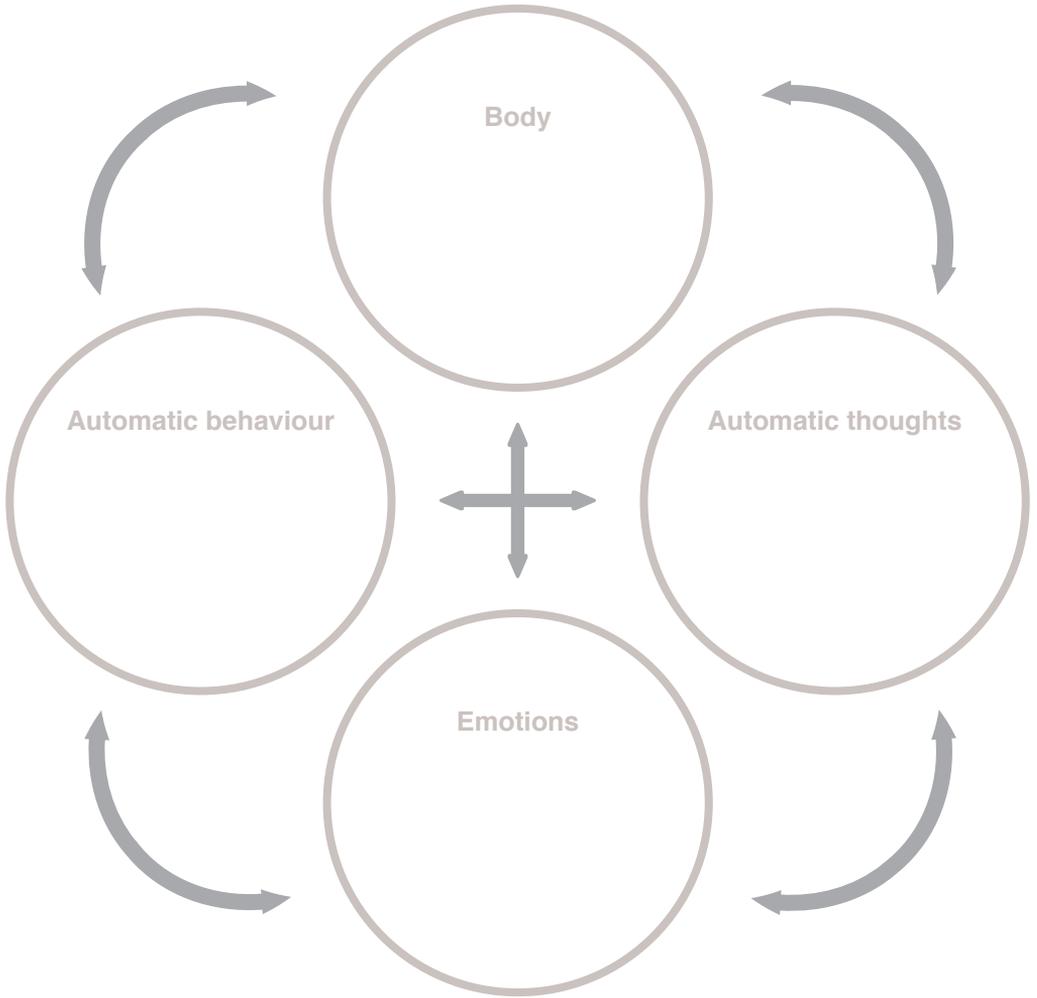
#### **Main point in week 7**

- There is wisdom in stillness.

#### **PROPOSAL FOR DAILY PRACTICE IN WEEK 7**

- Give yourself completely to precisely this moment
- Practice for 45 minutes every day without using the guiding exercises
- Complete the symptom registration form for the week
- Complete the basic model on page 147





***Complete the model***

# WEEK 8

## AGENDA:

- YOGA (5-10 MINUTES)
- MEDITATION (30 MINUTES)
- DISCUSSION ABOUT HOMEWORK
- OPPOSING FORCES
- EVERY INHALATION IS A GIFT
- EVERY MOMENT BE A NEW BEGINNING
- CHANGES
- UNDESIRABLE THOUGHTS, HABITS AND BEHAVIOUR
- MEDITATION
- NEW HOMEWORK

*To change is to open yourself to something new. Often the healing process requires that you change something in your life. Change often creates fear. We know what we have. There is safety in it, even when it is a bad thing. We do not know what we will get.*

Lone Overby Fjorback

## WEEK 8 CHANGE

Week 8 begins with yoga and meditation without the use of any guiding exercises.

### **YOGA (5-10 MINUTES)**

You can choose the exercises you prefer.

### **MEDITATION (30 MINUTES)**

Sit in a comfortable position. Breathing can be a way of anchoring yourself in meditation but you can also choose to stay in the meditation without having a fixed focus of attention. Perhaps it is your thoughts or your feelings that dominate, perhaps it is a sound or pain that dominates.



WWW



What was it like to meditate without the guiding exercises?

---

---

---

Meditation is discovering a place that is large enough to contain conflicts or apparently opposing forces. It is a place where there is space for the whole of you.

### **Opposing forces**

I am here but I want to be there. I am there but I want to be here. I am happy to get this task at work but I am having difficulty getting started. Do you recognise these thoughts and feelings? Or does it remind you of something? Meditation is discovering a place that is large enough to contain conflicts or apparently opposing forces. It is a place where there is space for the whole of you.

In this space there is nothing that must be removed or attacked. You must not do anything else other than be, with an awoken and clear consciousness and observe what happens.

"My marriage would be brilliant if it wasn't for my husband" or "My job would be perfect if it wasn't for my boss" are examples given by Buddhist nun Pema Chödrön to illustrate how quickly we blame someone else or complain about something we can't have or do.

Instead, focus on what you can bring. Permit yourself to feel what you feel – because that is how you are feeling, even when you are not feeling good. Can you be present in a short moment without changing anything at all? You can meditate on contentment. It can feel pleasant, but actually, that is not the goal of meditation. The peaceful space or feeling of harmony, contentment or happiness is limited. Therefore, meditation's ultimate goal is pure awareness. In that state, we are open and receptive to the world as it is. We are free from our egos, which constantly try to turn a situation in a specific direction.

### **Every inhalation is a gift**

Many of my patients have told me that every time they feel a little better, something happens that makes the situation worse. The conclusion is that nothing lasts. You may try to hold onto certain situations, experiences or feelings, but everything is temporary. We must leave

this place one day and the only thing we are master of, is how awake and conscious we are. This is what we do in meditation. Every inhalation is a gift. Perhaps you do not think so right now, but one day you will be utterly thankful for that you can breathe. With every exhalation you let go, and if you can let go without resistance, you are free.

Meditation embraces the whole. You embrace your craving for more and your resistance to letting go. Meditating is demanding, even though you do nothing. The task is to completely give yourself to this moment or breath.

### **Every moment is a new beginning**

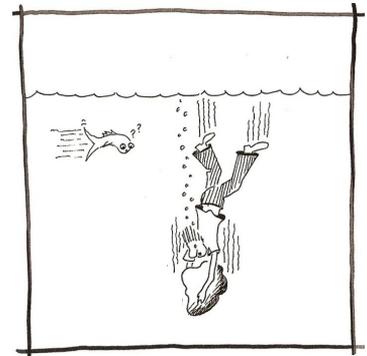
Mindfulness practice can give you a greater insight in how you are feeling and the way you are living your life. Perhaps you use too much energy worrying about things. Perhaps you have undesirable patterns of behaviour that are difficult to change.

You always have a choice. Will you continue along the same lines or will you try something new? Every single moment can be a new beginning.

Some years ago, I decided to finally fight the knot in my stomach. For a whole year, I meditated every day and cried. I struggled and thought, this has to end now. I was ready to take whatever might come. In a meditation I saw an image of myself: I was in a deep and fast-flowing river. I clinged to a stone so I would not lose control and drown. I realised that the stone symbolised my pain and it made me feel safe. I had difficulty letting go of my pain because it felt as if my life depended on it.

With every increasing frequency, I realise that the daily problems I encounter are due to the fact that I will not let go. I try to justify to myself that I have followed a specific path for years – even though it was undesirable.

You always have a choice. Will you continue in the same old way or will you try something new? Every single moment can be a new beginning.



### **GOOD AND BAD SHOOTS**

We are all born with good and bad shoots, says Zen Buddhist monk Thich Nhat Hanh. For example, when we are angry, new anger shoots will grow, which makes being happy more difficult. So we must be careful about the life we lead and the feelings we express. We feel much better when we are unconcerned, forgiving and non-judgemental towards ourselves and to others.

### **Changes**

Even giving up overtly bad habits is difficult. Change can provoke anxiety, and the bigger the change the greater the stress reaction. You throw something out that used to work for you. And you do not know what you will get instead. Perhaps there have been periods in your life where it was important that you did not show certain feelings. Perhaps you have always been praised for your efforts at work. Or perhaps you are always aware of the needs of others. The brain learns quickly. If a behaviour worked once, it is an easy habit to repeat this behaviour in the future. But patterns of behaviour can seem like a pair of shoes that have become too small.

Most of us know the pain of saying goodbye to something familiar but also the joy of welcoming something new. You can practice yourself to see change as a challenge and not a threat. You can engage with your life and learn to have control rather than succumb to feelings of hopelessness. Some people have everything but they always complain about what they do not have. Other people have lost everything but still find meaning in their lives.

All of us can practise in grappling with the lives we have; engaging with our lives and taking control of the things we can control. In other words, live life, as it is, for better or worse, instead of becoming lost in fantasies of what life could be.

### **TO TRAP MONKEYS**

in India there is a tradition of trapping monkeys. You make a basket with a small hole, so that the monkey can just stretch its hand inside. There is a banana in the basket. The monkey reaches in and grasps the banana and becomes trapped because it will not release the banana. If it was to let go of the banana it would almost certainly be able to get its arm out and escape. But usually this doesn't happen.

Sit still and feel your breathing. Think about what you hold onto, even if it is not good for you. What do you not want to change?

---

---

---

---

---

---

### **Undesirable thoughts, habits and behaviour**

Most of us have fixed thoughts, habits or patterns of behaviour, even when they are not good for us. It may be a notion of how you should be or how others should be. In a relationship, you can become fixed on who is right, instead of looking at things from a larger perspective.

Like almost everyone else, I like to feel that I am skilful, responsible and helpful. Sometimes striving after these qualities causes me to forget my actual needs. I lose perspective and have trouble seeing what I can realistically manage. What I am up against is my own vanity and my wish to show that I am a great, talented

and loveable person. You could say that the wish to be a great person comes from a very small person.

To become aware of your own patterns of behaviour is to become empowered. It allows you more freedom. It does not mean, for example, that you will never strain yourself. But you may be quicker at realising what is happening and are quicker at 'correcting' the direction you are moving in.

"The wise man also gets lost but he knows how to get back again," goes the saying. The more you are in the now, while being accepting and having affection for yourself, the clearer it becomes for you, when you get lost or trip over – the easier it is to change things.

#### **SHORT MEDITATION**

Sitting in a comfortable position, feel your breathing, if required take some deep breaths (5–10 minutes).

### **Main points in week 8**

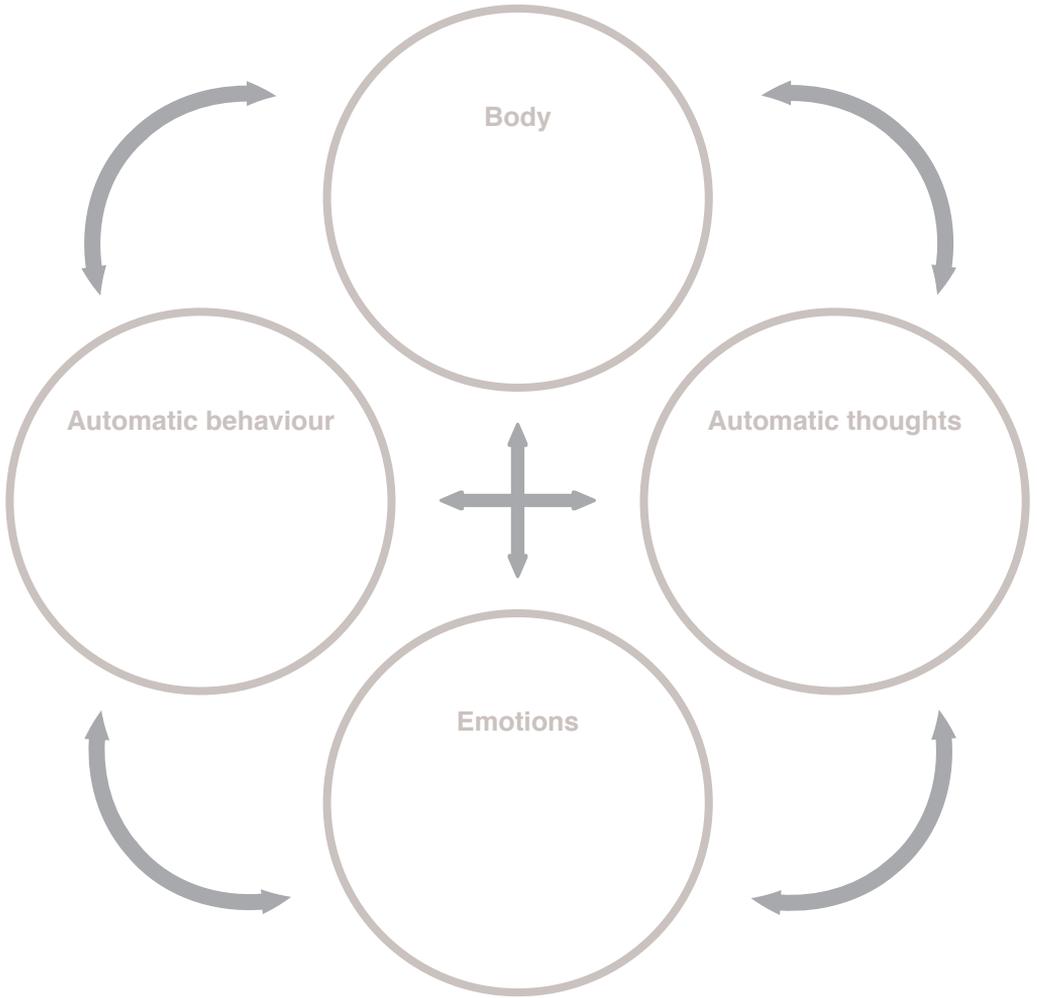
- Change is difficult. We are creatures of habit and we have a tendency to stick to what we know, even when it is no longer effective.
- Change is frequently necessary if we want to improve our health and well-being.

#### **PROPOSAL FOR DAILY PRACTICE IN WEEK 8**

- Practise meditation or yoga (with or without the CD) for 45 minutes every day
- Complete the symptom registration form for the week
- Complete the basic model on page 157







***Complete the model***

# WEEK 9

## AGENDA AND CONTENTS:

- BODY SCAN
- YOGA
- MEDITATION
- WHAT IS BODILY DISTRESS SYNDROME? (WEEK 2)
- WHY MINDFULNESS? (WEEK 1)
- IMPORTANT ATTITUDES (WEEK 1)
- WHAT IS MINDFULNESS?
- EVALUATION OF THE COURSE
- IDEAS FOR FURTHER MINDFULNESS PRACTICE
- LOOKING AHEAD
- CONCLUDING MEDITATION

*Meditation is like cleansing the body from within ...*

Sofia, meditation practitioner

## WEEK 9

# ON-GOING PRACTICE

Week 9 starts with a body scan – the first meditation you worked on – followed by yoga and sitting meditation. You can also use the yoga exercise guide on the CD or online at [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness).



### **BODY SCAN**

About 30 minutes.

### **YOGA**

About 10 minutes. Choose the exercises that you need. If you are part of a group, then each person can be the instructor for a particular exercise or name the area that he/she wants to focus attention on.

### **SMALL MEDITATION**

Feel your breathing. Meditate over how the course has been. What is it that you are certain you will remember? What will you take with you? Feel your breathing.

The course is about to finish. What are your thoughts?

---

---

---

Why did you start? What expectations did you have?  
Why did you continue?

---

---

---

What did you want with the course?

---

---

---

What have you taken from the course?

---

---

---

What have you learned?

---

---

---

What sacrifices have you made and what was the price?

---

---

---

What is your largest obstacle to growth and healing?

---

---

---

What strategies can help to prevent you from becoming stuck?

---

---

---

### **Ideas for further mindfulness practice**

You have practised yoga and mindfulness for many weeks now. I hope your efforts will help you to achieve your goals. Hopefully you will continue to practice, so you can better manage the challenges that life will bring.

*1. Sitting meditation for 20–30 minutes, once or twice a day.*

Sit, as still as possible, in a comfortable position, with your back and head held straight.

- Be aware of breathing in, and breathing out.
- Be aware of specific areas of the body.
- Be aware of your body as a whole.

- Listen to the silence and the sounds.
- Observe the thoughts and feelings that arise – without getting involved in the contents, observe them only as thoughts and feelings.
- When you discover that your mind is beginning to fantasise, focus your attention back to the now.

If you discover that you are feeling resistant to sitting still every day, focus your attention on your resistance and observe it. By sitting still at the same time every day, you can become more relaxed and balanced in your activities during the rest of the day. Use the CD or visit [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness) when you want to strengthen your meditation with guided exercises.

2. *Body scan and meditate as often as you can during the day.*

You now have the ability to scan your body with precise and concentrated awareness. When you discover a tension in a part of your body, focus non-judgemental awareness on that part of your body. Relate to what you are feeling with a sense of curiosity. You can body scan at any time, under all circumstances. All that is required is that you focus your attention on the body and that you are willing to listen. You can also try to breathe all the way down in the belly as often as possible during the day. It does not require effort, just awareness. If you prefer, you can use the CD or visit [www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness). Adjust the exercises to suit your preferences.

Body scan permits you to be comfortable in your own body. The feeling is greater than external circumstances or mental states, which sometimes lead to tension or discomfort, sometimes to relaxation and well-being. When you observe changing life situations and emotional states, you are permitting the development of a deep feeling of balance and presence. This feeling is an expression of wisdom.

3. *Walking meditation, as often as you can during the day*

Slow down now and then when you walk and remind yourself that you are here, now. Feel how you hold or bear your body. As you walk, feel your feet, legs and chest. Be open to your surroundings. You can do this exercise when you are shopping or walking on the street, and also when you are standing and waiting. You can combine the exercise with focus on your breathing, by feeling your breath all the way down into your stomach.

4. *Mindful eating*

Examine the quality and quantity of your meal. What function does food have for you? Do you eat to enjoy the meal and give yourself energy or to comfort yourself, fill an emptiness, feel more satisfied or safe?

Perhaps you eat and drink too much, too quickly and incorrectly, so that you dull the senses and do not notice the effects of the meal. This is a pity, because eating can be a wonderful experience, and there is a great sense of satisfaction linked to nourishing the body with good quality food.

Eat with greater attention to your food, and eat slower than you normally would. You can eat a meal in silence, where you only concentrate on your meal. Avoid watching television or reading while you eat. You will be able to focus greater attention on what you are eating. You can also use the same techniques when eating with others.

5. *Yoga – stay in shape without being fanatical*

Regularly practise yoga and relaxation for 20–45 minutes, as often as you can. If you prefer, use the exercises on the CD or online at [www.psykiatrifonden.dk](http://www.psykiatrifonden.dk). Do the exercises slowly and breathe through the stomach.

- Perhaps it can help if you ask yourself the following questions:
- How does my body feel right now?
- What is my health like right now?
- Am I allowing parts of my body or my mind to become unhealthy because of inactivity or by ignoring it?
- Is better health one of my goals?
- What do I do today to achieve that goal?

## 6. *Management of stress*

- Be aware when you are experiencing a situation as stressful. Remember, you can be conscious of your reaction instead of reacting automatically.
- Remind yourself that you are complete and whole as you are – ideally, several items a day. You do not lose anything by permitting yourself to express your sensitivity and love.
- Notice judgemental thoughts and feelings, e.g. "I like/don't like.." or "I want/don't want ...". When these feelings arise, you can try and notice how they are expressed in your activities, your behaviour, the tone of your voice and the choices you make.
- Be aware of what underlies your thoughts and actions. Listen to your feelings when you make a choice.
- Notice just how much your feelings and reactions affect your physical well-being. Be conscious of your posture, how you look and how much you eat, drink, smoke and talk. Use breathing to tune in on yourself.
- Notice how much your mind dwells on the past or worries about the future. Notice how many of your thoughts are about "me" and "mine".
- Focus attention on breathing. It helps you to be in the now. Right now, and now ...
- Notice the degree and how overwhelming the following feelings are: fear, anger, jealousy, envy, tiredness, restlessness, boredom, anxiety, worry, insecurity, greed, hate and laziness.
- Notice the quality of the feelings; fearlessness, happiness, happiness for others, energy, peacefulness, open-

ness, relaxation, security, satisfaction, love and enthusiasm. Are they strong? How can they be strengthened and supported?

- Notice your thoughts in relation to anxiety and depression. Are the thoughts correct? What thoughts could support your self-worth and your well-being. Are the thoughts more precise or correct?
- Imagine that you can die at any moment. How would you like that moment to be? What shall your mind be like? Will it be full of condescending thoughts and hate for yourself? Or will you be at peace with yourself? Imagine what can make you at peace with yourself right now.

### **Looking ahead**

Using mindfulness techniques is a continuous process. Learning consists of many steps –forwards and backwards. Do not lose courage, if you fall back into old habits. Relapses will become rarer and rarer events. The better you become at looking ahead, the more you learn. You should be aware that positive changes can also bring new difficulties.

#### **LETTER TO YOURSELF**

Small meditation. Feel your breathing. Meditate over how the course has been. What is it that you are certain you will remember? What will you take with you? Feel your breathing. Write a letter to yourself and describe what you have learned and what you will take with you. If you so wish, you can make a note in your calendar to read the letter six months from now.

### **CONCLUDING MEDITATION**

Sit down. Meditate about how you are feeling right now. See if you can find a single word to describe it. Write it down or say it aloud.

---

---

If you are doing the exercises in a group, you can sit in circle and hold hands. Each person is then invited to say their word aloud.

### **Main point in week 9**

- The techniques work if you use them!

### **PROPOSAL FOR DAILY PRACTICE IN WEEK 9**

- Carry out a meditation and yoga for 45 minutes every day. Use the technique you prefer( with or without the CD).
- Describe your short-term and long-term goals.

**Goals:**

Describe three short-term goals that you can achieve, based on your experience from this programme.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Describe three long-term goals (three years or longer)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

*To live in this world  
you must be able  
to do three things:  
to love what is mortal;  
to hold it against your bones  
your life depends on it;  
and, when the time comes to let it go,  
to let it let go.*

Mary Oliver

# EPILOGUE

The world is beautiful and savage. We all know that. But it is always a difficult thing to concede. We want to protect our children from the world's terrible reality. We want to protect ourselves. We often forget that pain is unavoidable and to feel pain or joy is part of the human condition.

Research shows that mindfulness can improve our physical, mental and social well-being. I feel that I am incredibly privileged, because I can combine my profession as a doctor with my passion for yoga and meditation. For many years now, to my and my patients' great satisfaction, I have used mindfulness techniques as part of treatments. It is wonderful being able to apply scientific principles to these techniques. I am certain in the future, the medical profession will have specific knowledge about what it means to be a human being. We must educate patients, so that they know that whatever ails them – there is more right with them than wrong with them. No matter what ails them, we must work with them if they are willing, but of course not by subjecting them to meaningless examinations and treatments. We must give hope by teaching them to do something that nobody else can do for them – take responsibility for their lives. They must consciously and systematically learn to work with stress, pain and disorders.

I am certain that I am a better mother, wife, friend and doctor when I am in harmony with myself. If I can tolerate my own presence, then I become more tolerant of other people.

I am certain that we can incorporate more humanity into our everyday existence. And this can be of great benefit to our healthcare sector. We cannot solve everything by operating on people or by medicating them. We have to relate to our own and our patients' suffering.

Thank you for sharing this mindfulness journey. I wish you all the best for the rest of your way. If there is one thing that I have learned is this: it is difficult to be in the now. But it is possible. Again and again to return to the life that is right in front of me. When I am mindful, I cry and I am deeply thankful for the miracle that life is.

Thank you to everyone who participated in Mindfulness Therapy, and thank you to the Danish Mental Health Fond and the Research Clinic for Functional Disorders for all of the support they have given to help me disseminate knowledge about mindfulness.

*Lone Overby Fjorback*

*Home*

*In time you will discover  
a place in your heart,  
where your true essence lives.  
It has been there all your life  
faithfully waiting for you to come home.*

*Buddhists say, this essence is emptiness.  
Religions say it is God.  
Primitive people believe it is a life force.  
Brain researchers think it is  
increased activity in the left part of the frontal lobe.*

*I feel the essence - my home,  
I know, it is possible  
to let go  
of the illusions of happiness  
and feel it right here.*

Lone Overby Fjorback

# LITERATURE

- Amen, Daniel G.: *Change your brain, change your life*. New York: Three Rivers Press, 1998.
- Arch, J.J. & Craske, M.G.: *Mechanisms of mindfulness: Emotion regulation following a focused breathing induction*. *Behaviour Research and Therapy*, 2006, 44(12):1849-1858.
- Armstrong, Karen: *A history of God*. New York: Ballantine Books, 1993.
- Borysenko, Joan: *Indre ro i en travl hverdag*. Aschehoug Dansk Forlag, 2003.
- Charlesworth, E. & Nathan, R.: *Stress management: A comprehensive guide to wellness*. Texas: Biobehavioral Press, 1982.
- Chödrön, Pema: *Awakening loving-kindness*. Shambhala Boston & London, 1996.
- Coelho, Paulo: *By the River Piedra I sat Down and Wept*. Haper Collins, 2006.
- Danner, D.D., Snowdon D.A., Friesen, W.V.: *Positive emotions in early life and longevity: Findings from the nun study*. *Journal of Personality and Social Psychology*, 2001, 80(5):804-813.
- Ehdin, Sanna: *The Self-Healing Human*. Holistic Wellness Publishers, 2003.
- Ende, Michael: *Momo*. Sommer & Sørensen, 1973.
- Engel, A.K., Fries, P., Singer, W.: *Dynamic predictions: Oscillations and synchrony in top-down processing*. *Nature Reviews Neuroscience*, 2001, 2:704-716.
- Epstein, Mark: *Thoughts without a thinker*. Basic Books, 2004.
- Fink, P., Toft, T., Hansen, M.S., Ørnbøl, E., Olesen, F.: *Symptoms and syndromes of bodily distress: An exploratory study of 978 internal medical, neurological, and primary care patients*. *Psychosomatic Medicine*, 2007, 69(1):30-39.
- Fromm, Erich: *The Art of Loving*. Harper, 1956.
- Fromm, Erich: *Man for Himself: An Inquiry into the Psychology of Ethics* Holt, Rinehart and Winston, 1947 and 1954.
- Goleman, Daniel: *The meditative mind: The varieties of meditative experience*. Los Angeles: J.P. Tarcher, 1988.
- Hanh, Thich Nhat: *Peace Is Every Step*. Bantam Books, 1991.
- Juul, Jesper: *Kunsten at sige nej* Forlaget Apostrof, 2006.
- Kabat-Zinn, Jon: *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Delta, 1990.
- Kuzminskyte, R., Kupers, R., Videbech, P., Gjedde, A., Fink, P.: *Increased sensitivity to supra-threshold painful stimuli in patients with multiple functional somatic symptoms (MFS)*. *Brain Research Bulletin*, 2010, 82(1-2):135-140.
- Langer, E.J. & Rodin, J.: *The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting*. *Journal of Personality and Social Psychology*, 1976, 34(2):191-198.

- Lazar, S.W.: "Mindfulness research". I: Germer, C.K., Siegel, R.D., Fulton, P.R. (red.): *Mindfulness and psychotherapy*. New York: Guilford Press, 2005.
- Lazar, S.W. & Benson, H.: "Functional brain imaging and meditation". I: Leskowitz, E. (red.): *Complementary & alternative medicine in rehabilitation*. St. Louis: Churchill Livingstone/Elsevier, 2002.
- Lazar, S.W., Kerr, C.E., Wasserman, R.H., Gray, J.R., Greve, D.N., Treadway, M.T., McGarvey, M., Quinn, B.T., Dusek, J.A., Benson, H., Rauch, S.L., Moore, C.I., Fischl, B.: *Meditation experience is associated with increased cortical thickness*. *NeuroReport*, 2005, 28;16(17):1893-1897.
- Møllehave, J.: *La Fontaine fabler (La Fontaine fables), interpreted by Johannes Møllehave*, Sesam, 2007.
- Nelson, Portia: *There's a hole in my sidewalk: The romance of self discovery*. Beyond Words Publishing, 1994.
- Nye, Naomi Shihab: *Words under the words: Selected poems*. The Eighth Mountain Press, 1995.
- Oliver, Mary: "In blackwater woods". I: *American Primitive*. Back Bay Books, 1983.
- Pert, Candace: *Molecules of emotions – why you feel the way you feel*. Simon & Schuster, 1998.
- Ricard, Matthieu: *Happiness: A guide to developing life's most important skill*. Little, Brown and Company, Hachette Book Group, 2003.
- Rumi: *Say I am you: Poetry interspersed with stories of Rumi and Shams*. Translated by John Moyne and Coleman Barks. Maypop Books, 1994.
- Rumi: *The essential Rumi*. Translated by Coleman Barks with John Moyne. HarperOne, 1997.
- Santorelli, Saki: *Heal thy self*. New York: Bell Tower, 1999.
- Senge, P.M., Scharmer, C.O., Jaworsky, J., Flowers, B.S.: *Presence: An Exploration of Profound Change in People, Organizations, and Society*. Currency, New York, 2006.
- Siegel, Daniel J.: *The mindful brain: Reflection and attunement in the cultivation of well-being*. W.W. Norton & Company, 2007.
- Swami Janakananda: *On the Ability to Experience Bindu* no. 19, 1993.
- Scandinavian Yoga and Meditation School. [www.yoga.dk](http://www.yoga.dk)
- Swami Janakananda: *Yoga, Tantra and meditation in Daily Life*. Red Wheel / Weiser, 1992.
- Thoreau, Henry David: *Walden, or Life in the Woods* Ticknor and Fields: Boston, 1854.
- Williams, M., Teasdale, J., Segal, Z., & Kabat-Zinn, J.: *The mindful way through depression: Freeing yourself from chronic unhappiness*. New York: Guilford Press, 2007. Danish edition: *Bevidst nærvær*. Akademisk Forlag, 2009.

# EXERCISES

The following exercises are available on the accompanying CD:

- Long body scan (about 30 minutes)
- Short yoga programme (about 20 minutes)
  - Mountain pose
  - Sideways bend
  - Shoulder rotations
  - Mountain pose
  - Balance exercises
  - The tree
  - Bending pose
  - Mountain pose
- Short sitting meditation (about 14 minutes)
- Loving-kindness meditation (about 13 minutes)

The following exercises are available at  
[www.psykiatrifonden.dk/forlag/mindfulness](http://www.psykiatrifonden.dk/forlag/mindfulness):

- Short body scan (about 16 minutes)
- Long sitting meditation (about 33 minutes)
- Long yoga programme (about 33 minutes)
  - Corpse Pose
  - Pelvis rotations
  - The cat
  - Corpse Pose
  - Pelvis rotations
  - Stomach exercises (the Cobra)
  - Corpse Pose

# Appendix B

## *Paper I*

### **Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review of randomized controlled trials**

Acta Psychiatrica Scandinavica. 2011; Aug; 124 (2): 102-19.



## Review

# Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy – a systematic review of randomized controlled trials

Fjorback LO, Arendt M, Ørnbøl E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy – a systematic review of randomized controlled trials.

**Objective:** To systematically review the evidence for MBSR and MBCT.

**Method:** Systematic searches of Medline, PsycInfo and Embase were performed in October 2010. MBSR, MBCT and Mindfulness Meditation were key words. Only randomized controlled trials (RCT) using the standard MBSR/MBCT programme with a minimum of 33 participants were included.

**Results:** The search produced 72 articles, of which 21 were included. MBSR improved mental health in 11 studies compared to wait list control or treatment as usual (TAU) and was as efficacious as active control group in three studies. MBCT reduced the risk of depressive relapse in two studies compared to TAU and was equally efficacious to TAU or an active control group in two studies. Overall, studies showed medium effect sizes. Among other limitations are lack of active control group and long-term follow-up in several studies.

**Conclusion:** Evidence supports that MBSR improves mental health and MBCT prevents depressive relapse. Future RCTs should apply optimal design including active treatment for comparison, properly trained instructors and at least one-year follow-up. Future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments.

**L. O. Fjorback<sup>1</sup>, M. Arendt<sup>2</sup>,  
E. Ørnbøl<sup>1</sup>, P. Fink<sup>1</sup>, H. Walach<sup>3</sup>**

<sup>1</sup>The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Aalborg,

<sup>2</sup>Unit for Psychiatric Research, Aarhus University Hospital, Aalborg, Denmark and <sup>3</sup>Institute for Transcultural Health Studies, European University Viadrina, Frankfurt, Germany

Key words: mindfulness meditation; mindfulness-based cognitive therapy; Mindfulness-Based Stress Reduction; systematic review; randomized controlled trials

Lone Fjorback, The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Noerrebrogade 44, DK-8000 Aarhus C, Denmark.  
E-mail: lonefjor@rm.dk

Accepted for publication March 9, 2011

### Summations

- Mindfulness-Based Stress Reduction is recommended as a useful method for improving mental health and reducing symptoms of stress, anxiety and depression.
- Mindfulness-Based Stress Reduction is recommended in medical disease management to improve health-related quality of life.
- Mindfulness-Based Cognitive Therapy is recommended for recovered recurrently depressed patients to prevent depressive relapse.

### Considerations

- Results are generalizable only to individuals who have the interest and ability to participate in a Mindfulness-Based Stress Reduction/Mindfulness-Based Cognitive Therapy programme.
- Lack of long-term follow-up and active control groups are limitations in most Mindfulness-Based Stress Reduction studies.
- Mindfulness-Based Cognitive Therapy may increase the risk of relapse in patients with only two previous episodes.

## Introduction

The literature on mindfulness is constantly expanding requiring updated reviews regularly. Mindfulness, defined as moment-to-moment non-judgemental awareness, is a skill that can be learned through practice, and it is believed to promote wellbeing (1). Mindfulness has received interest from clinicians and researchers because it seems to improve acceptance of symptoms that are difficult or impossible to change, install a cognitive metareflective capacity that enhances the degree of freedom of patients and help patients change their focus by emphasizing experience of the present moment. These potential mechanisms are not part and parcel of the established therapy programmes, and hence, mindfulness promises to offer something new to patients (2–4). Mindfulness-Based Stress Reduction (MBSR) (5) is a structured group programme that employs mindfulness meditation to alleviate suffering associated with physical, psychosomatic and psychiatric disorders. Participants are invited to focus with an interested, accepting and non-judgemental attitude on their pain, difficult sensations, emotions, cognitions and behaviour. This practice may lead to change in thoughts and behavioural patterns or in the attitudes towards thoughts, sensations and emotions. The improved self-observation may promote use of better coping skills (6). Mindfulness-Based Cognitive Therapy (MBCT) (7) is an adaptation of the MBSR programme. It incorporates elements of cognitive therapy facilitating a detached or decentred view of one's thoughts and is designed to prevent depressive relapse (6).

Since a first review in 2002, the interest in mindfulness-based interventions has increased (8). Baer (6) concludes that although the empirical literature includes many methodological flaws, mindfulness-based interventions may be helpful in the treatment of several disorders. A meta-analysis performed in 2004 shows effect sizes of approximately 0.5 on standardized measures of physical and mental wellbeing (9). The meta-analysis reviews both published and unpublished studies, and only three of the included controlled studies are actually published. Another review (10) concludes that MBSR is effective in reducing stress and anxiety whether it stems from chronic illness or other factors. However, the review is not systematic as there is no information on the number of included studies or inclusion criteria. An effect size analysis in clinical samples performed in 2010 (11) suggests that mindfulness-based therapy is moderately effective in improv-

ing anxiety and mood symptoms from pre- to post-treatment. However, the effect sizes for controlled studies are concluded to be unreliable and preliminary. All five reviews assess controlled and uncontrolled studies and do not exclude studies with few participants. A review by Tonneato et al. from 2007 assesses the impact of MBSR and MBCT on symptoms of anxiety and depression in clinical populations using a control group (12). They conclude that methodological variability in the reviewed studies precludes strong conclusions and that depression and anxiety do not reliably improve following MBSR. A meta-analysis of controlled studies performed in 2010 reports an overall small effect size of MBSR on mental health in adults with a chronic medical disease (13). In sum, the mindfulness literature is unclear about the evidence for MBSR/MBCT.

## Aims of the study

The aim of the study is to perform a systematic literature review only of randomized controlled trials (RCT) on Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) with adequate sample size and only little variability from the original programmes to give recommendations for research, health care professionals and participants.

## Material and methods

### Description of mindfulness interventions

Mindfulness-Based Stress Reduction (5) consists of eight weekly 2–2½-h sessions and a whole-day retreat between week 6 and 7. The programme focuses on cultivating mindfulness through formal practices (sitting meditation, body scan and mindful yoga) and on integrating this capacity into everyday life as a coping resource for dealing with intensive physical symptoms and difficult emotional situations. It also includes group interactions concerning the challenges and achievements that the participants experience upon integrating mindfulness into their lives and stressful situations. Participants are asked to practice daily home assignments for 45–60 min a day (14).

Mindfulness-Based Stress Reduction is developed by Jon Kabat-Zinn, who emphasizes that MBSR is a complement to medical treatment, not a substitute of it (15).

Mindfulness-Based Cognitive Therapy (16) combines training in mindfulness (MBSR) with cognitive therapy and consists of eight weekly

2-h sessions. MBCT is similar to the MBSR programme, but it focuses more on thoughts. The participants learn to notice when they are ruminating and to identify specific thought patterns (7). MBCT is a prevention programme, not a treatment programme for acute depression. MBSR is intended to be delivered in heterogeneous groups while MBCT is designed to target homogenous group, but as the aim of the present review is to summarize the evidence lumping in chosen for inclusion and splitting in the conclusion.

#### Identification and selection

This review focuses on MBSR and MBCT because both treatments are well defined and mindfulness training is the key element. Mindfulness techniques are also used in other treatments (17, 18), but these interventions are not included as mindfulness training is not considered the main part of the treatment.

Studies were identified by systematic searches of Medline, PsychInfo and Embase from 1980 to October 2010. Titles, abstracts and full texts of the identified papers were screened for eligibility by one reviewer. All abstracts were read, and when an indication of mindfulness and RCT was found, the entire article was retrieved. References of selected papers were checked for additional eligible papers. The following criteria were applied for selection:

Keywords: Mindfulness-Based Stress Reduction, Mindfulness-Based Cognitive Therapy and Mindfulness Meditation.

Inclusion criteria: RCT, adults, published in English, MBSR or MBCT.

Slightly modified MBSR interventions with reduced treatment time (7–8 weekly 1½ to 2½-h sessions) for patients with cancer, older adults with chronic low back pain and medical students are included (19–22).

Exclusion criteria: Exploratory studies and studies with 32 or less participants. We chose a minimum of 33 patients to reduce the risk of type 2 error. According to Cohen (23), an 80% change of detecting a medium-to-large treatment effect with a two-tailed *t*-test at  $\alpha = 0.05$  requires 33 participants per sample.

#### Data extraction

Data were extracted from eligible papers on study population, design, intervention, duration of follow-up and measurement and outcomes of physical and mental health.

#### Analysis

To examine the effects on physical and mental health, studies were grouped according to study population in non-clinical populations (Table 1) and clinical populations with physical illness (Table 2) or psychiatric disorders (Table 3). The aims and conclusions of the included trials are given in the text, and the outcomes are displayed in the tables. Then, the possible effect of mindfulness interventions was studied for different outcomes such as stress, anxiety and depression (Table 4). Finally, the quality of the RCTs is evaluated (Table 5).

#### Results

The search produced 72 different articles, of which 17 MBSR and 4 MBCT studies were included. The main reasons for exclusion were too few participants and the intervention not being the standard MBSR or MBCT programme.

#### Non-clinical populations (Table 1)

Nyklicek et al. (24) concluded that increased mindfulness may mediate the positive effects of MBSR intervention. The aim was to compare the effects of MBSR to a waiting list control condition while examining potentially mediating effects of mindfulness.

Davidson et al. (25) suggested that MBSR may produce demonstrable effects on brain and immune function. The aim was to measure the effects of MBSR on brain and immune function. We do not know whether the EEG-observed significant increases in left-sided anterior activation - a pattern previously associated with positive affect - are of any practical or clinical relevance, and not all brain scientists agree that increases in left-sided anterior activation are associated with positive affect (26).

Williams et al. (27) concluded that self-selected community residents can improve their mental and physical health by participating in an MBSR programme. The purpose was to determine whether participants in an MBSR intervention experienced decreases in the effect of daily hassles, psychological distress and medical symptoms. The results were based only on completers defined as subjects who completed the control or intervention programme and completed all the questionnaires.

Shapiro et al. (21) suggested that the short-term results give strength to the hypothesis that mindfulness can be thought of as 'preventive medicine'

Table 1. Effect of Mindfulness-Based Stress Reduction (MBSR) in non-clinical populations

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Nyklicek et al. (24)	Self-selected community residents reporting symptoms of distress. Recruited in local papers. N = 60 mean age 46, 63% females	MBSR: 8 weekly, 2.5- to 3-h classes along with a silent 7-h retreat in week 6 N = 29	Waiting-list N = 31	End of treatment	Perceived Stress Scale	Group × time effect Psychological wellbeing d-difference 6.17 P = 0.016 MBSR: preM = 32.44, SD = 6.46; postM = 25.39, SD = 7.54 Control: preM = 31.37, SD = 6.46; postM = 28.1, SD = 7.51 Vital exhaustion d-difference 13.72 P = 0.001 MBSR preM = 27.74, SD = 8.02; postM = 18.51, SD = 9.75 Control preM = 27.27, SD = 7.99; postM = 25.34, SD = 9.79 Quality of life d-difference 2.77 P = 0.009 MBSR preM = 2.98, SD = 0.69; postM = 3.37, SD = 0.63 Control preM = 2.97, SD = 0.69; postM = 3.07, SD = 0.63 Positive affect d-difference 8.23 P = 0.006 MBSR preM = 14.18, SD = 7.05; postM = 18.76, SD = 6.84 Control preM = 16.38, SD = 7.04; postM = 16.9, SD = 6.83 No significant group × time effect Negative affect d-difference 1.77 P = 0.189 MBSR preM = 20.49, SD = 8.67; postM = 14.68, SD = 9.21 Control preM = 20.39, SD = 8.69; postM = 17.13, SD = 9.21	Only within group effect sizes
Davidson et al. (25)	Healthy employees Recruited from a biotechnology corporation. 48 were randomized, N = 41 completed some of the measures for at least 2 assessments, mean age 36, 70% females	MBSR: 8 weekly, 2.5- to 3-h classes along with a silent 7-h retreat in week 6 N = 25	Waiting-list N = 16	End of treatment and 4 months	EEG  Antibody titers  State trait anxiety	Group × time effect MBSR had greater left-sided activation (C3/C4) end of treatment P < 0.05 and 4-month follow-up P < 0.01 MBSR had greater rise in antibody titers P < 0.05 MBSR had greater reduction in anxiety P < 0.01 MBSR preM = 40, SE = 1.7; postM = 35, SE = 1.3 Control preM = 39, SE = 3; postM = 40, SE = 2.5 No significant group × time effect	Not possible to calculate, no SE for change scores
					Positive and negative affect		

Table 1. Continued

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Williams et al. (27)	Self-selected community residents Recruited via local papers. 103 were randomized, N = 62 completed all questionnaires, mean age 42, 72% females	MBSR: 8 weekly, 2.5-h classes along with a silent 8-h retreat in week 6 plus 1-h preprogramme and postprogramme interviews N = 35	Educational Materials N = 27	End of treatment and 3 months	Daily Stress Inventory	Group × time effect Daily hassles $P = 0.045$ MBSR preM = 2.77, SE = 0.3; postM = 2.25, SE = 0.27 Control preM = 3, SE = 0.35; postM = 2.85, SE = 0.35 Psychological distress $P = 0.049$ MBSR preM = 0.57, SE = 0.15; postM = 0.28, SE = 0.07 Control preM = 0.67, SE = 0.2; postM = 0.61, SE = 0.2 Medical symptoms $P = 0.01$ MBSR preM = 17, SE = 3; postM = 10, SE = 2.5	Mean effect size all mental health scales 0.56 Mean effect size all physical health scales 1.01
Shapiro et al. (21)	Medical and premedical students were actively recruited. N = 78 53% females, mean age?	MBSR: 7 weekly, 2.5-h sessions or waiting-list N = 37	Waiting-list N = 41	End of treatment	Symptom checklist (SCL90)  State trait anxiety	Control preM = 18, SE = 4; postM = 17, SE = 4 Group × time effect MBSR group had less depression $P < 0.006$ MBSR preM = 0.85, SD = 0.58; postM = 0.57, SD = 0.58 Control preM = 0.76, SD = 0.63; postM = 0.89, SD = 0.71 MBSR group had less State Anxiety $P < 0.05$ MBSR preM = 39.8, SD = 11; postM = 37.2, SD = 12.4 Control preM = 39.1, SD = 9.4; postM = 42.8, SD = 11.6 MBSR group had less trait anxiety $P < 0.002$ MBSR preM = 40.9, SD = 8.9; postM = 35, SD = 8.8 Control preM = 41, SD = 9.9; postM = 40.5, SD = 10.1 MBSR group had increases in spirituality $P < 0.02$ MBSR preM = 2.57, SD = 0.64; postM = 2.8, SD = 0.57 Control preM = 2.6, SD = 0.76; postM = 2.6, SD = 0.68 MBSR group had increases in empathy $P < 0.05$ MBSR preM = 77, SD = 27.6; postM = 83.5, SD = 24.4 Control preM = 76, SD = 22.7; postM = 73, SD = 21.6	Mean effect size all mental health scales 0.62

Effect sizes refers to: Cohen's  $d$  an effect size of 0.2–0.3 might be a 'small' effect, around 0.5 a 'medium' effect and 0.8 to infinity, a 'large' effect. Williams and Shapiro: Mean effect sizes of all mental and physical health were calculated in meta-analysis Grossman et al. (9).

Table 2. Effect of Mindfulness-Based Stress Reduction (MBSR) in clinical populations with somatic conditions

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Grossman et al. (9)	Patients with multiple sclerosis Referred themselves after having received information via the outpatient neurology clinic at the University Hospital Basel N = 150 mean age 47 79% females	MBSR: 8 weekly, 2-h classes along with a silent 7-h retreat in week 7, a personal intake interview and post intervention interview N = 76	Treatment as usual N = 74	End of treatment and 6 months	Health-related quality of life HAQUAMS  Quality of life in chronic disorders POOLC  Depression CES-D  Fatigue MFIS  Anxiety STAI	Group × time effect MBSR change end of treatment 0.18 (0.09–0.27) P = 0.0002 TAU change end of treatment –0.09 (–0.2 to 0.01) MBSR change 6-month follow-up 0.13 (0.00–0.25) P = 0.04 TAU change 6-month follow-up –0.05 (–0.16 to 0.07) MBSR change end of treatment 2.54 (1.91–3.17) P = 0.00000 TAU change end of treatment –0.57 (–1.29 to 0.015) MBSR change 6-month follow-up 1.77 (0.97–2.58) P = 0.003 TAU change 6-month follow-up 0.1 (–0.83 to 0.64) MBSR change end of treatment 5.29 (3.5–7.07) P = 0.00000 TAU change end of treatment –0.143 (–3.47 to 0.61) MBSR change 6-month follow-up 4.63 (2.51–6.75) P = 0.03 TAU change 6-month follow-up 0.86 (–1.07 to 2.78) MBSR change end of treatment 6.65 (4.14–9.16) P = 0.0001 TAU change end of treatment –0.1 (–2.26 to 2.05) MBSR change 6-month follow-up 6.58 (3.63–9.53) TAU change 6-month follow-up –0.10 (–2.26 to 2.05) MBSR change end of treatment 3.95 (2.31–5.59) P = 0.001 TAU change end of treatment –0.22 (–1.89 to 1.46) MBSR change 6-month follow-up 3.68 (1.84–5.52) TAU change 6-month follow-up 0.13 (–1.62 to 1.88)	0.86  0.51  0.43  0.28  0.65  0.36  0.41 adjusted 0.38 adjusted 0.39 0.39 0.33

Table 2. Continued

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Foley et al. (29)	Cancer patients recruited through local media and clinical staff at the Sydney Cancer Center. <i>N</i> = 115 mean age 55, 77% females	Mindfulness-Based Cognitive Therapy (MBCT); 8 weekly, 2-h classes along with a silent 7-h retreat in week 7 <i>N</i> = 55	Waiting-list <i>N</i> = 60	End of treatment	Current levels of depression HAM-D  Current levels of anxiety HAM-A  Distress DASS-21	Group × time effect $P \leq 0.001$ MBCT preM = 16.02, SD = 7.28; postM = 6.26, SD = 5.43 Control preM = 14.38, SD = 8.12; postM = 10.27, SD = 6.93 Group × time effect $P = 0.002$ MBCT preM = 15.58, SD = 9.79; postM = 5.58, SD = 5.13 Control preM = 14.37, SD = 9.932; postM = 8.90, SD = 8.39 Group × time effect $P \leq 0.001$ MBCT preM = 16.98, SD = 10.57; postM = 10.67, SD = 6.98 Control preM = 16.13, SD = 10.88; postM = 15.52, SD = 10.71 No significant group × time effect MBCT preM = 71.62, SD = 14.81; postM = 78.80, SD = 14.87 Control preM = 71.38, SD = 14.67; postM = 74.18, SD = 13.30 Group × time effect $P \leq 0.001$ MBCT preM = 18.31, SD = 7.65; postM = 23.29, SD = 7.17 Control preM = 17.98, SD = 6.81; postM = 18.65, SD = 6.44 36 did not complete the study, most dropouts never attended a single session. No differences in major outcomes between the MBCT intervention and the support group by either intention to treat analysis ( $n = 49$ ) or within the subset completed at least 75% of the sessions ( $n = 36$ )	Only within group effect sizes
Mularki et al. (30)	Patients with chronic obstructive lung disease Recruited from two medical centre sites using posted advertisement or clinical referral <i>N</i> = 86 mean age 67 50% females	Mindfulness-based breathing therapy: standard MBSR plus with supplemental relaxation response training during the first 2 weeks. <i>N</i> = 44 mean age 70.6	Support group designed to match time spent and attention by a team of professional facilitator <i>N</i> = 42 mean age 64	End of treatment	Self-reported dyspnea Changes in functional limitation (6 min walk test) Mindfulness Perceived stress		0.5
Wong et al. (31)	Patients with chronic pain for at least 3 months <i>N</i> = 100	MBSR: 8 weekly, 2-h classes along with a silent 7-h retreat in week 7	Education programme groups	End of treatment 3 and 6 months	Self-reported pain Amount of sick leave Mood status (POMS, Depression scale, STA) Health-related quality of life (SF-12)	No group × time effect After intervention, patients in both groups had significant improvements in pain intensity, anxiety and quality of life which was sustained until 6 months postintervention	

Table 2. Continued

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Creswell et al. (33)	HIV-infected adults reporting symptoms of psychological distress Recruited through HIV/AIDS community agencies. N = 67 were randomized N = 48 attended at least one class, mean age 41, 10% females	MBSR: 8 weekly, 2-h classes along with a silent 7-h retreat in week 7 N = 41 (Intention to treat) N = 33 (Attended at least one study class)	1-day stress reduction MBSR program N = 26 (Intention to treat) N = 15 (Attended class)	End of treatment	Disease activity CD4 + Lymphocytes (Log 10)	Group × time effect $P = 0.02$ MBSR preM = 618, SE = 47; postM = 628, SE = 52 Control preM = 757, SE = 70; postM = 572, SE = 71 ITT analyses showed the same pattern $P = 0.08$	0.64
Morone et al. (20)	Older adults with chronic low back pain Recruited via adult pain clinics, flyers and newspapers. N = 37 mean age 75, 57% females	MBSR: 8 weekly 1-h sessions N = 19	Waiting-list N = 18	End of treatment	Pain SF-36 Pain Scale  Physical function SF-36 Physical Function Scale  Pain acceptance Questionnaire Total Score  Quality of life SF-36 global Health composite	No significant group × time effect $P = 0.31$ MBSR preM = 35.5, SD = 6; postM = 39.9, SD = 7.7 Control preM = 35.7, SD = 7.2; postM = 38.8, SD = 8.3 Group × time effect $P = 0.03$ MBSR preM = 42, SD = 10.9; postM = 45.7, SD = 9.2 Control preM = 35.7, SD = 7.2; postM = 38.8, SD = 8.3 Group × time effect $P = 0.008$ MBSR preM = 72.2, SD = 13.4; postM = 75.5, SD 16 Control preM = 68.1, SD = 20.3; postM = 64.8, SD = 23.0 No significant group × time effect $P = 0.27$ MBSR preM = 40.4, SD = 9.0; postM = 44.7, SD = 8.9 Control preM = 40.3, SD = 10.4; postM = 42.9, SD = 10.7	Only within group effect sizes
Pradhan et al. (34)	Rheumatoid arthritis patients Recruited via newspaper, health fairs and rheumatologists. N = 63 mean age 54, 86% females	MBSR: 8 weekly, 2.5-to 3-h classes along with a silent 7-h retreat in week 6 + 3 refresher classes over the following 4 months N = 31	Waiting-list N = 32	End of treatment and 6 months	Depressive symptoms (SCL-90-R)  Psychological distress (SCL-90-R)  Wellbeing Psychological Well-Being Scale  Disease activity Score in 28 joints  Mindfulness Attention Awareness scale	No significant differences between groups at two months. No significant group × time effect $P < 0.08$ (at 6 months) MBSR Change $M = -0.26$ , SE = 0.08; Control $-0.06$ , SE = 0.08 Group × time effect $P < 0.04$ (at 6 months) MBSR Change $M = -0.17$ , SE = 0.05; Control $-0.03$ , SE = 0.05 Group × time effect $P < 0.03$ (at 6 months) MBSR Change $M = -5.55$ , SE = 3.44; Control $-5.47$ , SE = 3.38 No effect on disease activity $P = 0.45$ MBSR Change $M = -0.3$ , SE = 0.17; Control $-0.12$ , SE = 0.16 No significant group × time effect $P < 0.09$ MBSR Change $M = 0.45$ , SE = 0.15; Control 0.09, SE = 0.14	0.5

Table 2. Continued

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Sephton et al. (35)	Women with fibromyalgia Recruited via news-papers, TV. N = 91 mean age 48	MBSR: 8 weekly, 2.5- to 3-h classes along with a silent 7-h retreat in week 6 N = 51	Waiting-list N = 40	End of treatment and 2 months	Depressive Symptoms (BDI: Beck Depression Inventory)	Group × time effect $P = 0.002$ MBSR preM = 15.7, SE = 7.1; postM = 12.4, SE = 7.4; 2-month follow-up $M = 13.3$ , SE = 7.5 Control preM = 14.7, SE = 6.9; postM = 15.1, SE = 8.1;	0.64
Monti et al. (32)	Woman with cancer Referred from cancer centres and hospitals N = 111 mean age 53	Mindfulness-based art therapy: MBSR and aspects of art therapy N = 56	Waiting-list N = 55	End of treatment	Symptoms of distress (SCL-90-R) Overall Anxiety Depression Quality of life (SF-36) Physical composite score Mental composite score Total energy Kcal/d	Group × time effect Change in means (control-MBAT) 0.16 (0.08,0.24) $P < 0.001$ 0.16 (0.02,0.29) $P < 0.022$ 0.19 (0.07,0.30) $P < 0.001$ No Group × time effect $P < 0.19$ -2.23 (-5.6, 1.15) -4.45 (-8.32, -0.58) Group × time effect $P < 0.0002$ 4-month follow-up nutrition education $M = -74.8$ , SE = 74.1 vs no change in other groups 12-month follow-up $M = -33.9$ , SE = 79.2	0.3 0.23 0.26
Hebert et al. (37)	Women with breast cancer Enrolled from hospitals N = 172 mean age 50	MBSR N = 50	Nutrition education N = 51 or usual care N = 56	4 and 12 months	Profile Of Mood States Anxiety	Group × time effect MBSR $M = -4.8$ , SE = 5.6; Control $M = -0.4$ , SE = 5.2 $P < 0.01$ MBSR $M = -6.2$ , SE = 8.3; Control $M = -0.4$ , SE = 9.5 $P < 0.05$ MBSR $M = -3.9$ , SE = 4.8; Control $M = -0.1$ , SE = 7.1 $P < 0.05$ MBSR $M = 4.1$ , SE = 6.8; Control $M = 0.4$ , SE = 4.6 $P < 0.05$ MBSR $M = -2.5$ , SE = 4.2; Control $M = 0.3$ , SE = 3.9 $P < 0.05$	Mean effect size all: mental health scales 0.54
Specia et al. (19)	Cancer patients Referred from clinical staff or leaflets in clinic. N = 90 mean age 51 (27-75), 79% female	MBSR: 7 weekly, 90-min sessions N = 53	Waiting-list N = 37	End of treatment	Depression Anger Vigour Confusion Total POMS Symptoms of Stress Inventory SOSI	MBSR $M = -24.1$ , SE = 25.1; Control $M = -2.1$ , SE = 28.6 $P < 0.01$ Group × time effect $P < 0.05$ MBSR $M = -31.3$ , SE = 32.4; Control $M = -12.3$ , SE = 30.26	

Sephton and Pradhan Effect sizes were calculated in meta-analysis Bohlmeijer et al. (13).  
Specia Effect size = 0.54 Mean effect sizes of all mental and physical health were calculated in meta-analysis Grossman et al. (28).

Table 3. Effect of Mindfulness-Based Stress Reduction (MBSR) in clinical populations with psychiatric disorders

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Koszycki et al. (38)	Patients with DSM-IV generalized social anxiety disorders Recruited via media. N = 53 mean age 37–38, 72% females	MBSR: 8 weekly, 2.5-h classes along with a silent 7-h retreat in week 6 N = 26	12 weekly 2.5-h sessions of cognitive behavioural therapy (CBT) N = 27	End of treatment	Social interacting (SIAS)  Social phobia scale (SPS)  CGI- Illness severity	Group × time interaction CBT had greater improvement in decreasing social anxiety symptoms. Equally efficacious in improving function, mood, wellbeing. CBT preM = 46.1, SE = 8.9; postM = 30.2, SE = 10.8 P = 0.057 MBSR preM = 44.6, SE = 10.6; postM = 34.1, SE = 14.9 CBT preM = 33.3, SE = 13.2; postM = 15.4, SE = 8 P = 0.006 MBSR preM = 34.0, SE = 14; postM = 24.6, SE = 16.4 CBT preM = 4.7, SE = 0.7; postM = 3 SE = 1, P = 0.005 MBSR preM = 5, SE = 0.8; postM = 3.9, SE = 0.8 CBT preM = 34.3, SE = 8.6; postM = 17.4, SE = 8.3 P = 0.009 MBSR preM = 39.1, SE = 8.9; postM = 25.3, SE = 9	Only within group effect sizes
Moritz et al. (22)	Emotionally distressed patients (> 40 POMS) Recruited from primary care clinics. N = 165 mean age 44, 84% females	MBSR: 8 weekly, 1.5-h classes N = 56 76% female	An 8-week audiotaped spirituality home-study programme N = 54 95% females, or a waiting-list control group N = 55 80% females	End of treatment and 4 weeks	Profile of Mood Scale (POMS)  Health survey, Mental component (SF-36, MCS)	Group × time interaction. Greatest improvement in the spirituality group at the end of treatment. MBSR equally efficacious at 4 weeks follow-up P values refer to comparison to spirituality group Control Mean change scores = -10.3, SE = 4.0 P < 0.001 MBSR Mean change scores = -22.6, SE = 4.0 P = 0.034 Spirituality Mean change scores = -43.1, SE = 3.9 Group × time interaction. Greatest improvement in the spirituality group at the end of treatment MBSR equally efficacious at 4 weeks follow-up Control Mean change scores = 4.7, SE = 1.6 P < 0.001 MBSR Mean change scores = 7.1, SE = 1.6 P = 0.029 Spirituality Mean change scores = 14.4, SE = 1.6	Only within group effect sizes

Table 3. Continued

Author, year	Participants	Intervention	Control group	Follow-up	Measures	Results	Effect-size
Teasdale et al. (39)	Recovered recurrently depressed patients Recruited from community health care facilities and media. <i>N</i> = 145 mean age 41–44, 73–78% females	Mindfulness-Based Cognitive Therapy (MBCT): 8 weekly, 2-h sessions + 4 follow-up meetings <i>N</i> = 76 Patients with 3 or more past episodes <i>N</i> = 49 MBCT: 8 weekly, 2-h sessions + 2 follow-up meetings <i>N</i> = 38 Patients with 3 or more past episodes <i>N</i> = 28	treatment as usual (TAU) <i>N</i> = 69 Patients with 3 or more past episodes <i>N</i> = 50	1 year	Time to onset of relapse of depression, over the 60-week study period	Group × time interaction MBCT reduced relapse from 66% to 37% in patients with 3 or more previous episodes <i>P</i> < 0.01 but in patients with only 2 recent episodes, relapse non-significantly increased from 31% to 56% at 1-year follow-up <i>P</i> > 0.1	0.59
Ma et al. (40)	Recovered recurrently depressed patients Recruited from general practice and newspapers. <i>N</i> = 75 mean age 43–46, 73–79% females	Mindfulness-Based Cognitive Therapy (MBCT): 8 weekly, 2-h sessions + 4 follow-up meetings <i>N</i> = 31 Patients with 3 or more past episodes <i>N</i> = 28	TAU <i>N</i> = 37 79% female Mean age 46 Patients with 3 or more past episodes <i>N</i> = 27	1 year	Time to onset of relapse of depression, over the 60-week study period	Group × time interaction MBCT significantly reduced relapse from 78% to 36% in patients with 3 or more previous episodes <i>P</i> = 0.002 but in patients with only 2 recent episodes, relapse non-significantly increased from 20% to 50% at 1-year follow-up <i>P</i> = 0.321	0.88
Bondolfi et al. (41)	Unmedicated patients in remission from recurrent depression (≥3 episodes) Recruited via general practice, psychiatrists and media. <i>N</i> = 60 mean age 46–49, 69–74% females	MBCT: 8 weekly, 2-h sessions + 4 follow-up meetings <i>N</i> = 31	treatment as usual (TAU) <i>N</i> = 29	14 months	Time to onset of relapse of depression, over the 60-week study period Among those who relapsed ( <i>n</i> = 19)	No Group × time interaction <i>P</i> = 0.78 MBCT relapse rate 29% TAU relapse rate 34% Group × time interaction <i>P</i> = 0.006 MBCT Time to relapse mean 204 days [35–330] TAU Time to relapse mean 69 days [15–191]	Not possible to calculate 0.77
Kuyken et al. (42)	Medicated patients in full or partial remission from recurrent depression (≥3 episodes) Recruited from general practice. <i>N</i> = 123 mean age 49, 47% females	MBCT: 8 weekly, 2-h sessions + 4 follow-up meetings and support to discontinue antidepressant medication <i>N</i> = 61	Antidepressant medication <i>N</i> = 62	15 months	Time to onset of relapse of depression  Residual depressive symptoms hamilton  Quality of life WHO brief  Physical	No Group × time interaction <i>P</i> = 0.07 ITT ( <i>P</i> = 0.05 PPT) MBCT relapse rate 47% Active control relapse rate 60% Group × time interaction <i>P</i> = 0.02 MBCT Mean 5.83 [4.49–7.3] 1 month post-treatment to 7.05 [5.53–8.74] at 15 Active control 7.75 [5.86–9.34] 1 month post-treatment to 8.69 [6.64–10.5] at 15 Group × time interaction <i>P</i> = 0.04 physical and <i>P</i> = 0.01 psychological MBCT Mean 24.08 [22.62–25.53] 1-month follow-up to 23.97 [22.63–25.3] at 15 Active control 22.86 [21.34–24.39] 1-month follow-up to 22.93 [21.18–24.69] at 15	Not possible to calculate
					Psychological	MBCT Mean 18.88 [17.88–19.89] 1-month follow-up to 18.61 [17.65–19.57] at 15 Active control 17.47 [16.24–18.7] 1-month follow-up to 17.36 [15.93–18.78] at 15	

Table 4. The effect of Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy on selected symptoms

Outcome	Participants	Control group	Measures	Significant group × time interaction	Pre-post effect size	
Perceived stress and/or psycho-logical distress	103 Community residents	Educational materials	DSI, SCL-90-R	+	0.56	
	78 Medical/premedical students	Waiting-list	GSI	+	0.62	
	60 Residents reporting distress	Waiting-list	PSS	+	0.64	
	63 Patients with rheumatoid arthritis	Waiting-list	SCL-90-R	+	0.5	
	90 Cancer patients	Waiting-list	SOSI	+	0.51	
	115 Cancer patients	Waiting-list	DASS-21	+	0.6	
	111 Cancer patients (women)	Waiting-list	SCL-90-R	+	0.3	
	86 Chronic obstructive lung disease patients	Support group	PSS	–		
	Depressive symptoms	78 Medical/premedical students	Waiting-list	SCL-90-R	+	0.62
		63 Patients with rheumatoid arthritis	Waiting-list	SCL-90-R	–	0.48
91 Females with fibromyalgia		Waiting-list	BDI	+	0.64	
90 Cancer patients		Waiting-list	POMS	+	0.71	
115 Cancer patients		Waiting-list	HAM-D	+	1.34	
111 Cancer patients (women)		Waiting-list	SCL-90-R	+	0.26	
150 Patients with multiple sclerosis		TAU	CES-D	+	0.65	
100 Chronic pain patients		Education group	POMS	–	?	
165 Emotionally distressed patients		Spirituality, Waiting-list	POMS	–	0.85	
53 Patients with social anxiety		CBT	BDI	–	0.67	
145 Recurrently depressed patients 3 or more previous episodes up to 2 previous episodes		TAU	Relapse of depression	+	0.59	
				–		
75 Recurrently depressed patients 3 or more previous episodes up to 2 previous episodes		TAU	Relapse of depression	+	0.88	
				–		
60 Recurrently depressed patients		TAU	Relapse of depression	–	?	
	+			0.77		
	–			?		
123 Recurrently depressed patients	Antidepressant medication	Relapse of depression	–	?		
			+	?		
Anxiety symptoms	78 Medical/premedical students	Waiting-list	STA	+	0.62	
	41 Healthy employees	Waiting-list	STA	+	?	
	90 Cancer patients	Waiting-list	POMS	+	0.82	
	115 Cancer patients	Waiting-list	HAM-A	+	1.14	
	111 Women with cancer	Waiting-list	SCL-90-R	+	0.23	
	150 Patients with multiple sclerosis	Usual care	STAI	+	0.39	
	100 Chronic pain patients	Education group	STAI	–	?	
	53 Patients with social anxiety	CBT	LSAS-Fear	–	1.44	
				LSAS-Avoidance	–	1.54

+, significant group × time interaction; –, No significant group × time interaction; TAU, Treatment as usual; GSI, General Severity Index; SCL-90-R, The Symptom Checklist-90-Revised; PSS, Perceived Stress Scale; SOSI, Symptoms of Stress Inventory; DSI, Daily Stress Inventory; BDI, Becks Depression Inventory; POMS, Profile of Mood States; STA, State Trait Anxiety Inventory; LSAS, Liebowitz Anxiety Scale; DASS-21, Depression, anxiety stress scale, short form; CES-D, Centre for epidemiologic studies depression scale; CBT, cognitive behavioural therapy.

for future doctors, helping them to cultivate a way of being that fosters healing and growth in their own lives as well as skills to help others. The aim of the study was to assess the efficacy of MBSR.

Table 1 presents the results of the four included MBSR studies in non-clinical populations. Mental health improved in all four studies, and MBSR improved outcomes of physical health in the two studies measuring physical health.

Clinical populations with physical illness (Table 2)

Grossman et al. (28) examined effects of MBSR among individuals with multiple sclerosis and found evidence of improved health-related quality of life and wellbeing compared to treatment as usual and suggested that the results may also have treatment

implications for other chronic disorders that diminish health-related quality of life.

Foley et al. (29) evaluated the effectiveness of MBCT for individuals with a diagnosis of cancer and concluded that the observed improvements represent clinically meaningful change and provide evidence for the provision of MBCT within oncology settings. This is an MBCT/MBSR programme, but in the present review, it is grouped as MBSR because it contains the same elements including a daylong retreat session.

Mularski et al. (30) suggested that Mindfulness Breathing Therapy in patients with chronic obstructive lung disease (COPD) is unlikely to be an important therapeutic option for patients with COPD. The aim was to test the efficacy of Mindfulness Breathing Therapy on improving

Table 5. Quality of the included studies

	Jadad score	ITT	Primary outcome/power calculation	Study provided evidence to support the aim/effect size	Therapist competence and number of therapist	Number of therapist	Description of concomitant treatment	Adherence to the treatment manual	Description of homework practice	Total score
Nyklicek et al. (24)	3	+	-, +	+, +	?	?	-	-	+	6
Davidson et al. (25)	2	-	-	+	+	-	-	+	-	3
Williams et al. (27)	2	-	-, +	+	?	?	-	-	+	3
Shapiro et al. (21)	3	?	-	+	?	-	-	-	-	2
Grossman et al. (28)	3	+	+, +	+, +	+	-	+	-	+	9
Foley et al. (29)	3	+	-, +	+, +	+	-	-	-	+	7
Wong et al. (31)	2	+	+	-	?	?	-	-	+	3
Mularski et al. (30)	3	+	+, +	-	+, $\geq 2$	+	-	-	+	8
Cresswell et al. (33)	3	+	+	+	+	?	-	-	-	5
Morone et al. (20)	2	+	-	+, +	+	-	-	-	+	6
Pradhan et al. (34)	2	+	-, +	+	+, $\geq 2$	+	-	-	+	7
Monti et al. (32)	3	+	-, +	+	+	-	-	-	-	6
Sephton et al. (35)	2	+	+, +	+, +	+	-	-	-	+	6
Specia et al. (19)	3	-	+	+	?	?	-	-	+	4
Hebert et al. (37)	2	?	+	?	+	?	-	-	-	2
Koszycki et al. (38)	2	+	+	+, +	+	-	-	-	-	5
Moritz et al. (22)	3	+	+, +	+	?	?	-	-	+	6
Teasdale et al. (39)	3	+	+, +	+, +	+, $\geq 2$	+	+	+	-	11
Ma et al. (40)	3	+	+, +	+, +	+	?	+	+	-	9
Kuyken et al. (42)	2	+	+, +	+	+	-	+	+	-	7
Bondolfi et al. (41)	3	+	+, +	ss	+, $\geq 2$	+	+	+	+	10

symptoms and health-related quality of life in patients with COPD. A high dropout (40%) is a limitation in this study.

Wong et al. (31) aimed to compare the effectiveness of MBSR with a multidisciplinary education programme based on principles for management of chronic pain that could adjust for the confounding effects of group attention and therapist time. Wong concluded that MBSR was not effective per se for improving quality of life or mood symptoms as significant improvements were observed in both groups. The high dropout rate, a low proportion of subjects who completed all 10 sessions and practiced daily for the recommended amount of time might have contributed to the negative results.

Monti et al. (32) tested the efficacy of Mindfulness-Based Art Therapy in women with cancer. After an observed reduction in symptoms of distress and improved health-related quality of life, they concluded that data support a possible future role for psychosocial treatment option for patients with cancer.

Cresswell et al. (33) provided initial evidence that MBSR can buffer CD4 + T lymphocyte declines in an ethnically diverse sample of HIV-1-infected adults. The aim was to test whether MBSR could do that. Additional analyses suggested that the MBSR treatment effects on CD4-T lymphocytes are independent of antiretroviral medication use.

Morone et al. (20) conducted a pilot study to assess the feasibility of recruitment and adherence

to an MBSR programme for older adults with chronic low back pain and to develop initial estimates of treatment effects. The completion rate for the intervention group was 68% and 78% for the control group after they crossed over to the MBSR programme. Because it was a pilot study, they explored participant outcome on a variety of outcome measures. As a result, they did not consider any one of the measures as primary.

Pradhan (34) suggested that MBSR may complement medical disease management by improving psychological distress and strengthening wellbeing in patients with rheumatoid arthritis. The objective was to assess the effect of MBSR on depressive psychological status and disease activity.

Sephton et al. (35) showed that MBSR alleviated depressive symptoms in patients with fibromyalgia. The aim was to test the effects of MBSR on depressive symptoms in patients with a physician-verified fibromyalgia diagnosis. All findings persisted when pain, sleep and antidepressant medication use were controlled for. Functional impairment, pain and sleep quality were measured prior to randomization. The results of these outcomes were not reported.

Specia et al. (19, 36) concluded that the modified MBSR programme was effective in decreasing mood disturbance and stress symptoms in both male and female patients with a wide variety of cancer diagnoses, stages of illness and ages. The objective of this study was to assess the effects of

participation in MBSR on mood disturbance and symptoms of stress in cancer out-patients. All patients were assessed six months after programme completion in a pre- and postintervention design, and these improvements were maintained at six-month follow-up.

Hebert et al. (37) compared the effectiveness of an intensive dietary intervention on diet and body mass in women with breast cancer to an MBSR programme or usual supportive care. Results indicated that MBSR did not make women with breast cancer consume less fat. Psychosocial variables included measures of self-reported emotional wellbeing, and data on anxiety, depression, self-esteem and psychological distress were also obtained. None of these results were reported.

Table 2 shows the results of the 11 included MBSR studies in clinical populations with physical illnesses. Nine studies reported changes in mental health, and six showed significant improvements compared to the control group. Six reported changes in physical health, and two demonstrated significant improvements. Disease activity was assessed in three studies, and no effect was found in rheumatoid arthritis and COPD patients, whereas a positive effect was found in patients with HIV.

#### Clinical populations with psychiatric disorders (Table 3)

Koszycki et al. (38) concluded that Cognitive Behavioural Group Therapy (CBGT) is the treatment of choice in generalized social anxiety disorders and suggested that MBSR may have some benefit in the treatment of these disorders. The aim was to evaluate the efficacy of MBSR compared to a first-line psychological intervention for social anxiety disorder. Both treatment groups improved, but patients receiving CBGT had lower scores on measures of social anxiety. Both interventions were comparable in improving mood, functionality and quality of life (these results are not displayed in the table).

Moritz et al. (22) suggested that a home study-based spirituality educational programme can affect mental health by improving mood and quality of life within the same range as reported by other mood intervention programmes such as cognitive behavioural therapy and MBSR. The objective was to evaluate the efficacy of a home study-based spirituality educational programme on mood disturbance in emotionally distressed patients. The mindfulness intervention followed the modified programme developed for patients with cancer (19), which is modelled on the MBSR programme (5). Only 57% of the participants in

the MBSR group completed the treatment, which is 20–40% lower than the figures reported by the other included MBSR/MBCT studies.

Teasdale et al. (39) suggested that MBCT offers a promising cost-efficient psychological approach to preventing relapse in recovered, recurrently depressed patients. The aim was to evaluate MBCT. The patients were stratified according to recency of recovery from the last episode of depression and number of previous episodes (two vs. more than two).

Ma et al. (40) concluded that MBCT is an effective and efficient way to prevent depressive relapse in recovered depressed patients with three or more previous episodes. One aim was to see whether the relapse prevention effects of MBCT observed by Teasdale could be replicated. To determine whether patients with only two previous episodes were from the same base population as those with three or more episodes, they also compared these two groups according to age at onset of their first episode of major depression and, along with a group of never-depressed controls, according to measures of childhood experience. MBCT was most effective in preventing relapses that were not preceded by life events. Relapses were more often associated with significant life events in the two-episode group. This group also reported less childhood adversity and later first depression onset than the three-or-more-episode group, which suggests that these groups represented distinct populations.

Bondolfi et al. (41) concluded that further studies are required to determine which patient characteristics, beyond the number of past depressive episodes, may predict differential benefits from this MBCT therapeutic approach. The study tested the hypothesis that MBCT would reduce the risk of depressive relapse in an independent replication trial across both language and culture. The trial was conducted in Switzerland, where there is high availability of mental health care and patients have direct access to psychiatrists, which may impact on the global management of recurrent depression.

Kuyken et al. (42) suggested that MBCT produces comparable outcomes in people using antidepressant medication in terms of relapse/cost-effectiveness and superior outcomes concerning residual depressive symptoms, psychiatric comorbidity and the physical and psychological domains of quality of life. The aim was to examine whether MBCT provided an alternative approach to antidepressant medication in preventing depressive relapse. The participants had a history of three or more previous episodes of depression, had been treated with a therapeutic dose of antidepressant

medication over the last six months and were either in full or in partial remission. The patients were randomized to traditional antidepressant medication or MBCT that included support to taper/discontinue antidepressant medication.

The results of the six included MBSR/MBCT studies in clinical populations with psychiatric disorders are presented in Table 3. When compared to active control conditions, the improvements were significantly higher in the mindfulness condition in one study and significantly higher in active control conditions in two studies at the end of treatment, but when 4-week follow-up was assessed, mindfulness and active control conditions were equal.

Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy on selected outcomes (Table 4)

When compared to a control group, MBSR significantly reduced perceived stress and/or psychological distress in seven studies (19, 21, 24, 27, 29, 32, 34). MBSR did not reduce stress in one study (30). MBSR/MBCT alleviated depressive symptoms in ten studies (19, 21, 28, 29, 32, 35, 39–42). Depressive symptoms were not alleviated significantly more than control group in four studies (22, 31, 34, 38). MBSR improved anxiety in six studies (19, 21, 25, 28, 29, 32). And anxiety was not improved more than the active control condition in two studies (22, 38).

Quality of the included randomized controlled trials

The Psychotherapy Outcome Study Methodology Rating Scale consists of 22 items, of which some are chosen along with the Consort guidelines to evaluate the quality of the RCTs (43, 44). Waiting list control group is the weakest possible control and the design used in most of the included MBSR studies. MBCT/MBSR was compared to treatment as usual (TAU) in four studies. It is difficult to clearly define TAU as it can change over time, and TAU patients usually get markedly less hours of treatment than participants. A treatment method that in previous research has been found effective for a specific disorder is the most stringent comparison condition to use, but this design is only used in two studies (38, 42) (Table 5).

To avoid confounding therapist and treatment condition, treatment should be delivered by more than one therapist; four included studies reported use of two or more therapists. To conclusively determine whether authors actually apply the treatment they describe, independent assessors should rate recorded sessions for adherence to the

treatment manual and competence of the therapists. This is reported only in the MBCT studies (39–42). Authors should indicate how the sample size was determined. If a formal power calculation was used, the authors should identify the primary outcome on which the calculation was based. The APA Division 12 Task Force (45) has defined an adequate sample size as ‘about 30 per group’, and 14 of the 21 included studies met that recommendation. Only about half of the included studies reported power calculation, primary outcome and effect sizes. The quality was also assessed by the Jadad score that depends on the description of randomization, blinding and dropouts. A Jadad score of 3 was reached in 12 studies.

Overall, studies provided evidence supporting that:

- i) MBSR is superior to waiting list in improving mental health in self-selected clinical and non-clinical populations and
- ii) MBCT can reduce the risk of depressive relapse among referred and self-selected recovered, recurrently depressed patients with three or more previous episodes.

The sum of mindfulness homework practice was not related to outcome change in four studies (24, 25, 34, 41), while patients who meditated more had better outcomes than those who did not in two studies (19, 35). One study found no association between number of sessions attended and outcome (33), while another (19) found better outcomes for patients attending more sessions. Mindfulness questionnaires were used in three studies. Increase in mindfulness correlated significantly with improvements in mental health in two studies (24, 29), whereas the effects of mindfulness were in the predicted direction, but failed to reach significance in another study (34). So, overall, the literature shows an effect, but we do not know if this is a result of specific skills taught by the programmes, meditation practice or increases in mindfulness measured by mindfulness questionnaires.

Compliance

The review showed that most patients randomized to the mindfulness interventions (75–97%) did complete treatment, which was defined as attending at least four or five sessions.

Limitations

Most studies did not include active control groups. The stress-reducing effect of mindfulness treatment may not have come out as strong if the treatments

were compared with other stress-reducing interventions. Among MBSR studies, nine studies only assessed end of treatment results, and six studies reported one- to six-month post-treatment results. The lack of active control groups and long-term follow-up periods constitutes a limitation of many of the assessed studies. Publication bias cannot be ruled out because most studies have shown positive results.

#### Risks

The popularity of mindfulness interventions involves the risk that the techniques may be misunderstood or inappropriately applied. The developers behind both MBSR and MBCT address this issue and state that several years of practice is required before teaching which might have economical implications. If the interventions are delivered by teachers without adequate experience or qualifications, this could explain a poor outcome. The instructors' different levels of experience may explain some of the variation between studies and even between teachers within the same study. Experience in MBSR (one teacher having over 20 years of meditation practice and 10 years of teaching experience) was found to be the only predictive variable in one study (34). For patients with only two recent episodes of depression, relapse non-significantly increased following MBCT, which could be due to motivation factors, but also a result of a real risk. Patients with three or more episodes might be more marginalized and may benefit from unspecific group factors, whereas the two-episode patients may be better off using their own network. None of the studies reported any side effects to MBSR/MBCT, but it is well known that participants can experience an increase in symptoms because of the awareness training. And according to the mindfulness literature, mindfulness has to be integrated in the teacher in order for the teacher to provide sufficient support (46).

#### Discussion

Based on a systematic review of RCTs on MBSR and MBCT, the following can be concluded: evidence supports that MBSR improves mental health in non-clinical (21, 24, 25, 27) and clinical populations (19, 20, 22, 28, 29, 32–35, 38), but it remains unclear whether it can also improve physical health. In clinical populations with physical illness, MBSR complements medical disease management by relieving psychological distress and strengthening wellbeing (19, 28, 29, 32, 35,

36, 47). In clinical populations with psychiatric disorders, MBSR has some benefit as it reduces symptoms of distress, anxiety and depression or teaches patients coping skills to handle these symptoms (22, 38). MBCT is an effective and efficient way to prevent relapse in recovered, depressed patients with three or more previous episodes (39–42). Overall, studies showed medium effect sizes, and improvement fell within the range reported in other psychosocial interventions.

The APA Division 12 Task Force has developed criteria that therapies must fulfil to be considered well established and empirically supported (45). MBSR meets these criteria in the following way: 15 included MBSR studies reported mental health outcomes, and 13 studies found MBSR to be more effective than a waiting list or educational materials and equivalent to a home-based spirituality programme, educational group and cognitive behavioural therapy (CBT). Experiments are conducted with treatment manuals, and effects have been demonstrated by different investigators in large and clearly specified samples. MBSR thus meets criteria for the 'well-established' designation.

Mindfulness-Based Cognitive Therapy also approached the 'well-established' designation regarding prevention of depressive relapse. Methodologically, the reviewed studies are strong, and they show MBCT to be superior to TAU and equivalent to continuing antidepressant medication when compared to MBCT plus support to discontinue antidepressants in preventing relapse. Treatment manuals and large and clearly specified samples of formerly depressed patients are used, and the studies are conducted by independent investigators. MBCT did not prevent depressive relapse in patients with only two previous episodes, and the number of past episodes of depression is a determined characteristic that may predict differential benefit from MBCT.

Thus, we now know that the two manuals MBSR and MBCT are effective for some people, but the literature does not clarify the mechanisms whereby they are efficacious. If mindfulness training is specifically responsive to the effects of treatment, the mechanisms by which MBSR/MBCT achieve these benefits remain unclear. Enhancement of sense of control and accuracy of perception, or increased tolerance, acceptance, patience and courage to deal with unpredictable life events may play a role (28). Unlike many health promoting and cognitive behavioural approaches (6), mindfulness training focuses solely on cultivating inner resources, rather than changing what is wrong with the person. This is shown in the study comparing MBSR with CBT for patients

with DSM-IV generalized social anxiety disorders (38). Both treatment groups improved, but patients receiving CBT had lower scores on measures of social anxiety. The interventions were comparable in improving mood, functionality and quality of life. Thus, patients in the mindfulness group may still have symptoms, but experience less impairment. As the mechanisms in mindfulness are cognitive decentring and acceptance, mindfulness can possibly be reached through other activities than meditation, such as being in the nature, through art, talking to a friend. Mindfulness is indeed important, but other elements such as learning to concentrate, taking half an hour off each day, group support are also important. Future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments.

Generalizations can be made to individuals who choose mindfulness as an intervention, and for them it seems to work. Because of the need for active participation, it is desirable that mindfulness is actively chosen. Bias is inherent in self-selected samples, and the results can be extrapolated only to patients or participants who are interested in and able to participate in the intervention. The inconsistent association between home practice and outcomes may be because of relatively small numbers of participating subjects and lack of long-term follow-up periods.

A limitation was that we did not include unpublished studies and we included studies with Jahad scores lower than three. In a systematic review, all papers on the topic in question with a Jadad score of three or less can be excluded to avoid that the meta-analysis itself suffers under the limitations of the included studies (48). As the mindfulness studies are not double-blinded, a Jadad score of maximum three can be achieved, which was the case in 11 of the 21 included studies.

#### Recommendations for future research

Future RCTs of MBSR and MBCT should use optimal design including the use of an active treatment as comparison and properly trained instructors, and they should include follow-up of at least one year and describe attrition. In clinical populations, it is recommended to test the combination of mindfulness treatment and specialized treatment for the specific medical disorder in question. It is recommended to explore the effect of longer treatment times as several of the strong studies reviewed included 3–4 reinforcement classes.

#### Recommendations for health care professionals and participants

Individuals who have the interest and ability to participate in an MBSR/MBCT programme learn how to actively participate in their health and wellbeing. MBSR is a useful method for improving mental health and reducing symptoms of stress, anxiety and depression or help individuals to better cope with these symptoms. MBSR complements medical disease management by improving psychological distress and wellbeing, and MBCT reduces the risk of depressive relapse.

#### Acknowledgements

The study was funded by The Danish Agency for Science Technology and Innovation, Aase og Ejnar Danielsen's Fond (Aase and Ejnar Danielsen's Fund) and TrygFonden. The funding sources have not been involved in the study or in the writing of this manuscript.

#### Declaration of interest

We declare that there are no conflicts of interest.

#### References

1. BROWN KW, RYAN RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003;**84**:822–848.
2. TEASDALE JD, SEGAL Z, WILLIAMS JM. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behav Res Ther* 1995;**33**:25–39.
3. WALLACE BA, SHAPIRO SL. Mental balance and well-being: building bridges between Buddhism and Western psychology. *Am Psychol* 2006;**61**:690–701.
4. KOHLS N, SAVER S, WALACH H. Facets of mindfulness. An online study investigating the Freiburg Mindfulness Inventory. *Personality Individ Differ* 2009;**46**:224–230.
5. KABAT-ZINN J. Full catastrophe living: using the wisdom of the body and the mind to face stress, pain and illness. New York, US: Dell, 1990.
6. BAER RA. Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science & Practice* 2003;**10**:125–143.
7. SEGAL ZV, WILLIAMS JM, TEASDALE JD. Mindfulness-based cognitive therapy for depression – a new approach to preventing relapse. US: Guilford Press, 2002.
8. BISHOP SR. What do we really know about mindfulness-based stress reduction? *Psychosom Med* 2002;**64**:71–83.
9. GROSSMAN P, NIEMANN L, SCHMIDT S, WALACH H. Mindfulness-based stress reduction and health benefits. A meta-analysis. *J Psychosom Res* 2004;**57**:35–43.
10. PRAISSMAN S. Mindfulness-based stress reduction: a literature review and clinician's guide. *J Am Acad Nurse Pract* 2008;**20**:212–216.
11. HOFMANN SG, SAWYER AT, WITT AA, OH D. The effect of mindfulness-based therapy on anxiety and depression: a meta-analytic review. *J Consult Clin Psychol* 2010;**78**:169–183.

12. TONEATTO T, NGUYEN L. Does mindfulness meditation improve anxiety and mood symptoms? A review of the controlled research *Can J Psychiatry* 2007;**52**:260–266.
13. BOHLMMEIER E, PRENGER R, TAAL E, CUIJPERS P. The effects of mindfulness-based stress reduction therapy on mental health of adults with a chronic medical disease: a meta-analysis. *J Psychosom Res* 2010;**68**:539–544.
14. KABAT-ZINN J. *Wherever you go there you are*. US: Hype-  
rion, 1994.
15. KABAT-ZINN J. *Indra's Net at Work: the mainstreaming of  
Dharma Practice in Society*. In: WATSON G, BATCHELOR S,  
CLAXTON G, eds. *The psychology of awaking: buddhism,  
science and our day-to-day lives*. UK: Rider, 1999:226–  
249.
16. WILLIAMS JM, TEASDALE JD, SEGAL ZV, KABAT-ZINN J. *The  
mindful way through depression: freeing yourself from  
chronic unhappiness*. US: Guilford Press, 2007.
17. LINEHAN MM. *Skills training manual for treating borderline  
personality disorder*. US: Guilford Press, 1993.
18. HAYES SC. *Get out of your mind & into your life: the new  
acceptance & commitment therapy*. US: Guilford Press,  
2005.
19. SPECIA M, CARLSON LE, GOODEY E, ANGEN M. A randomized,  
wait-list controlled clinical trial: the effect of a mindfulness  
meditation-based stress reduction program on mood and  
symptoms of stress in cancer outpatients. *Psychosom Med*  
2000;**62**:613–622.
20. MORONE NE, GRECO CM, WEINER DK. Mindfulness medita-  
tion for the treatment of chronic low back pain in older  
adults: a randomized controlled pilot study. *Pain*  
2008;**134**:310–319.
21. SHAPIRO SL, SCHWARTZ GE, BONNER G. Effects of mindful-  
ness-based stress reduction on medical and premedical  
students. *J Behav Med* 1998;**21**:581–599.
22. MORITZ S, QUAN H, RICKHI B et al. A home study-based  
spirituality education program decreases emotional distress  
and increases quality of life—a randomized, controlled trial.  
*Altern Ther Health Med* 2006;**12**:26–35.
23. COHEN J. *Statistical power analysis for the behavioral sci-  
ences*, Rev. edition. US: Academic Press, 1977.
24. NYKLICEK I, CUIJPERS KF. Effects of mindfulness-based stress  
reduction intervention on psychological well-being and  
quality of life: is increased mindfulness indeed the mecha-  
nism? *Ann Behav Med* 2008;**35**:331–340.
25. DAVIDSON RJ, KABAT-ZINN J, SCHUMACHER J et al. Alterations  
in brain and immune function produced by mindfulness  
meditation. *Psychosom Med* 2003;**65**:564–570.
26. TRAVIS F, ARENANDER A. EEG asymmetry and mindfulness  
meditation. *Psychosom Med* 2004;**66**:147–148.
27. WILLIAMS KA, KOLAR MM, REGER BE, PEARSON JC. Evalua-  
tion of a wellness-based mindfulness stress reduction  
intervention: a controlled trial. *Am J Health Promot*  
2001;**15**:422–432.
28. GROSSMAN P, KAPPOS L, GENSICKE H et al. MS quality of  
life, depression, and fatigue improve after mindfulness  
training: a randomized trial. *Neurology* 2010;**75**:1141–  
1149.
29. FOLEY E, BAILLIE A, HUXTER M, PRICE M, SINCLAIR E. Mind-  
fulness-based cognitive therapy for individuals whose lives  
have been affected by cancer: a randomized controlled  
trial. *J Consult Clin Psychol* 2010;**78**:72–79.
30. MULARSKI RA, MUNJAS BA, LORENZ KA et al. Randomized  
controlled trial of mindfulness-based therapy for dyspnea  
in chronic obstructive lung disease. *J Altern Complement  
Med* 2009;**15**:1083–1090.
31. WONG SY. Effect of mindfulness-based stress reduction  
programme on pain and quality of life in chronic pain  
patients: a randomised controlled clinical trial. *Hong Kong  
Med J* 2009;**15**(Suppl 6):13–14.
32. MONTI DA, PETERSON C, KUNKEL EJ et al. A randomized,  
controlled trial of mindfulness-based art therapy (MBAT)  
for women with cancer. *Psychooncology* 2006;**15**:363–  
373.
33. CRESWELL JD, MYERS HF, COLE SW, IRWIN MR. Mindfulness  
meditation training effects on CD4 + T lymphocytes in  
HIV-1 infected adults: a small randomized controlled trial.  
*Brain Behav Immun* 2009;**23**:184–188.
34. PRADHAN EK, BAUMGARTEN M, LANGENBERG P et al. Effect of  
mindfulness-based stress reduction in rheumatoid arthritis  
patients. *Arthritis Rheum* 2007;**57**:1134–1142.
35. SEPHTON SE, SALMON P, WEISSBECKER I et al. Mindfulness  
meditation alleviates depressive symptoms in women with  
fibromyalgia: results of a randomized clinical trial.  
*Arthritis Rheum* 2007;**57**:77–85.
36. CARLSON LE, URSULIAK Z, GOODEY E, ANGEN M, SPECIA M. The  
effects of a mindfulness meditation-based stress reduction  
program on mood and symptoms of stress in cancer out-  
patients: 6-month follow-up. *Support Care Cancer* 2001;**9**:  
112–123.
37. HEBERT JR, EBBELING CB, OLENDZKI BC et al. Change in  
women's diet and body mass following intensive interven-  
tion for early-stage breast cancer. *J Am Diet Assoc*  
2001;**101**:421–431.
38. KOSZYCKI D, BENDER M, SHLIK J, BRADWEIN J. Randomized  
trial of a meditation-based stress reduction program and  
cognitive behavior therapy in generalized social anxiety  
disorder. *Behav Res Ther* 2007;**45**:2518–2526.
39. TEASDALE JD, SEGAL ZV, WILLIAMS JM, RIDGEWAY VA, SOULSBY  
JM, LAU MA. Prevention of relapse/recurrence in major  
depression by mindfulness-based cognitive therapy.  
*J Consult Clin Psychol* 2000;**68**:615–623.
40. MA SH, TEASDALE JD. Mindfulness-based cognitive therapy  
for depression: replication and exploration of differential  
relapse prevention effects. *J Consult Clin Psychol* 2004;**72**:  
31–40.
41. BONDOLFI G, JERMANN F, DER LINDENMV et al. Depression re-  
lapse prophylaxis with mindfulness-based cognitive ther-  
apy: replication and extension in the Swiss health care  
system. *J Affect Disord* 2010;**122**:224–231.
42. KUYKEN W, BYFORD S, TAYLOR RS et al. Mindfulness-based  
cognitive therapy to prevent relapse in recurrent depres-  
sion. *J Consult Clin Psychol* 2008;**76**:966–978.
43. OST LG. Efficacy of the third wave of behavioral therapies:  
a systematic review and meta-analysis. *Behav Res Ther*  
2008;**46**:296–321.
44. MOHER D, SCHULZ KF, ALTMAN D. The CONSORT State-  
ment: revised recommendations for improving the quality  
of reports of parallel-group randomized trials 2001.  
*Explore (NY)* 2005;**1**:40–45.
45. CHAMBLESS DL, OLLENDICK TH. Empirically supported  
psychological interventions: controversies and evidence.  
*Annu Rev Psychol* 2001;**52**:685–716.
46. MCCOWN D, REIBEL D, MICOZZI MS. *Teaching mindfulness.  
A practical guide for clinicians and educators*. US:  
Springer, 2010.
47. ZAUTRA AJ, DAVIS MC, REICH JW et al. Comparison of  
cognitive behavioral and mindfulness meditation inter-  
ventions on adaptation to rheumatoid arthritis for patients  
with and without history of recurrent depression. *J Consult  
Clin Psychol* 2008;**76**:408–421.
48. SIMON SD. *Statistical evidence in Medical Trials: What do  
they really tell us?* Oxford, UK: University Press, 2006.

# Appendix C

## *Paper II*

### **Meditation Based Therapies – A Systematic Review and Some Critical Observations**

Religions and Psychotherapies. 2012; 3: 1-18.

Review

## Meditation Based Therapies—A Systematic Review and Some Critical Observations

Lone Overby Fjorback <sup>1</sup> and Harald Walach <sup>2,\*</sup>

<sup>1</sup> The Research Clinic for Functional Disorders and Psychosomatics, Aarhus University Hospital, Denmark; E-Mail: lonefjor@rm.dk

<sup>2</sup> Institute for Transcultural Health Studies, European University Viadrina and Samueli Institute European Office, Frankfurt (Oder), Germany

\* Author to whom correspondence should be addressed; E-Mail: walach@europa-uni.de; Tel.: +49-335-5534-2380; Fax: +49-335-5534-2748.

Received: 13 September 2011; in revised form: 8 December 2011 / Accepted: 28 December 2011 / Published: 4 January 2012

---

**Abstract:** This article systematically reviews the evidence for Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) and analyses the conditions around their rising popularity. MBSR, MBCT and Mindfulness Meditation were used as key words. The inclusion criteria were randomized controlled trials using the standard MBSR/MBCT program with a minimum of 33 participants. Twenty four studies were included. MBSR improved mental health in ten studies compared to waitlist control or treatment as usual. Moreover, MBSR was as efficacious as active control group in four studies, and showed a tendency over active control in one study. MBCT reduced the risk of depressive relapse in all five included studies. Evidence supports that MBSR improves mental health and MBCT prevents depressive relapse. It is interesting to observe that meditation based therapy programs are rapidly enjoying popularity. We discuss the cultural and theoretical implications.

**Keywords:** mindfulness meditation; mindfulness-based cognitive therapy; mindfulness-based stress reduction; systematic review; randomized controlled trials; sense of meaning

---

## Abbreviations

MBSR: Mindfulness-Based Stress Reduction; MBCT: Mindfulness-Based Cognitive Therapy; RCT: randomized controlled trials; TAU: treatment as usual; TM: transcendental meditation; CBGT: Cognitive Behavioral Group Therapy.

## 1. Introduction

In recent years, literature on meditation based therapy programs has been rapidly growing. During the 1970s and 1980s, there was the first spike of interest with the transcendental meditation (TM) program being studied widely and showing promising effects compared to other relaxation or therapeutic techniques in anxiety [1], psychological health [2], and various other issues such as drug addiction and behavioral problems [3], blood pressure and cardiovascular risk factors [4,5] The TM program is a mantra-based concentration technique derived from the Vedic tradition and is heavily dependent on the whole TM-system with especially installed and approved teachers and a strong in-group with close relationships that have sometimes been likened to those of religious sects. Interest in this specific type of meditation program seems to have decreased following the death of its founder Maharishi Mahesh Yogi several years ago.

Meanwhile a new wave of interest in meditation based programs has swept across academic and medical culture. This time it is based on the concept of mindfulness. It was popularized by Jon Kabat-Zinn who, starting in the eighties, developed a secularized meditation program founded on the old Theravada-Buddhist practice of mindfulness meditation [6–8].

Mindfulness holds a special place within Buddhist teaching [9–11]. According to this teaching, the suffering humans experience in this world exists from the beginning. It happens due to our own shortcomings, mainly greed and other mental toxins or destructive emotions [12]. It can, however, and this is the good news, be overcome [13]. The path towards this liberation is known as the eightfold path. This can be separated into three main domains: some concern ethical conduct (right speech, right action, right livelihood), some refer to the culture of the mind (right intention, right concentration, right mindfulness), and from these, finally, grow wisdom and insight (vipassana) [12]. From this goal of the whole path, insight, vipassana, the whole meditation tradition takes its name, Vipassana-Meditation. This is the old Buddhist tradition that is reputed to go back to Gautama Buddha himself. It is mainly taught in South-East Asia in countries such as Sri Lanka, Myanmar, Thailand, Laos and Vietnam, while other countries have adopted different teachings or have developed their own traditions and see themselves as the “larger vessel—Mahayana”. Within the older or Theravada Buddhist tradition, insight—into the non-substantiality of the ego and the fact that we create our suffering through clinging and greed—is the prime goal of all actions and meditation, since it means the end of all suffering. To reach it, ethical conduct is a prerequisite, and cultivation of the mind through good intention, practice of concentration and mindfulness is the prime method. Hence the importance placed on meditation as a spiritual practice [12,13]. In the Vipassana tradition, concentration types of meditation are practiced to strengthen the mind. This happens through mindfulness of breathing, where the diligent observation of the breath predominates, or mindfulness of the body, where attention is directed towards physical sensations in the body. Only after the mind has become used to steadying

attention on objects are further techniques employed, such as observation and mindfulness of mental objects or mental activity. It is only after lengthy practice in Buddhist teaching often over many reincarnations, that wisdom and insight is reached, which finally leads to enlightenment and complete freedom. In this concept, concentration and mindfulness are interconnected: Concentration enables mindfulness, and the practice of mindfulness even outside meditation enhances concentrative power and thus makes mindfulness possible. Observe, further, that this whole edifice rests on ethical conduct as a prerequisite [13].

Out of this tradition, the new interest in meditation based techniques arose with Kabat-Zinn's training, which he called a "Mindfulness Based Stress Reduction" Program (MBSR). Kabat-Zinn was a long-term meditator and a student of Jack Kornfield, one of the first Vipassana teachers in the West [14]. His professed goal was to make this tradition available to Westerners without any religious context, to secularize it. From this, MBSR emerged as an eight week group program [15–18]. Participants have to be committed to practice meditation for at least half an hour a day, preferably 45–60 minutes, for at least the eight weeks of the program. Afterwards they may decide for themselves whether they want to continue or not. Once a week they meet for 2.5 hours in groups of 12 to 20, sometimes up to 40 people. They have the support of the group and their leader; they learn formal types of meditation such as sitting in mindful presence attending to the breath, or the body scan—a particular type of mindfulness of the body. They also learn mindful hatha yoga. They hear lectures about the connection between mind and body, how stress impacts physical systems and our immunity, and how mindfulness and meditation may combat these. This is in strict analogy to so called "Dharma Talks" in the Vipassana tradition or "Teishos" in the Zen tradition. These talks are intended to give a theoretical background, but even more importantly motivate the disciple to increase his efforts and keep on meditating. The lectures within MBSR programs are, of course, secular and also of a motivating nature, using obvious and well established knowledge about the importance of attention, the mind-body connection, and the psycho-neuro-immunological consequences of mental habits [15,17,18].

Kabat-Zinn developed the program from his own rich meditation experience [19] and offered it first to patients of pain clinics and other outpatients who had no treatment success within the conventional system. These patients were desperate and presumably happy to commit themselves to anything that could potentially help. This may also explain the success of the early studies. German language teachers first started offering courses in the nineties, and our group was among the first to start evaluating these programs in Germany [20] and to develop a measurement instrument [21,22]. Interest grew rapidly, publications were produced in an exponential growth curve and a general enthusiasm seemed to grip the community. We did a first meta-analysis in 2004 and found quite good, medium sized effect sizes, both in controlled and in uncontrolled studies, for MBSR in clinical populations [23]. Meanwhile, the body of literature is growing; mindfulness is becoming a concept used by many people in many different contexts and presumably with meanings different from the original ones. The discussion whether "mindfulness" is perhaps simply a psychological function that can be used outside religion [24–26] has already been raised. This is at least implied by the current classic definition that defines mindfulness as moment-to-moment awareness in a non-judgmental stance [27].

Thus, mindfulness has received interest from clinicians and researchers, perhaps because it seems to improve acceptance of symptoms that are difficult or impossible to change, installs a cognitive meta-reflective capacity [28] that enhances the degree of freedom of patients, and can help patients

change their focus by emphasizing experience of the present moment. Most therapeutic concepts see symptoms as defects that have to be changed, either pharmacologically or psychologically. Thus, pharmacological concepts try to counteract symptoms, and behavioral approaches try to change mental habits towards what is considered to be healthier. In contrast, mindfulness approaches teach one to simply observe, pass no judgment and accept things as they are. The paradoxical experience of patients seems to be that it is exactly this non-judgmental, even curious mental stance of observation that sometimes changes the symptoms, and sometimes just instills peace of mind in relation to them. The MBSR program starts by focusing on the body and reconnecting the mind to the body. In a second step the mind is itself the object of attention and awareness. This may finally lead to a stance of acceptance which also helps to experience compassion for oneself and for others. A state of connectedness and an experience of being, belonging and caring are strong pillars of this program.

Mindfulness-Based Cognitive Therapy (MBCT) [29] is an adaptation of the MBSR program. It incorporates elements of cognitive therapy facilitating a detached or decentered view of one's thoughts and is designed to prevent depressive relapse [30]. It is based on the clinical observation that decentering one's view and looking at one's own symptoms and mental activities with some detachment can help both alleviate symptoms and discover triggers for potential downward spirals of affect or mood. Long-term vulnerability to depression may be related to the presence of perceived discrepancies between the actual self and ideal self-guides, and MBCT might both protect against increases in self-discrepancy and facilitate a shift in the goals of self-regulation [31].

These maladaptive self-guides, rumination, avoidance and perfectionism are four characteristics that can be seen as different aspects of the same "mode of mind" and mindfulness training might allow people to recognize when this mode of mind is operating [32].

As a prevention program for those depressed patients who are at great risk of lifelong suffering from depressive relapses, MBCT is certainly an important potential addition to the therapeutic arsenal.

Due to the different approach to illness—acceptance rather than change—adopted by both MBSR and MBCT and due to the different potential mechanism—observing and non-reacting rather than acting and fighting—MBSR and MBCT pose a conceptual challenge to Western medical concepts.

It is therefore of special interest to see whether these treatments actually work, and if so, whether they work better than or similar to established treatments. We therefore decided to conduct a systematic review focusing only on randomized controlled studies, as only these offer a reasonable protection against bias. We have reported this systematic review in detail elsewhere [33]. Here we will summarize the main results with an update of new studies, and draw special attention to some conceptual, theoretical, practical and methodological consequences.

## **2. Methods**

### *2.1. Identification and Selection*

This review focuses on MBSR and MBCT because both treatments are well-defined and mindfulness training is their key element.

Studies were identified by systematic searches of Medline, PsychInfo and Embase from 1980 to October 2010, using "mindfulness-based stress reduction", "mindfulness-based cognitive therapy" and "mindfulness meditation" and appropriate abbreviations as keywords. Titles, abstracts and full-texts of

the identified papers were screened for eligibility by one reviewer. All abstracts were read, and when an indication of mindfulness and RCT was found, the entire article was retrieved. The reference lists of selected papers were checked for additional eligible papers. We included only randomized controlled studies on adults, published in English, on either MBSR or MBCT interventions, either in their original form or in appropriate adaptations for certain patient populations.

## 2.2. Analysis

To examine the effects on physical and mental health, studies were grouped according to study population in non-clinical populations and clinical populations with physical illness or psychiatric disorders. The update of new studies is presented in a table 1.

## 3. Results

Twenty four out of 72 studies fulfilled the criteria and were included. The main reasons for exclusion were too few participants and the intervention not being the standard MBSR or MBCT program.

### 3.1. Non-clinical Populations

Nyklicek *et al.* [34] compared the effects of MBSR to a wait-list control condition while examining potentially mediating effects of mindfulness. They found that well-being, quality of life, vital exhaustion and positive affect improved in the mindfulness but not in the wait-list control condition, whereas negative affect remained unchanged. Mindfulness might mediate this effect.

Davidson *et al.* [35] found that a mindfulness training offered to employees changed not only their anxiety level, but also their immunological functioning measured by higher antititers to vaccines when compared to a wait-list control group. Moreover, the change of anxiety was correlated to stronger frontal left-asymmetry in their EEG, which was correlated to improved immunity. Davidson interpreted this as an improved plasticity in dealing with emotional stress, an interpretation which is, however, contested [36].

Daily hassles, psychological distress and medical symptoms improved in self-selected community residents compared to a control group receiving educational materials [37]. The MBSR training improved medical students' depression and anxiety, and improved their empathy and their spirituality scores compared with wait-list controls [38].

Thus, in the four studies on non-clinical populations MBSR was demonstrated to improve mental and physical health without exception. Effect sizes were medium to large. None of the studies, however, used a strong, active control.

### 3.2. Clinical Populations with Physical Illness

In a large study of 150 patients suffering from multiple sclerosis, Grossman and colleagues [39] showed moderate to strong effects in all measures, especially in quality of life, when compared to treatment as usual (TAU).

Foley *et al.* [40] adapted the MBCT manual to the situation of cancer survivors in a wait-list trial and showed, in a mixed group of cancer patients, of which more than 50% were in late stages 3 and 4, significant improvements in depression and anxiety, as well as in distress and quality of life. Mindfulness improved, and effects sizes were medium to large.

Mularski *et al.* [41] were unable to see any improvement in a group of patients with chronic obstructive pulmonary disease who were taught mindful breathing, or an active control. A high drop-out rate of 40% suggests that the program was either not suited to the patients or that the patients recruited were not committed to really participating in the program.

A study with a similarly negative result was published by Wong who studied 100 patients with chronic pain [42]. MBSR was compared to a strong active control group and both groups improved about the same.

Monti *et al.* [43] tested the efficacy of Mindfulness Based Art Therapy in women with cancer, and observed reduction in symptoms of distress and improved health related quality of life when compared to a wait-list control group.

Creswell *et al.* [44] provided initial evidence that MBSR can buffer CD4+T lymphocyte declines in an ethnically diverse sample of HIV-1 infected adults. Additional analyses suggested that the MBSR treatment effects on CD4-T lymphocytes are independent of antiretroviral medication use. The control group received 1 day of MBSR intervention.

Morone *et al.* [45] conducted a pilot wait-list study to assess the feasibility of recruitment and adherence to an MBSR program for older adults with chronic low back pain, and to develop initial estimates of treatment effects. The completion rate for the intervention group was 68% and 78% for the control group after they crossed over to the MBSR program. Because it was a pilot study, they explored participant outcome on a variety of outcome measures. As a result, no final conclusion can be drawn.

Pradhan *et al.* [46] suggested after a wait-list controlled pilot study that MBSR may complement medical disease management by reducing psychological distress and strengthening well-being in patients with rheumatoid arthritis.

Sephton *et al.* [47] showed that MBSR alleviated depressive symptoms in patients with fibromyalgia when compared to a wait-list control group. All findings persisted when pain, sleep and antidepressant medication use were controlled for. Functional impairment, pain and sleep quality were measured prior to randomization. The results of these outcomes were not reported.

Astin *et al.* [48] was unable to show a difference between a treatment combining MBSR and Qi Gong, and an educational program. High drop-out rates of up to 49% make it difficult to draw final conclusions. While both groups improved, they showed no difference between them.

A similar finding was observed in our own recent study [49]. Being the largest and one of the few active controlled studies, it shows a small difference between MBSR and active control in fibromyalgia patients, which, however, is not significant, due to power problems. The wait-list group also improved significantly.

Specia *et al.* [50,51] concluded after a wait-list study that the modified MBSR program was effective in decreasing mood disturbance and stress symptoms in both male and female patients with a wide variety of cancer diagnoses, stages of illness and ages. These improvements were maintained at six-month follow-up.

Hebert *et al.* [52] compared the effectiveness of an intensive dietary intervention on diet and body mass in women with breast cancer to an MBSR program or usual supportive care. Results indicated that MBSR did not make women with breast cancer consume less fat.

Among the thirteen MBSR studies in clinical populations with physical illnesses included, eleven reported changes in mental health, six out of seven showed significant improvements compared to wait-list or TAU, three improved similar to active control conditions, and one did not improve either in the mindfulness or the active control condition. Three fibromyalgia studies were conducted and none of them showed convincing results, but gave some indications as to improvements. Disease activity was assessed in three studies and no effect was found in rheumatoid arthritis and COPD patients, whereas a positive effect was found in HIV patients.

### 3.3. Clinical Populations with Psychiatric Disorders

Cognitive Behavioral Group Therapy (CBGT) was superior to MBSR in the improvement of generalized anxiety disorder, although MBSR patients also improved and had similar results in depression and general symptoms [53].

Moritz *et al.* [54] suggested that a home study-based spirituality educational programme can affect mental health by improving mood and quality of life within the same range as reported by other mood intervention programs such as cognitive behavioral therapy and MBSR. The mindfulness intervention followed the modified program developed for cancer patients. Only 57% of the participants in the MBSR group completed the treatment, which is 20–40% lower than the figures reported by the other included MBSR/MBCT studies.

In their first study on MBCT, Teasdale *et al.* [55] suggested that MBCT offers a promising cost-efficient psychological approach to preventing relapse in recovered, recurrently depressed patients. This was replicated by Ma [56] and more recently by Kuyken and colleagues [57], who also added a cost-benefit analysis and could show that MBCT was the more cost-effective option long term. This was again replicated in principle by Segal and colleagues [58], who also showed superiority over placebo. It was concluded that MBCT offers protection against relapse on a par with that of maintenance antidepressant pharmacotherapy.

Although slightly better, Bondolfi and colleagues [59] did not see superiority of MBCT over psychiatric treatment in their Swiss sample of 60 patients. This might be mainly due to the fact that the conventionally treated patients had much better results than in the other studies. Teasdale *et al.* [55], Ma [56], and Bondolfi [59] compared MBCT to TAU, while Kuyken [57] and Segal [58] compared MBCT to maintenance antidepressant medication.

Thus, seven MBSR/MBCT studies in clinical populations with psychiatric disorders are included. All five MBCT studies reduced depressive relapse. The two MBSR studies were compared to active control conditions, the improvements were significantly higher in active control conditions at the end of treatment, but when four-week follow-up was assessed, mindfulness and active control conditions were equal.

Table 1. Update of new studies.

Author	Participants	Intervention	Control group	Follow-up	Measures	Results
Segal <i>et al.</i> 2010	Medicated patients with Major depression ( $\geq 2$ episodes) N = 160 mean age 44 58% female	MBCT: 8 weekly, 2-hour sessions and optional monthly meditation classed; plus medication taper	Antidepressant medication or placebo	18 months	Time to relapse Depressive Symptoms Hamilton Depression Rating Scale and Clinical Interview	<b>No significant difference overall between active components</b> MBCT relapse rate: 38%; Medication: 46%; Placebo: 60% Hazard Ratio relative to placebo: MBCT 0.26 (95%CI 0.09–0.79); Medication 0.24 (95%CI 0.07–0.89) Reduction of risk for unstable remitters in MBCT ( $p = 0.01$ ) and Medication ( $p = 0.03$ ) vs. Placebo
Schmidt <i>et al.</i> 2010	Women with fibromyalgia N = 177 mean age 52	MBSR, 8 weekly 2.5 hour session plus day of mindfulness	Active Control, 8 weekly, 2.5 hour sessions relaxation, group support and body work or Wait list	End of treatment 2 months follow-up	Health related Quality of Life Profile of Quality of Life for the Chronically Ill Fibromyalgia Impact Questionnaire  Depression CES-D  Anxiety STAI  Quality of Sleep Pittsburgh Sleep Quality Index	<b>No significant group x time effect. Significant improvement for all groups</b> MBSR preM = 11.7 SD = 2.9; PostM = 12.6 SD = 3.0; 2 month follow-up M = 12.8 SD = 3.1 Active control preM = 11.7 SD = 3.3; PostM = 12.9 SD = 3.4; 2 month follow-up M = 12.2 SD = 3.6 Wait list preM = 11.7 SD = 3.2; PostM = 11.8 SD = 3.5; 2 month follow-up M = 12.3 SD = 3.3 <b>No significant group x time effect. Significant improvement for all groups</b> MBSR preM = 5.8 SD = 1.4; PostM = 4.9 SD = 1.7; 2 month follow-up M = 5.2 SD = 2.0 Active control preM = 5.5 SD = 1.7; PostM = 5.1 SD = 1.6; 2 month follow-up M = 5.3 SD = 1.9 Wait list preM = 5.6 SD = 1.9; PostM = 5.3 SD = 1.6; 2 month follow-up M = 5.3 SD = 1.7 <b>No significant group x time effect. Significant improvement for all groups</b> MBSR preM = 11.31 SD = 3.4; PostM = 10.0 SD = 3.8; 2 month follow-up M = 10.0 SD = 3.8 Active control preM = 11.4 SD = 4.2; PostM = 10.1 SD = 4.2; 2 month follow-up M = 10.1 SD = 4.2 Wait list preM = 11.1 SD = 4.4; PostM = 10.7 SD = 4.4; 2 month follow-up M = 10.4 SD = 4.1 <b>No significant group x time effect. Significant improvement for all groups</b> MBSR preM = 35.5 SD = 9.4; PostM = 31.3 SD = 8.8; 2 month follow-up M = 30.8 SD = 9.2 Active control preM = 34.7 SD = 8.7; PostM = 32.0 SD = 9.0; 2 month follow-up M = 32.2 SD = 8.8 Wait list preM = 34.8 SD = 7.7; PostM = 33.1 SD = 7.8; 2 month follow-up M = 32.4 SD = 9.1 <b>No significant group x time effect. Significant improvement for MBSR and active control</b> MBSR preM = 11.31 SD = 3.45; PostM = 10.04 SD = 3.76; 2 month follow-up M = 10.01 SD = 3.6 Active control preM = 10.12 SD = 4.21; PostM = 10.12 SD = 4.21; 2 month follow-up M = 10.25 SD = 4.09

					<p><b>Pain Perception</b> Pain Perception Scale</p> <p>Wait list preM = 11.21 SD = 4.36; PostM = 10.68 SD = 4.42; 2 month follow-up M = 10.37 SD = 4.06</p> <p><b>No significant group x time effect. Significant improvement for all groups</b></p> <p>MBSR preM = 35.47 SD = 9.38; PostM = 31.26 SD = 8.78; 2 month follow-up M = 30.79 SD = 9.20</p> <p>Active control preM = 34.74 SD = 8.67; PostM = 31.96 SD = 9.02; 2 month follow-up M = 32.17 SD = 8.76</p> <p>Wait list preM = 34.78 SD = 7.66; PostM = 33.09 SD = 7.78; 2 month follow-up M = 32.38 SD = 9.07</p>
<p><i>Astin et al.</i> 2003</p>	<p><b>Women with fibromyalgia</b> N = 128 mean age 48</p>	<p><b>MBSR+ Quigong</b> 8 weekly, 2.5 hour sessions. 25.8% never attended, attrition up to 49%</p>	<p>Education program groups designed to match time spent and attention by a team of professional facilitator</p>	<p>End of treatment, 2 and 4 months after treatment</p>	<p><b>Total myalgic score</b></p> <p><b>Fibromyalgia Impact</b></p> <p><b>Depressive Symptoms</b> (Becks BDI)</p> <p><b>Pain</b> SF36 Subscales</p> <p><b>No significant group x time effect. Significant changes in MBSR group</b></p> <p>MBSR preM = 17.9, SD = 5; postM = 15.3, SD = 3.5; 4 month follow-up M = 15.7, SD = 4.3</p> <p>Education preM = 16.8, SD = 5.1; postM = 15.6, SD = 3.4; 4 month follow-up M = 15.9, SD = 4.5</p> <p><b>No significant group x time effect</b></p> <p>MBSR preM = 57.8, SD = 10.8; postM = 48.8, SD = 15.4; 4 month follow-up M = 46.4, SD = 19.5</p> <p>Education preM = 58.7, SD = 13.5; postM = 50.1, SD = 18.3; 4 month follow-up M = 50.0, SD = 18.2</p> <p><b>No significant group x time effect. Significant changes in both groups</b></p> <p>MBSR preM = 16.7, SD = 7.4; postM = 13.1, SD = 7.9; 4 month follow-up M = 12.3, SD = 7.7</p> <p>Education preM = 17.2, SD = 9.1; postM = 14.3, SD = 8.4; 4 month follow-up M = 14.0, SD = 9.2</p> <p><b>No significant group x time effect. Significant changes in both groups</b></p> <p>MBSR preM = 32.3, SD = 14.4; postM = 39.8, SD = 17.7; 4 month follow-up M = 41.6, SD = 22.2</p> <p>Education preM = 31.4, SD = 16.7; postM = 40.8, SD = 18.7; 4 month follow-up M = 42.4, SD = 22.5</p>

### 3.4. Quality of the Included Randomised Controlled Trials

Waiting-list control group is the weakest possible control, and is the design used in most of the MBSR studies included. MBCT/MBSR was compared to TAU in four studies. It is difficult to know whether TAU as used in these studies was a strong active control or a minimum treatment.

A treatment method that in previous research has been found effective for a specific disorder is the most stringent comparison condition to use, but this design was only used in three studies [52,56,57].

In order to avoid confounding therapist and treatment condition, treatment should be delivered by more than one therapist; five studies included reported the use of two or more therapists. To conclusively determine if authors actually apply the treatment they describe, independent assessors should rate recorded sessions for adherence to the treatment manual and competence of the therapists. This is reported only in the MBCT studies. Only about half of the studies included reported power calculation, primary outcome and effect sizes. Thus, the field clearly is still in the initial stage, and conclusions as to its efficacy cannot be considered final. What is also puzzling is that only half of all studies with reported homework practice show a positive correlation between homework and improvement [60]. This could indicate that mindfulness is only one, and perhaps not even the most important, component in this complex program. This would, however, certainly need further clarification.

Overall, studies provided evidence supporting that:

- MBSR is superior to waiting-list in improving mental health in self-selected clinical and non-clinical populations and
- MBCT can reduce the risk of depressive relapse among referred and self-selected recovered, recurrently depressed patients with three or more previous episodes.

#### 3.4.1. Compliance

The review showed that most patients randomized to the mindfulness interventions (75%–97%) did complete treatment, which was defined as attending at least four or five sessions.

#### 3.4.2. Limitations

Most studies did not include active control groups. Among the MBSR studies, nine only assessed end of treatment results, and seven reported one- to six-month post-treatment results. The lack of active control groups and long-term follow-up periods constitutes a limitation of many of the assessed studies. Publication bias cannot be ruled out because most studies have shown positive results.

## 4. Discussion

We tried to answer the question: Are meditation based interventions, especially those using mindfulness as a potential mechanism, effective? We conducted a systematic review of RCTs on MBSR/MBCT. Evidence supports that MBSR improves mental health in non-clinical and clinical populations. It remains unclear; however, whether it can also improve physical health. In clinical populations with physical illness, MBSR complements medical disease management by relieving

psychological distress and strengthening well-being. In clinical populations with psychiatric disorders, MBSR has some benefit as it reduces symptoms of distress, anxiety and depression, or teaches patients coping skills to handle these symptoms. MBCT is an effective and efficient way to prevent relapse in recovered, depressed patients with three or more previous episodes. It deserves further study and potentially even inclusion into public mental health schemes as a more sustainable alternative to pharmacotherapy, especially for those who do not reliably improve after medication. Overall, studies showed medium to large effect sizes, and improvement fell within the range reported in other psychosocial interventions.

The APA Division 12 Task Force has developed criteria that therapies must fulfill in order to be considered well-established and empirically supported [61]. MBSR meets these criteria. 17 of the MBSR studies included reported mental health outcomes and 14 found MBSR to be more effective than a waiting-list or equivalent to active control conditions. Experiments were conducted using treatment manuals and effects have been demonstrated by different investigators in large and clearly specified samples. MBSR thus meets the criteria for the “well-established” designation.

MBCT also approached the “well-established” designation regarding prevention of depressive relapse. Methodologically, the reviewed studies are strong, and they show MBCT to be superior to TAU and equivalent to continuing antidepressant medication when compared to MBCT plus support in discontinuing antidepressants in preventing relapse. Treatment manuals and large and clearly specified samples of formerly depressed patients were used, and the studies were conducted by independent investigators. MBCT did not prevent depressive relapse in patients with only two previous episodes, and the number of past episodes of depression is a determined characteristic that might predict differential benefit from MBCT.

Thus, we now know that implementation of the manuals of both MBSR and MBCT are effective for some people. But what is the mechanism? There are weak indications only that mindfulness itself is the “active ingredient” in the therapeutic programs. The fact that the intensity of the homework is weakly correlated only in half of the studies, that the increase of mindfulness is not always correlated to the improvement of symptoms, and that actively controlled studies show only small effect sizes, if at all, of mindfulness over active control, indicate that mindfulness is only partially involved. Hence it is likely that all the other components—group support, the novelty of the program, commitment and compliance, the cognitive restructuring—might play equally important roles. Research into mechanisms is only starting to emerge. Initial results point to the fact that mindfulness decreases automatic reactions [62], reduces the propensity for negative reinforcements [25], increases acceptance [63], fosters patients with a meta-cognitive viewpoint that allows for some freedom from established and potentially painful ways of reacting [28], and enhances self-compassion [64].

One culturally very interesting fact that has gone unnoticed so far is the following: Western medicine and psychotherapy has mainly focused on combating symptoms and has defined therapeutic success by absence of symptoms. Mindfulness based interventions however do not focus on symptoms, but on the conscious attitude towards them. By letting symptoms be and teaching patients a different mental stance, namely accepting what is and being attentive to the present moment instead of running away from their illness and trying to change it, these approaches provide patients in particular and the medical culture at large with a completely new viewpoint. Thus patients might not experience less symptoms, but experience decreased suffering from their symptoms and more freedom in relation

to them, manifesting as improved mental health and quality of life. One of the patients in our mindfulness study on fibromyalgia [48] expressed this beautifully by saying: “For 20 years I have been bullied by my illness, never took a week holiday because I felt I have to be close to a doctor. Now I don’t care. I simply go on holidays and have a good time.” Another patient who was in one of our mixed patient groups, who had suffered from severe agoraphobia and had not left the house for quite some year, suddenly started going out again, visiting her aunt hundreds of miles away. She was unable to say how it had happened, but all of a sudden, her anxiety was gone. By attending to the present moment, dysfunctional loops which keep patients either fixed to the past, such as in depression, or anxiously anticipating the future, as in anxiety, can be broken. What religions over the ages, not only Buddhism, have taught can then become experience for patients: The richness of present-moment experience is the richness of life itself [6]. With mindfulness this rather simple but very important truth comes back into our culture, clad in psychological and Buddhist clothes but, in fact, being quite universal. It is arguably not an easy task to catch this altered stance scientifically. So far it has escaped researchers it seems, except in anecdotes and vignettes.

Future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments. Mindfulness is a systematic training of attention, awareness, compassion and wisdom. It may be useful because the Dharma is universal [65]. This universal quality may also, however, be present in other programs; in fact it may be this quality that is present when a psychosocial intervention is working. Further, this quality may be pointed to as common humanity, which makes it difficult to capture and investigate.

So far we have not discussed MBSR and MBCT separately. The following three books represent the MBSR manual: *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness* [6], *Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life* [66] and *Heal Thy Self: Lessons on Mindfulness in Medicine* [65]. What is very special about the MBSR program is that mindfulness has to be integrated in the teacher and that it includes periods of silence. Using the wisdom of the body and mind to face stress, pain and illness is very different from a traditional CBT perspective which focuses on fixing and problem solving. MBCT focus more on thoughts compared to MBSR, and MBSR teachers more often have a meditation background than MBCT teachers, who often have a psychotherapeutic background. The MBCT manual may look simpler describing mindfulness as attention control training, [29]but the authors behind the MBCT manual describe the mindful presence of the therapist as playing a crucial role in the efficacy of treatment. They themselves observed a shift from being problem solving therapists to roles as instructors empowering patients to relate mindfully to their experience [29].

It is clear that mindfulness is not a pill that can be prescribed. Patients must be ready to practice, be willing to engage and to take daily time out to keep practicing. Naturally, results apply only to this type of patient, and for them it seems to work.

We saw relatively few studies with negative outcomes. Since most clinical research in this field is either publicly or self-supported it is likely that the file-drawer problem of unpublished negative studies is small, but it cannot be excluded.

There is certainly a danger involved in the “hype” around mindfulness: If we take it out of its original context and see it only as a tool, similar to others, it might lose its impact. As explained in the Introduction, mindfulness has to be seen within a certain context. It is a habit and a way of being rather

than merely a psychological skill. It might well be the case that it only lives up to its original strength and power if it is incorporated as a habit into daily life and not just seen as a tool switched on and off according to symptom load. If that danger is heeded, however, then mindfulness based approaches might be able to reintroduce a much needed skill to people, which seems previously to have been within the remit of classical religions: that of focusing on the present moment and imbuing it with meaning. Perhaps the modern interest in mindfulness is part of the larger cultural shift which seems to be bringing back religious concepts in secular clothes. Spirituality is, after all, a human condition, and even very “secularly” trained people such as psychotherapists report on spontaneous spiritual experiences [66] and the importance of spirituality in psychotherapy. Thus we might be currently witnessing a transition of religious concepts into secular and scientific culture. Whether this is a beneficial process or not is difficult to say. It seems, at least from a scientific point of view, that the inclusion of concepts of mindfulness into therapeutic approaches is helpful for people.

## 5. Recommendations for Further Research

Future RCTs of MBSR and MBCT should use optimal design including the use of an active treatment as comparison, properly trained instructors, follow-up of at least one year and should describe attrition. In clinical populations, it is recommended to test the combination of mindfulness treatment and specialized treatment for the specific medical disorder in question. It is also recommended to explore the effect of longer treatment times, as several of the strong studies reviewed included 3–4 reinforcement classes.

## 6. Standardized Training

MBSR teachers from America and Europe have developed principles for training teachers. This non-exclusive list of essential elements of training programs to develop MBSR teachers would include [67]:

1. The MBSR teacher trainer needs to have a personal longstanding grounding in meditative practices and be a committed student of the dharma, as it is expressed both within the Buddhist meditation traditions and in more mainstream and universal contexts exemplified by MBSR. This has nothing to do with being or not being a Buddhist.
2. MBSR is a vehicle for embodying and transmitting the dharma in a wholly secular and universal idiom. It is a *recontextualizing* of dharma, not a decontextualizing of it.
3. MBSR instructors need to have their own personal meditation practice and attend retreats in the spirit of "continuing education" and the ongoing deepening of their practice and understanding.
4. MBSR instructors follow the principle that they never ask more of program participants than they do of themselves on a daily basis in terms of both formal and informal mindfulness practices. This also needs to be the case for MBSR teacher trainers.
5. The teaching of mindfulness is never a matter of merely teaching or operationalizing techniques. Mindfulness is a way of being in a wiser relationship to one's experience, not one particular mental state to be pursued and attained. Thus, the non-instrumental dimensionality of the work and of the practice of mindfulness is the foundation of effective practice and teaching.

6. Teaching MBSR is an opportunity for right livelihood. Thus, it is important to develop a fair and non-exploitative pricing structure for both MBSR implementation and teacher training.

Similar guidelines were established by the UK Network of Mindfulness-Based Teacher Trainers, along with a professional mental health training that includes the use of evidenced based therapeutic approaches (if delivering MBCT) [68].

## 7. Conclusions

Mindfulness based interventions work. They can be seen to be clinically validated. Further research is needed to clarify what the exact role of the mindfulness and meditation components in these interventions are. For patients who choose these interventions they seem to be beneficial because they foster within them a sense of control and self-efficacy, allowing them to take an active role in their condition without having to rely on external help.

## Acknowledgments

The study was funded by The Danish Agency for Science Technology and Innovation, Aase og Ejnar Danielsens Fond (Aase and Ejnar Danielsen's Fund) and TrygFonden.

The funding sources have not been involved in the study or in the writing of this manuscript.

## References

1. Eppley, K.; Abrams, A.I.; Shear, J. The differential effects of relaxation techniques on trait anxiety: A meta-analysis. *J. Clin. Psychol.* **1989**, *45*, 957–974.
2. Alexander, C.N.; Rainforth, M.V.; Gelderloos, P. Transcendental meditation, self-actualization, and psychological health: A conceptual overview and statistical meta-analysis. *J. Soc. Behav. Pers.* **1991**, *6*, 189–247.
3. Alexander, C.N.; Robinson, P.; Orme-Johnson, D.W.; Schneider, R.H. The effects of transcendental meditation compared to other methods of relaxation and meditation in reducing risk factors, morbidity, and mortality. *Homeostasis* **1994**, *34*, 243–263.
4. Rainforth, M.V.; Schneider, R.H.; Nidich, S.I.; Gaylor-King, C.; Salerno, J.W.; Anderson, J.W. Stress reduction programs in patients with elevated blood pressure: A systematic review and meta-analysis. *Curr. Hypertens Rep.* **2007**, *9*, 520–528.
5. Anderson, J.W.; Liu, C.; Kryscio, J. Blood pressure response to transcendental meditation: A meta-analysis. *Am. J. Hypertens.* **2008**, *21*, 310–316.
6. Kabat-Zinn, J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*; Delacorte: New York, NY, USA, 1990.
7. Kabat-Zinn, J. An outpatient program in behavioural medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *Gen. Hosp. Psychiat.* **1982**, *4*, 33–47.
8. Kabat-Zinn, J. *Wherever you go, there you are: Mindfulness Meditation in Everyday Life*; Hyperion: New York, NY, USA, 1994.

9. Chah, A. *A Taste of Freedom. Selected Dhamma Talks*; The Sangha, Bun Wai Forest Monastery, Sukhi Hotu Dhamma Publications: Penang, Malaysia, 2010.
10. Docket, K.H., Dudley-Grant, G.R., Bankart, C.P., Eds. *Psychology and Buddhism: From Individual to Global Community*; Kluwer Academic/Plenum Publishers: New York, NY, USA, 2003.
11. Monneyya, B. *Teaching and Training: Pa-Auk Forest Monastery*, 4th ed.; Wave Publications: Kuala Lumpur, Malaysia, 2009.
12. McCown, D.; Reibel, D.; Micozzi, M.S. *Teaching Mindfulness*; Springer Science: New York, NY, USA, 2010.
13. Goleman D. *Destructive Emotions. How can we overcome them? A scientific Dialogue with the Dalai Lama*; Bantam Dell, A division of Random House, Inc.: New York, NY, USA, 2003
14. Kornfield, J. Intensive insight meditation: A phenomenological study. *J. Transpersonal. Psychol.* **1979**, *11*, 41–58.
15. Kabat-Zinn, J. Meditation. In *Jimmie Holland Textbook of Psycho-Oncology*; Oxford University Press: Oxford, UK, 1998; pp. 767–779.
16. Kabat-Zinn, J. Indra's Net at Work: The mainstreaming of Dharma Practice in Society. In *The Psychology of Awakening: Buddhism, Science and Our Day to Day Lives*; Watson, G., Batchelor, S., Claxton, G., Eds.; Rider: London, UK, 1999; pp. 226-249.
17. Kabat-Zinn, J. Foreword in Fabrizio Didonna. *Clinical Handbook of Mindfulness*; Springer: New York, NY, USA, 2009.
18. Kabat-Zinn, J. Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemp. Buddhism* **2011**, *12*, 281–306.
19. Kabat-Zinn, J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *Gen. Hosp. Psychiat.* **1982**, *4*, 33–47.
20. Majumdar, M.; Grossman, P.; Dietz-Waschkowski, B.; Kersig, S.; Walach, H. Does mindfulness meditation contribute to health? Outcome evaluation of a German sample. *J. Altern. Complement. Med.* **2002**, *8*, 719–730.
21. Buchheld, N.; Grossman, P.; Walach, H. Measuring mindfulness in insight meditation (vipassana) and meditation-based psychotherapy: The development of the Freiburg Mindfulness Inventory (FMI). *J. Meditation Meditation Res.* **2001**, *1*, 11–34.
22. Buchheld, N.; Walach, H. Achtsamkeit in Vipassana-Meditation und Psychotherapie. Die Entwicklung des "Freiburger Fragebogens zur Achtsamkeit". *Zeitschrift für Klinische Psychologie Psychiatrie und Psychotherapie* **2002**, *50*, 153–172.
23. Grossman, P.; Niemann, L.; Schmidt, S.; Walach, H. Mindfulness based stress reduction and health: A meta-analysis. *J. Psychosom. Res.* **2004**, *37*, 35–43.
24. Sauer, S.; Lynch, S.; Walach, H; Kohls, N. Dialectics of mindfulness: Implications for western medicine Philos. *Ethics Humanit. Med.* **2011**, *6*.
25. Sauer, S.; Walach, H.; Kohls, N. Gray's Behavioural Inhibition System as a mediator of mindfulness towards well-being. *Pers. Individ. Dif.* **2011**, *50*, 506–511.
26. Wallace, B.A.; Shapiro, S.L. Mental Balance and Well-Being: Building Bridges Between Buddhism and Western Psychology. *Am. Psychol.* **2006**, *61*, 690–701.

27. Brown, K.W.; Ryan, R.M. The benefits of being present: Mindfulness and its role in psychological well-being. *J. Pers. Soc. Psychol.* **2003**, *84*, 822–848.
28. Teasdale, J.D.; Segal, Z.; Williams, M.G. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behav. Res. Ther.* **1995**, *33*, 25–39.
29. Segal, Z.V.; Williams, J.M.G.; Teasdale, J.D. *Mindfulness-Based Cognitive Therapy for Depression: A New Approach to Preventive Relapse*; Guilford Press: New York, NY, USA, 2002.
30. Baer, R. Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clin. Psychol. Sci. Pract.* **2003**, *10*, 125–143.
31. Crane, C.; Barnhofer, T.; Duggan, D.S.; Hepburn, S.; Fennel, M.; Williams, J.M.G. Mindfulness-Based Cognitive Therapy and Self-Discrepancy in Recovered Depressed Patients with a History of Depression and Suicidality. *Cogn. Ther. Res.* **2008**, *32*, 775–787.
32. Williams, J.M.G. Mindfulness, Depression and Modes of Mind. *Cogn. Ther. Res.* **2008**, *32*, 721–733.
33. Fjorback, L.O.; Arendt, M.; Ornbøl, E.; Fink, P.; Walach, H. Mindfulness-based stress reduction and mindfulness based cognitive therapy—A systematic review of randomized controlled trials. *Acta Psychiatr. Scand.* **2011**, *124*, 102–119.
34. Nyklicek, I.; Kuijpers, K.F. Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: Is increased mindfulness indeed the mechanism? *Ann. Behav. Med.* **2008**, *35*, 331–340.
35. Davidson, R.J.; Kabat-Zinn, J.; Schumacher, J.; Rosenkranz, M.; Muller, D.; Santorelli, S.F.; Urbanowski, F.; Harrington, A.; Bonus, K.; Sheridan, J.F. Alterations in brain and immune function produced by mindfulness meditation. *Psychosom. Med.* **2003**, *65*, 564–570.
36. Hagemann, D.; Neumann, E.; Becker, G.; Maier, S.; Bartussek, D. Resting brain asymmetry and affective reactivity: Aggregated data support the right-hemisphere hypothesis. *Pers. Individ. Dif.* **2005**, *26*, 139–154.
37. Williams, K.A.; Kolar, M.M.; Regar, B.E.; Pearson, J.C. Evaluation of a wellness-based mindfulness stress reduction intervention: a controlled trial. *Am. J. Health Promot.* **2001**, *15*, 422–432.
38. Shapiro, S.L.; Schwartz, G.E.; Bonner, G. Effects of mindfulness based stress reduction on medical or paramedical students. *J. Behav. Med.* **1998**, *21*, 581–599.
39. Grossman, P.; Kappos, L.; Gensicke, H.; DSouza, M.; Mohr, D.C.; Penner, I.K.; Steiner, C. MS quality of life, depression, and fatigue improve after mindfulness training: A randomized trial. *Neurology* **2010**, *75*, 1141–1149.
40. Foley, E.; Baillie, A.; Huxter, M.; Price, M.; Sinclair, E. Mindfulness-based cognitive therapy for individuals whose lives have been affected by cancer: A randomized controlled trial. *J. Consult. Clin. Psychol.* **2010**, *78*, 72–79.
41. Mularski, R.A.; Munjas, B.A.; Lorenz, K.A.; Sun, S.; Robertson, S.J.; Schmeizer, W.; Kim, A.S.; Shekelle, P.G. Randomized controlled trial of mindfulness-based therapy for dyspnea in chronic obstructive lung disease. *J. Altern. Complement.* **2009**, *15*, 1083–1090.

42. Wong, S.Y. Effect of mindfulness-based stress reduction programme on pain and quality of life in chronic pain patients: A randomised controlled clinical trial. *Hong Kong Med. J.* **2009**, *15* (Suppl. 6), 13–14.
43. Monti, D.A.; Peterson, C.; Kunkel, E.J.; Hauck, W.W.; Pequignot, E; Rhodes, L.; Brainard, G.C. A randomized, controlled trial of mindfulness-based art therapy (MBAT) for women with cancer. *Psychooncology* **2006**, *15*, 363–373.
44. Creswell, J.D.; Myers, H.F.; Cole, S.W.; Irwin, M.R. Mindfulness meditation training effects on CD4+ T lymphocytes in HIV-1 infected adults: A small randomized controlled trial. *Brain. Behav. Immun.* **2009**, *23*, 184–188.
45. Morone, N.E.; Greco, C.M.; Weiner, D.K. Mindfulness meditation for the treatment of chronic low back pain in older adults: A randomized controlled pilot study. *Pain* **2008**, *134*, 310–319.
46. Pradhan, E.K.; Baumgarten, M.; Lagenberg, P. Effect of Mindfulness-Based Stress Reduction in rheumatoid arthritis patients. *Arthritis Rheum.* **2007**, *57*, 1134–1142.
47. Sephton, S.E.; Salmon, P.; Weissbecker, I.; Ulmer, C.; Floyd, A.; Hoover, K.; Studts, J.L. Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: results of a randomized clinical trial. *Arthritis Rheum.* **2007**, *57*, 77–85.
48. Astin, J.A.; Berman, B.M.; Bausell, B.; Lee, W.L.; Hochberg, M.; Forsys, K.L. The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: A randomized controlled trial. *J. Rheumatol.* **2003**, *30*, 2257–2262.
49. Schmidt, S.; Grossman, P; Schwarzer, B; Jena, S.; Naumann, J.; Walach, H. Treating fibromyalgia with mindfulness-based stress reduction: Results from a 3-armed randomized controlled trial. *Pain* **2011**, *152*, 361–369.
50. Speca, M.; Carlson, L.E.; Goodey, E.; Angel, M.A. randomized, wait-list controlled clinical trial: The effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosom. Med.* **2000**, *62*, 613–622.
51. Carlson, L.E.; Ursuliak, Z.; Goodey, E; Angel, M.; Speca, M. The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6 Month follow-up. *Support Care Cancer* **2001**, *9*, 112–123.
52. Hebert, J.R.; Ebbeling, C.B.; Olendzki, B.C. Change in women's diet and body mass following intensive intervention for early-stage breast cancer. *J. Am. Diet Assoc.* **2001**, *101*, 421–428.
53. Koszycki, D.; Bengner, M.; Shlik, J.; Bradwejn, J. Randomized trial of a meditation-based stress reduction program and cognitive behavior therapy in generalized social anxiety disorder. *Behav. Res. Ther.* **2007**, *45*, 2518–2526.
54. Moritz, S.; Ouan, H.; Rickhi, B. A home study-based spirituality education program decreases emotional distress and increases quality of life--a randomized, controlled trial. *Altern. Ther. Health* **2006**, *12*, 26–35.
55. Teasdale, J.D.; Segal, Z.V.; Williams, J.M.; Ridgeway, V.A.; Soulsby, J.M.; Lau, M.A. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J. Consult. Clin. Psychol.* **2000**, *68*, 615–623.
56. Ma, S.; Teasdale, J.D. Mindfulness-based cognitive therapy for depression: Replication and exploration of differential relapse prevention effects. *J. Consult. Clin. Psychol.* **2004**, *72*, 31–40.

57. Kuyken, W.; Byford, S.; Taylor, R.S. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *J. Consult. Clin. Psychol.* **2008**, *76*, 966–978.
58. Segal, Z.V.; Bieling, P.; Young, T.; Macqueen, G.; Cooke, R.; Martin, L.; Bloch, R.; Levitan, R.D. Antidepressant monotherapy vs. sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in recurrent depression. *Arch. Gen. Psychiat.* **2010**, *67*, 1256–1264.
59. Bondolfi, G.; Jermann, F.; Der Linden Jermann, F.; Der Linden, M.V.; Gex-Fabry, M.; Bizzini, L.; Rouget, B.W.; Myers-Arrazola, L.; Gonzalez, C.; Segal, Z.; Aubry, J.M.; Bertschy, G. Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: Replication and extension in the Swiss health care system. *J. Affect. Disord.* **2010**, *122*, 224–231.
60. Vettese, L.C.; Toneatto, T.; Stea, J.N.; Nguyen, L.; Wang, J.J. Do mindfulness meditation participants do their homework? And does it make a difference? A review of the empirical evidence. *J. Cognit. Psychother.* **2009**, *23*, 198–225.
61. Chambless, D.L.; Ollendick, T.H. Empirically supported psychological interventions: controversies and evidence. *Ann. Rev. Psychol.* **2001**, *52*, 685–716.
62. Sauer, S.; Walach, H.; Schmidt, S.; Hinterberger, T.; Horan, M.; Kohls, N. Implicit and explicit emotional behavior and mindfulness. *Conscious. Cogn.* **2011**, doi: 10.1016/j.concog.2011.08.002.
63. Kohls, N.; Sauer, S.; Walach, H. Facets of mindfulness. An online study investigating the Freiburg Mindfulness Inventory. *Pers. Individ. Dif.* **2009**, *46*, 224–230.
64. Kuyken, W.; Watkins, E.; Holden, E.; White, K.; Taylor, R.S.; Byford, S.; Evans, A.; Radford, S.; Teasdale, J.D.; Dalgeish, T. How does mindfulness-based cognitive therapy work? *Behav. Res. Ther.* **2010**, *48*, 1105–1112.
65. Santorelli, S. *Heal Thy Self: Lessons on Mindfulness in Medicine*; Crown, Random House: New York, NY, USA, 1999.
66. Hofmann, L.; Walach, H. Spirituality and religiosity in psychotherapy—A representative survey among German psychotherapists. *Psychother. Res.* **2011**, *21*, 179–192.
67. Kabat-Zinn, J.; Santorelli, S.F. Training Teachers to Deliver Mindfulness-Based Stress Reduction. Available online: <http://www.umassmed.edu/cfm/trainingteachers/index.aspx> (accessed on 1 November 2011).
68. Centre for Mindfulness Research and Practice, Bangor University. Our Mission Statement. Available online: <http://www.bangor.ac.uk/mindfulness> (accessed on 1 November 2011).