

## Overview Scientific Research

**MAGAZINE**  
**SUBJECT**  
**RESULT**  
**CONCLUSION**

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Sadlier M, Stephens SDG, Kennedy V (2008) *The Journal of Laryngology & Otology* 122: 31–37.

Tinnitus rehabilitation: a mindfulness meditation cognitive behavioural therapy approach

Chronic tinnitus is a frequent symptom presentation in clinical practice. No drug treatment to date has shown itself to be effective. The aim of the present study was to investigate the effects of cognitive

behavioural therapy and meditation in tinnitus sufferers.

Patients were selected from a dedicated tinnitus clinic in the Welsh Hearing Institute. A waiting list control design was used. Twenty-five chronic tinnitus sufferers were consecutively allocated to two groups, one receiving a cognitive behavioural therapy/meditation intervention of four one hour sessions with the other group waiting three months and subsequently treated in the same way, thereby acting as their own control. The main outcome was measured using the Hallam tinnitus

questionnaire. A four to six month follow up was conducted.

Results: These showed significant statistical reductions in tinnitus variables both in the active and also in the control group. Post-therapy, no significant change was found after the waiting list period. The

improvement was maintained at the four to six month period.

Conclusion: The positive findings give support for the use of cognitive behavioural therapy/meditation for chronic tinnitus sufferers.

Garland SN, Carlson LE, Cook S, Lansdell L, Speca M (2007) *Support Care Cancer* 15: 949-961.

A non-randomized comparison of mindfulness-based stress reduction and healing arts programs for facilitating post-traumatic growth and spirituality in cancer outpatients

The aim of this study was to compare a mindfulness-based stress reduction (MBSR) program and a

healing through the creative arts (HA) program on measures of post-traumatic growth (PTGI-R), spirituality (FACIT-Sp), stress (SOSI), and mood disturbance (POMS) in cancer patients.

A sample of cancer outpatients

(MBSR, n=60; HA, n=44) with a variety of diagnoses chose to attend either an 8-week MBSR program or a 6-week HA program and were assessed pre- and postintervention.

The majority of participants were female, married, and had breast cancer. Repeated measures analysis of variance indicated that participants in both groups improved significantly over time on overall post-traumatic growth ( $p= 0.015$ ). Participants in the MBSR group improved

on

measures of spirituality more than those in the HA group ( $p=0.029$ ). Participants in the MBSR group also showed more improvement than those in HA on measures of anxiety (POMS,  $p=0.038$ ), anger (POMS,  $p=0.004$ ), overall stress symptoms (SOSI,  $p=0.041$ ), and mood disturbance (POMS,  $p=0.023$ ). Several main effects of time were also observed in both groups. These results were found despite attrition in both groups.

Both programs may improve facilitation of positive growth after traumatic life experiences for those who choose to participate. MBSR may be more helpful than HA in enhancing spirituality and reducing stress, depression, and anger.

Jain S, Shapiro SL, Roesch SC, Mills PJ, Bell I, Schwartz GER (2007) *Annals of Behavioral Medicine* 33 (1): 11-21.

A Randomized Controlled Trial of Mindfulness Meditation Versus Relaxation Training: Effects on Distress, Positive States of Mind, Rumination, and Distraction

Although mindfulness meditation interventions have recently shown benefits for reducing stress in various populations, little is known about their relative efficacy compared with relaxation interventions. This randomized controlled trial examines the effects of a 1-month mindfulness meditation versus somatic relaxation training as compared to a control group in 83 students (M age = 25; 16 men and 67 women) reporting distress. Psychological distress, positive states of mind, distractive and ruminative thoughts and behaviors, and spiritual experience were measured, while controlling for social desirability. Hierarchical linear modeling reveals that both meditation and relaxation groups experienced significant decreases in distress as well as increases in positive mood states over time, compared with the control group ( $p < .05$  in all cases). There were no significant differences between meditation and relaxation on distress and positive mood states over time. Effect sizes for distress were large for both meditation and relaxation (Cohen's  $d = 1.36$  and  $.91$ , respectively), whereas the meditation group showed a larger effect size for positive states of mind than relaxation (Cohen's  $d = .71$  and  $.25$ , respectively). The meditation group also demonstrated significant pre-post decreases in both distractive and ruminative thoughts/behaviors compared with the control group ( $p < .04$  in all cases; Cohen's  $d = .57$  for rumination and  $.25$  for distraction for the meditation group), with mediation models suggesting that mindfulness meditation's effects on reducing distress were partially mediated by reducing rumination. No significant effects were found for spiritual experience.

The data suggest that compared with a no-treatment control, brief training in mindfulness meditation or somatic relaxation reduces distress and improves positive mood states. However, mindfulness meditation may be specific in its ability to reduce distractive and ruminative thoughts and behaviors, and this ability may provide a unique mechanism by which mindfulness meditation reduces distress.

Sephton SE, Salmon P, Weissbecker I, Ulmer C, Floyd A, Hoover C, Studts JL (2007) *Arthritis & Rheumatism* 57: 77-85.

Mindfulness Meditation Alleviates Depressive Symptoms in Women With Fibromyalgia: Results of a Randomized Clinical Trial

Depressive symptoms are common among patients with fibromyalgia, and behavioral intervention has been recommended as a major treatment component for this illness. The objective of this study was to

test the effects of the Mindfulness-Based Stress Reduction (MBSR) intervention on depressive symptoms in patients with fibromyalgia.

This randomized controlled trial examined effects of the 8-week MBSR intervention on depressive symptoms in 91 women with fibromyalgia who were randomly assigned to treatment (n 51) or a waiting-list control group (n 40). Eligible patients were at least 18 years old, willing to participate in a weekly group, and able to provide physician verification of a fibromyalgia diagnosis. Of 166 eligible participants who responded to local television news publicizing, 49 did not appear for a scheduled intake, 24 enrolled but did not provide baseline data, and 2 were excluded due to severe mental illness, leaving 91 participants. The sample averaged 48 years of age and had 14.7 years of education. The typical participant was white, married, and employed. Patients randomly assigned to treatment received MBSR. Eight weekly 2.5-hour sessions were led by a licensed clinical psychologist with mindfulness training. Somatic and cognitive symptoms of depression were assessed using the Beck Depression Inventory administered at baseline, immediately postprogram, and at followup 2 months after the conclusion of the intervention. Change in depressive symptoms was assessed using slopes analyses of intervention effects over time. Depressive symptoms improved significantly in treatment versus control participants over the 3 assessments.

Koerbel LS, Zucker DM, RN (2007) *Journal of Holistic Nursing* 25 (4): 265

#### The Suitability of Mindfulness-Based Stress Reduction for Chronic Hepatitis C

As incidence of chronic hepatitis C (CHC) in the United States increases, management of physical and psychological symptoms over the long term becomes crucial. Research has shown meditation to be a valuable tool in reducing such symptoms for various chronic illnesses. In particular, the Mindfulness-Based Stress Reduction (MBSR) program offers curriculum that has been shown to influence both physiology and perception of disease states. Although there has been no direct research to date on the effectiveness of the MBSR program for CHC, several studies have shown significant findings affecting other chronic conditions, including heart disease, fibromyalgia, and HIV. The purpose of this literature review is to examine recent research, summarize findings, and indicate appropriate inclusion of MBSR as a primary, secondary, and tertiary treatment option in conjunction with biomedical care for those diagnosed with CHC. Thusly, nurses can better inform their clients with this condition.

MBSR, although not without questions, continues to provide researchers with a body of knowledge that makes it a legitimate health behavior intervention. Given that stress and psychological issues play a part in illness in general, and may play a larger role in chronic illness in particular, it is valid to propose further investigation on the impact of the MBSR program on hepatitis C patients.

Carlson LE, Speca M, Patel KD, Faris P (2007) *Brain, Behavior, and Immunity* 21(8): 1038-1049

One year pre-post intervention follow-up of psychological, immune, endocrine and blood pressure outcomes of mindfulness-based stress reduction (MBSR) in breast and prostate cancer outpatients

This study investigated the ongoing effects of participation in a mindfulness-based stress reduction (MBSR) program on quality of life (QL), symptoms of stress, mood and endocrine, immune and autonomic parameters in early stage breast and prostate cancer patients. Forty-nine patients with breast cancer and 10 with prostate cancer enrolled in an eight-week MBSR program that incorporated relaxation, meditation, gentle yoga and daily home practice. Demographic and health behaviors, QL, mood, stress symptoms, salivary cortisol levels, immune cell counts, intracellular cytokine production, blood pressure (BP) and heart rate (HR) were

assessed pre and post-intervention, and at 6- and 12-month follow-up.

Fifty-nine, 51, 47 and 41 patients were assessed pre- and post-intervention and at 6- and 12-month follow-up, respectively, although not all participants provided data on all outcomes at each time point. Linear mixed modeling showed significant improvements in overall symptoms of stress which were maintained over the follow-up period. Cortisol levels decreased systematically over the course of the follow-up. Immune patterns over the year supported a continued reduction in Th1 (pro-inflammatory) cytokines. Systolic blood pressure (SBP) decreased from pre- to post-intervention and HR was positively associated with self-reported symptoms of stress.

MBSR program participation was associated with enhanced quality of life and decreased stress symptoms, altered cortisol and immune patterns consistent with less stress and mood disturbance, and decreased blood pressure. These pilot data represent a preliminary investigation of the longer term relationships between MBSR program participation and a range of potentially important biomarkers.

Stewart TM. Behaviour Modification 2004; 28(6): 783-811

Light on body image treatment. Acceptance through mindfulness.

The treatment of body image has to be multifaceted and should be directed toward the treatment of the whole individual – body, mind, and spirit – with an ultimate culmination of acceptance and compassion for the self. This article presents information on a mindful approach to the treatment of body image as it pertains to concerns with body size and shape. This approach fosters the idea that the treatment process should be one of observation, nonjudgment, neutrality, and acceptance. To this end, this article will depict the conceptualization of body image treatment from a mindful perspective, in which mindfulness serves as the foundation on which the multiple facets of treatment are built. The core components of body image treatment (i.e., cognitive, perceptual, behavioural, and emotional), in the context of mindfulness, are discussed as they relate to the treatment of body image disturbance.

This article may be viewed as a theoretical overview of a new treatment concept for body image disturbance

O'Haver Day P, Horton-Deutsch S. Archives of Psychiatric Nursing 2004; 18(5): 164-177.

Using mindfulness-based therapeutic interventions in psychiatric nursing practice – part I: description and empirical support for mindfulness-based interventions.  
& Using mindfulness-based therapeutic interventions in psychiatric nursing practice – part II: mindfulness-based approaches for all phases of psychotherapy – clinical case study.

Finding effective nursing interventions for the treatment of mental illness is a major concern for advanced practice psychiatric nurses. Increasingly, innovative psychotherapeutic treatment modalities are being used for the treatment of individuals with serious mental illness. One such innovative approach, mindfulness-based therapeutic interventions, has been shown to relieve distress for individuals with medical and psychiatric illnesses.

In part one of this two-part article, the investigators describe principle concepts of mindfulness, review current research in the usefulness of mindfulness practice for treatment of psychiatric illnesses, and outline the theoretical basis for this treatment modality, including mindfulness-based cognitive therapy (MBCT). This alternative therapeutic approach offers potential usefulness for the treatment of individuals suffering from mental illness. In Part II, the writers detail the therapy phases of MBCT and present a clinical case in which an advanced practice psychiatric nurse integrates mindfulness-based psychotherapeutic approaches into her treatment.

This clinical case may inform future clinical nursing research and advanced psychiatric nursing practice.

Watkins E, Teasdale JD. *Journal of Affective Disorders* 2004; 82(1): 1-8.

Adaptive and maladaptive self-focus in depression.

Studies of rumination suggest that self-focused attention is maladaptive and perpetuates depression. Conversely, self-focused attention can be adaptive, facilitating self-knowledge and the development of the alternative functional interpretations of negative thoughts and feelings on which cognitive therapy of depression depends. Increasing evidence suggests there are distinct varieties of self-focus, each with distinct functional properties. This study tested the prediction that in depressed patients brief inductions of analytical versus experiential self-focus would differentially affect overgeneral autobiographical memory, a phenomenon associated with poor clinical course. It was predicted that, relative to analytical self-focus, experiential self-focus would reduce overgeneral memory. For this research 28 depressed patients either thought analytically about, or focused on their momentary experience of, identical symptom-focused induction items from a rumination task. Participants completed the Autobiographical Memory Test before and after self-focus manipulations. The results showed that experiential self-focus reduced overgeneral memory compared to analytical self-focus. Analytical and experiential self-focus did not differ in their effects on mood. Limitation of the study: in the absence of a reference condition, only conclusions concerning the relative effects of analytical and experiential self-focus can be made.

Kavanagh DJ, Andrade J, May J. *Addictive Behaviours* 2004; 29(7): 1359-1372.

Beating the urge: implications of research into substance-related desires.

Despite the advent of improved pharmacological treatments to alleviate substance-related desires, psychological approaches will continue to be required. However, the current psychological treatment that most specifically focuses on desires and their management—cue exposure (CE)—has not lived up to its original promise. This paper argues that current psychological approaches to desire do not adequately incorporate our knowledge about the factors that trigger, maintain, and terminate episodes of desire. It asserts that the instigation and maintenance of desires involve both associative and elaborative processes. Understanding the processes triggering the initiation of intrusive thoughts may assist in preventing some episodes, but occasional intrusions will be inevitable.

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CT and MBCT may reduce relapse by changing relationships to negative thoughts rather than by changing belief in thought

Beddoe AE, Murphy SO. *Journal of nursing education* 2004; 43(7): 305-312.

Does mindfulness decrease stress and foster empathy among nursing students ?

This pilot study of baccalaureate nursing students explored the effects of an 8-week mindfulness-based stress reduction (MBSR) course on stress and empathy. The course was intended to provide students with tools to cope with personal and professional stress and to foster empathy through intrapersonal knowing. A convenience sample of 16 students participated in the course, used guided meditation audiotapes at home, and completed journal assignments. Stress and empathy were measured using paired sample t tests. Participation in the intervention significantly reduced students' anxiety. Favourable trends were observed in a number of stress dimensions including attitude, time pressure, and total stress. Two dimensions of empathy—personal distress and fantasy—also demonstrated favourable downward trends. Regular home meditation was correlated with additional benefit. Participants reported using meditation in daily life and experiencing greater well-being and improved coping skills as a result of the program. Findings suggest that being mindful may also decrease tendencies to take on others' negative emotions.

Coping with stress and fostering the affective domain are important facets of nursing education that may be facilitated by mindfulness trainin

Ott MJ. *Journal of Psychosocial Nursing and Mental Health Services* 2004; 42(7): 22-29.

Mindfulness meditation: a path of transformation and healing.

Nurses are witnessing and nurturing the healing process of the whole person—mind, body, and spirit. Teaching mindfulness meditation is a nursing intervention that can foster healing. The consistent practice of mindfulness meditation has been shown to decrease the subjective experience of pain and stress in a variety of research settings. Formal and informal daily practice fosters development of a profound inner calmness and nonreactivity of the mind, allowing individuals to face, and even embrace, all aspects of daily life, regardless of circumstances.

By emphasizing being, not doing, mindfulness meditation provides a way through suffering for patients, families, and staff. This practice allows individuals to become compassionate witnesses to their own experiences, to avoid making premature decisions, and to be open to new possibilities, transformation, and healing.

Grossman P, Niemann L, Schmidt S, Walach H. *Journal of Psychosomatic Research* 2004; 57(1): 35-43.

Mindfulness-based stress reduction and health benefits. A meta-analysis.

Mindfulness-based stress reduction (MBSR) is a structured group program that employs mindfulness meditation to alleviate suffering associated with physical, psychosomatic and psychiatric disorders. The program, nonreligious and nonesoteric, is based upon a systematic procedure to develop enhanced awareness of moment-to-moment experience of perceptible mental processes. The approach assumes that greater awareness will provide more veridical perception, reduce negative affect and improve vitality and coping. In the last two decades, a number of research reports appeared that seem to support many of these claims. We performed a comprehensive review and meta-analysis of published and unpublished studies of health-related studies related to MBSR. Sixty-four empirical studies were found, but only 20 reports met criteria of acceptable quality or relevance to be included in the meta-analysis. Acceptable studies covered a wide spectrum of clinical populations (e.g., pain, cancer, heart disease, depression,

and anxiety), as well as stressed nonclinical groups. Both controlled and observational investigations were included. Standardized measures of physical and mental well-being constituted the dependent variables of the analysis. Overall, both controlled and uncontrolled studies showed similar effect sizes of approximately 0.5 ( $P < .0001$ ) with homogeneity of distribution.

Although derived from a relatively small number of studies, these results suggest that MBSR may help a broad range of individuals to cope with their clinical and nonclinical problems.

Gross CR, Kreitzer MJ, Russas V, Treesak C, Frazier PA, Hertz MI. *Advances in mind-body medicine* 2004; 20 (2): 20-29.

Mindfulness meditation to reduce symptoms after organ transplant: a pilot study.

Solid organ transplant patients require life-long immune suppression that can produce distressing side effects and complications. Objective of this study: to evaluate the potential of Mindfulness-Based Stress Reduction (MBSR) to reduce symptoms of depression, anxiety, and sleep disturbance and improve quality of life after solid organ transplantation. Longitudinal design: kidney, lung, or pancreas transplant recipients (N20), aged 35 to 59 years, living in the community, were evaluated at baseline, postcourse and 3-month follow-up. Intervention was a MBSR class (2.5 hours weekly, for 8 weeks), modelled after the program of Jon Kabat-Zinn. Home practice (goal: 45 minutes, 5 days weekly) was monitored. Nineteen participants completed the course. Findings suggest improvement from baseline symptom scores for depression (P.006) and sleep (P.011) at the completion of the MBSR program. At 3 months, improvement in sleep continued (P.002), and a significant improvement in anxiety scores was seen (P.043); scores for both symptoms demonstrated a linear trend and dose-response relationship with practice time. In contrast, depression scores showed a quadratic trend, and at 3 months were no longer different from baseline. A composite symptom measure was significantly improved at 3-month follow-up (P.007). Global and health-related quality of life ratings were not improved. Effects of group support and instructor attention were not controlled, and sample size and follow-up time were limited.

A randomized trial to overcome these shortcomings should be done, as symptom distress in transplant recipients appears responsive to M

Sun TF, Wu CK, Chiu NM. *Chang Gung Medical Journal* 2004; 27(6): 464-469.

Mindfulness meditation training combined with eye movement desensitization and reprocessing in psychotherapy of an elderly patient.

Presentation of experiences with an elderly patient with depression that was attributed to a surge of physical ailments who also had trauma-derived fear of having to undergo a tracheotomy. He refused pharmacotherapy and was offered intensive training in Mindfulness Meditation (MM) plus Eye Movement Desensitization and Reprocessing (EMDR) therapy during the 2 weeks of hospitalization. This treatment combination had not been used previously. We suggest that EMDR eliminated his fear of surgery, whereas MM relieved his depression and attendant anxiety. However, the two techniques appeared to work synergistically. Following his discharge, he continued to practice MM, which prevented the recurrence of emotional distress, and even helped to reduce its causative physical symptoms. We offer an explanation for the success of our combined treatments and discuss the potential usefulness in specific psychotherapeutic situations.

The authors propose a place for MM within general geriatric care, and point out the reluctance to consider the therapeutic value of medita

Carlson LE, Speca M, Patel KD, Goodey E. Psychoneuroendocrinology 2004; 29 (4): 448-474.

Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress and levels of cortisol, dehydroepiandrosterone sulfate (DHEAS) and melatonin in breast and prostate cancer outpatients.

This study investigated the relationships between a mindfulness-based stress reduction meditation program for early stage breast and prostate cancer patients and quality of life, mood states, stress symptoms, and levels of cortisol, dehydroepiandrosterone-sulfate (DHEAS) and melatonin. Fifty-nine patients with breast cancer and 10 with prostate cancer enrolled in an eight-week Mindfulness-Based Stress Reduction (MBSR) program that incorporated relaxation, meditation, gentle yoga, and daily home practice. Demographic and health behaviour variables, quality of life, mood, stress, and the hormone measures of salivary cortisol (assessed three times/day), plasma DHEAS, and salivary melatonin were assessed pre- and post-intervention. Fifty-eight and 42 patients were assessed pre- and post-intervention, respectively. Significant improvements were seen in overall quality of life, symptoms of stress, and sleep quality, but these improvements were not significantly correlated with the degree of program attendance or minutes of home practice. No significant improvements were seen in mood disturbance. Improvements in quality of life were associated with decreases in afternoon cortisol levels, but not with morning or evening levels. Changes in stress symptoms or mood were not related to changes in hormone levels. Approximately 40% of the sample demonstrated abnormal cortisol secretion patterns both pre- and post-intervention, but within that group patterns shifted from "inverted-V-shaped" patterns towards more "V-shaped" patterns of secretion. No overall changes in DHEAS or melatonin were found, but nonsignificant shifts in DHEAS patterns were consistent with healthier profiles for both men and women.

Birnbaum L, Birnbaum A. The Scientific World Journal 2004; 18 (4): 216-227.

In search of inner wisdom: guided mindfulness meditation in the context of suicide.

Spiritual concerns are highly relevant, but often ignored, in psychotherapy in general and in suicide in particular. This article presents Internet data and clinical case material bearing on the topic, and describes an innovative therapeutic intervention administered in a group-workshop format with suicide survivors and mental health professionals. The technique incorporates relaxation and mindfulness meditation, with the addition of guided meditation in search of inner wisdom. Results of the group intervention are described and illustrated. Many participants reported a significant positive experience including connection to knowledge that was highly relevant to them in their current state of life. Whether such insights were experienced as coming from within (a deeper part of the self) or from an external source (a guiding figure or presence), indications are that guided meditation can be a powerful resource for therapists and their clients, suicidal and otherwise.

Possible applications in diverse populations and settings, as well as the need for further research,

Teasdale JD, Segal ZV, Williams JM, Ridgeway VA, Soulsby JM, Lau MA. Journal of Consulting and Clinical Psychology 2000; 68 (4): 615-623.

Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy.

This study evaluated mindfulness-based cognitive therapy (MBCT), a group intervention designed to train recovered recurrently depressed patients to disengage from dysphoria-activated depressogenic thinking that may mediate relapse/recurrence. Recovered recurrently depressed patients (n 145) were randomized to continue with treatment as usual or, in addition, to receive

MBCT. Relapse/recurrence to major depression was assessed over a 60-week study period. For patients with 3 or more previous episodes of depression (77% of the sample), MBCT significantly reduced risk of relapse/recurrence. For patients with only 2 previous episodes, MBCT did not reduce relapse/recurrence.

Ma SH, Teasdale JD. *Journal of Consulting and Clinical Psychology* 2004; 72 (1): 31-40.

Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects.

Recovered recurrently depressed patients were randomized to treatment as usual (TAU) or TAU plus mindfulness-based cognitive therapy (MBCT). Replicating previous findings, MBCT reduced relapse from 78% to 36% in 55 patients with 3 or more previous episodes; but in 18 patients with only 2 (recent) episodes corresponding figures were 20% and 50%. MBCT was most effective in preventing relapses not preceded by life events. Relapses were more often associated with significant life events in the 2-episode group. This group also reported less childhood adversity and later first depression onset than the 3-or-more-episode group, suggesting that these groups represented distinct populations.

MBCT is an effective and efficient way to prevent relapse/recurrence in recovered depressed patients with 3 or more previous episode

Robinson FP, Mathews HL, Witek-Janusek L. *Journal of Alternative and Complementary Medicine: Research on paradigm, practice, and policy* 2003; 9 (5): 683-694.

Psycho-endocrine-immune response to mindfulness-based stress reduction in individuals infected with the human immunodeficiency virus: a quasiexperimental study.

The purpose of this study was to examine the effects of a structured, 8-week, Mindfulness-Based Stress Reduction (MBSR) program on perceived stress, mood, endocrine function, immunity, and functional health outcomes in individuals infected with the human immunodeficiency virus (HIV). This study used a quasiexperimental, nonrandomized design. Subjects were specifically recruited (nonrandom) for intervention (MBSR) or comparison group. Data were collected at pretest and post-test in the MBSR group and at matched times in the comparison group. t Tests were performed to determine within-group changes and between-group differences. The results showed that natural killer cell activity and number significantly increased in the MBSR group compared to the comparison group. No significant changes or differences were found for psychological, endocrine, or functional health variables.

These results provide tentative evidence that MBSR may assist in improving immunity in individuals infected with HIV.

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\* Shannahoff-Khalsa D. The complications of meditation trials and research: issues raised by the Robinson, Mathews, and Witek-Janusek paper-‘Psycho-endocrine-immune response to mindfulness-based stress reduction in individuals infected with the human immunodeficiency virus: a quasiexperimental study’. *Journal of Alternative and Complementary Medicine: Research on paradigm, practice, and policy* 2003; 9 (5): 603-605.

Astin JA, Berman BM, Bausell B, Lee WL, Hochberg M, Forys KL. *Journal of Rheumatology* 2003; 30 (10): 2257-2262.

The efficacy of mindfulness meditation plus Qigong movement therapy in the treatment of fibromyalgia: a randomized controlled trial.

This study to test the short and longterm benefits of an 8 week mind-body intervention that combined training in mindfulness meditation with Qigong movement therapy for individuals with fibromyalgia syndrome (FM). A total of 128 individuals with FM were randomly assigned to the mind-body training program or an education support group that served as the control. Outcome measures were pain, disability, depression, myalgic score (number and severity of tender points), 6 minute walk time, and coping strategies, which were assessed at baseline and at 8, 16, and 24 weeks. Results showed that both groups registered statistically significant improvements across time for the Fibromyalgia Impact Questionnaire, Total Myalgic Score, Pain, and Depression, and no improvement in the number of feet traversed in the 6 minute walk. However, there was no difference in either the rate or magnitude of these changes between the mind-body training group and the education control group. Salutary changes occurring by the eighth week (which corresponded to the end of the mind-body and education control group sessions) were largely maintained by both groups throughout the 6 month follow-up period.

While both groups showed improvement on a number of outcome variables, there was no evidence that the multimodal mind-body intervention for FM was superior to education and support as a treatment option. Additional randomized controlled trials are needed before interventions of this kind can be recommended for treatment of

Proulx K. *Holistic Nursing Practice* 2003; 17 (4): 201-208.

Integrating mindfulness-based stress reduction

Mindfulness-based stress reduction (MBSR) programs may mitigate the effects of stress and disease. This integrative review identified 21 clinical studies on MBSR interventions.

Although preliminary findings suggest health enhancement from MBSR, controlled, randomized studies, the operationalization of constructs, and qualitative research are needed.

Singh NN, Wahler RG, Adkins AD, Myers RE. *Research in developmental disabilities* 2003; 24 (3): 158-169.

Soles of the Feet: a mindfulness-based self-control intervention for aggression by an individual with mild mental retardation and mental illness.

Uncontrolled low frequency, high intensity aggressive behaviour is often a barrier to community living for individuals with developmental disabilities. Aggressive behaviours are typically treated with psychotropic medication, behavioural interventions or their combination; but often the behaviours persist at a level that is problematic for the individual as well as care providers. We developed a mindfulness-based, self-control strategy for an adult with mental retardation and mental illness whose aggression had precluded successful community placement. He was taught a simple meditation technique that required him to shift his attention and awareness from the anger-producing situation to a neutral point on his body, the soles of his feet. After practice he applied this technique fairly consistently in situations that would normally have elicited an aggressive response from him. The data show that he increased self-control over his aggressive behaviours, met the community provider's requirement for 6 months of aggression-free behaviour in the inpatient facility before being transitioned to the community, and then successfully lived in the community without readmission to a facility. No aggressive behaviour was seen during the 1-year follow-up after his community placement.

Mindfulness-based intervention may offer a viable alternative to traditional interventions currently being used to treat behavioural challenges in children and adults with mild mental retar

Rosenzweig S, Reibel DK, Greeson JM, Brainard GC, Hojat M. Teaching and learning in medicine 2003; 15 (2): 88-92.

Mindfulness-based stress reduction lowers psychological distress in medical students.

Medical students confront significant academic, psychosocial, and existential stressors throughout their training. Mindfulness-based stress reduction (MBSR) is an educational intervention designed to improve coping skills and reduce emotional distress. The purpose of this study was to examine the effectiveness of the MBSR intervention in a prospective, nonrandomized, cohort-controlled study. Second-year students (n 140) elected to participate in a 10-week MBSR seminar. Controls (n 162) participated in a didactic seminar on complementary medicine. Profile of Mood States (POMS) was administered preintervention and postintervention. Results: Baseline total mood disturbance (TMD) was greater in the MBSR group compared with controls (38.7 +/- 33.3 vs. 28.0 +/- 31.2;  $p < .01$ ). Despite this initial difference, the MBSR group scored significantly lower in TMD at the completion of the intervention period (31.8 +/- 33.8 vs. 38.6 +/- 32.8;  $p < .05$ ). Significant effects were also observed on Tension-Anxiety, Confusion-Bewilderment, Fatigue-Inertia, and Vigor-Activity subscales.

MBSR may be an effective stress management intervention for medical stud

Shapiro SL, Bootzin RR, Figueredo AJ, Lopez AM, Schwartz GE. Journal of Psychosomatic Research 2003; 54 (1): 85-91.

The efficacy of mindfulness-based stress reduction in the treatment of sleep disturbance in women with breast cancer: an exploratory study.

The diagnosis of breast cancer, the most common type of cancer among American women, elicits greater distress than any other diagnosis regardless of prognosis. Therefore, the present study examined the efficacy of a stress reduction intervention for women with breast cancer. As part of a larger, randomized, controlled study of the effects on measures of stress of a mindfulness-based stress reduction (MBSR) intervention for women with breast cancer, the current analyses examined the effects on sleep complaints. Analyses of the data indicated that both MBSR and a free choice (FC) control condition produced significant improvement on daily diary sleep quality measures though neither showed significant improvement on sleep-efficiency. Participants in the MBSR who reported greater mindfulness practice improved significantly more on the sleep quality measure most strongly associated with distress.

MBSR appears to be a promising intervention to improve the quality of sleep in woman with breast cancer whose sleep complaints are due to stres

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Majumdar M, Grossman P, Dietz-Waschkowski B, Kersig S, Walach H. Journal of Alternative and Complementary Medicine: research on paradigm, practice, and policy 2002; 8 (6): 719-730.

Does mindfulness meditation contribute to health? Outcome evaluation of a German sample.

This exploratory study is the first systematic outcome evaluation to examine the effects of an 8-week meditation-based program in mindfulness in a German sample. Twenty-one participants with chronic physical, psychologic, or psychosomatic illnesses were examined in a longitudinal pretest and post-treatment design with a 3-month follow-up. Both quantitative and qualitative data were gathered. Emotional and general physical well-being, sense of coherence, overall psychologic distress, and satisfaction with life were measured with standardized instruments. Overall, the interventions led to high levels of adherence to the meditation practice and

satisfaction with the benefits of the course, as well as effective and lasting reductions of symptoms (especially in psychologic distress, well-being, and quality of life). Changes were of moderate-to-large effect sizes. Positive complementary effects with psychotherapy were also found.

Teasdale JD, Moore RG, Hayhurst H, Pope M, Williams S, Segal ZV.

Metacognitive awareness and prevention of relapse in depression: empirical evidence.

Metacognitive awareness is a cognitive set in which negative thoughts/feelings are experienced as mental events, rather than as the self. The authors hypothesized that (a) reduced metacognitive awareness would be associated with vulnerability to depression and (b) cognitive therapy (CT) and mindfulness-based CT (MBCT) would reduce depressive relapse by increasing metacognitive awareness. They found (a) accessibility of metacognitive sets to depressive cues was less in a vulnerable group (residually depressed patients) than in nondepressed controls; (b) accessibility of metacognitive sets predicted relapse in residually depressed patients; (c) where CT reduced relapse in residually depressed patients, it increased accessibility of metacognitive sets; and (d) where MBCT reduced relapse in recovered depressed patients, it increased accessibility of metacognitive sets.

CT and MBCT may reduce relapse by changing relationships to negative thoughts rather than by changing belief in t

Carlson LE, Speca M, Patel KD, Goodey E. *Psychosomatic Medicine* 2003; 65 (4): 571-581.

Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress, and immune parameters in breast and prostate cancer outpatients.

This study investigated the relationships between a mindfulness-based stress reduction meditation program for early stage breast and prostate cancer patients and quality of life, mood states, stress symptoms, lymphocyte counts, and cytokine production. Forty-nine patients with breast cancer and 10 with prostate cancer participated in an 8-week MBSR program that incorporated relaxation, meditation, gentle yoga, and daily home practice. Demographic and health behaviour variables, quality of life, mood, stress and counts of NK, NKT, B, T total, T helper, and T cytotoxic cells, as well as NK and T cell production of TNF, IFN-gamma, IL-4, and IL-10 were assessed pre- and postintervention. Fifty-nine and 42 patients were assessed pre- and postintervention, respectively. Significant improvements were seen in overall quality of life, symptoms of stress, and sleep quality. Although there were no significant changes in the overall number of lymphocytes or cell subsets, T cell production of IL-4 increased and IFN-gamma decreased, whereas NK cell production of IL-10 decreased. These results are consistent with a shift in immune profile from one associated with depressive symptoms to a more normal profile.

MBSR participation was associated with enhanced quality of life and decreased stress symptoms in breast and prostate cancer patients. This study is also the first to show changes in cancer-related cytokine production associated with program parti

Davidson RJ, Kabat-Zinn J, Schumacher J, Rosenkranz M, Muller D, Santorelli SF, Urbanowski F, Harrington A, Bonus K, Sheridan JF. *Psychosomatic Medicine* 2003; 65 (4): 564-570

Alterations in brain and immune function produced by mindfulness meditation.

Significant increases in left-sided anterior activation, a pattern previously associated with positive affect, in the meditators compared with the nonmeditators.

We also found significant increases in antibody titers to influenza vaccine among subjects in the meditation compared with those in the wait-list control group. Finally, the magnitude of increase in left-sided activation predicted the magnitude of antibody titer rise to the vaccine.

These findings demonstrate that a short program in mindfulness meditation produces demonstrable effects on brain and immune function. These findings suggest that meditation may change brain and immune function in positive ways and underscore the need for additional research.

See also:

\* Smith JC. Alterations in brain and immune function produced by mindfulness meditation: three caveats. *Psychosomatic Medicine* 2004; 66 (1): 148-152.

\* Travis F, Arenander A. EEG asymmetry and mindfulness meditation. *Psychosomatic Medicine* 2004; 66 (1): 147-148.

*Fam Community Health*. 2003 Jan-Mar; 26(1):25-33.

Anxiety reduction and heart disease.

Anxiety, emotional control, coping styles, and health locus of control were compared in a treatment and control group of women with heart disease.

Post-intervention analyses provide initial support for beneficial effects of this program.

Bédard M, Felteau M, Mazmanian D, Fedyks K, Klein R, Richardson J, Parkinson W, Minthorn-Biggs M-B. *Disability and Rehabilitation* 2003; 25 (13): 722-731.

Pilot evaluation of a mindfulness-based intervention to improve quality of life among individuals who sustained traumatic brain injuries.

Primary objective was to examine the potential efficacy of a mindfulness-based stress reduction approach to improve quality of life in individuals who have suffered traumatic brain injuries. Research design was a pre-post design with drop-outs as controls. The researchers recruited individuals with mild to moderate brain injuries, at least 1 year post-injury. They measured their quality of life, psychological status, and function. Results of 10 participants who completed the programme were compared to three drop-outs with complete data. The intervention was delivered in 12-weekly group sessions. The intervention relied on insight meditation, breathing exercises, guided visualization, and group discussion. We aimed to encourage a new way of thinking about disability and life to bring a sense of acceptance, allowing participants to move beyond limiting beliefs. The treatment group mean quality of life (SF-36) improved by 15.40 (SD 9.08) compared to - 1.67 (SD 16.65; p 0.036) for controls. Improvements on the cognitive-affective domain of the Beck Depression Inventory II (BDI-II) were reported (p 0.029), while changes in the overall BDI-II (p 0.059) and the Positive Symptom Distress Inventory of the SCL-90R (p 0.054) approached statistical significance.

*J Altern Complement Med*. 2002 Dec; 8(6):719-30; discussion 731-5

Does mindfulness meditation contribute to health?

Twenty-one (21) participants with chronic physical, psychologic, or psychosomatic illnesses were examined in a longitudinal pretest and post-treatment design with a 3-month follow-up. Overall, the interventions led to high levels of adherence to the meditation practice and satisfaction with the benefits of the course, as well as effective and lasting reductions of symptoms (especially in psychologic distress, well-being, and quality of life). Changes were of

moderate-to-large effect sizes. Positive complementary effects with psychotherapy were also found.

Chang Gung Med J. 2002 Aug; 25(8):538-41

Mindfulness meditation in the control of severe headache

We report on the case of a man who was prone to developing severe headaches due to activities requiring extreme concentration. He learned to control his pain and discomfort through mindfulness meditation, although this practice in fact induced headaches initially

It is suggested that training in MM may be a medically superior and cost-effective alternative to pain medication for the control of headaches with no underlying organic causes in highly motivated patients

Psychosom Med. 2002 Jan-Feb; 64(1):71-83

What do we really know about mindfulness-based stress reduction?

There has been a paucity of research and what has been published has been rife with methodological problems. At present, we know very little about the effectiveness of this approach. However, there is some evidence that suggests that it may hold some promise.

The available evidence does not support a strong endorsement of this approach at present. However, serious investigation is warranted and strongly recommended

Altern Ther Health Med. 2002 Jan-Feb; 8(1):60-2, 64-6

Inner-city patients' healthcare utilization before and after an MBSR intervention.

A significant decrease in the number of chronic care visits was found among the 47 patients for whom complete data were available. The 36 patients who completed the Spanish courses demonstrated a significant decrease in total medical visits and chronic care visits

The results of this study suggest that MBSR may help contain healthcare costs by decreasing the number of visits made by inner-city patients to their primary care providers after completing the MBSR program

Br J Med Psychol. 2001 Jun; 74 Part 2:197-212

A qualitative study of mindfulness-based cognitive therapy for depression

The theory suggested that the preconceptions and expectations of therapy are important influences on later experiences of MBCT. Important areas of therapeutic change ('coming to terms') were identified, including the development of mindfulness skills, an attitude of acceptance and 'living in the moment'.

The development of mindfulness skills was seen to hold a key role in the development of change. Generalization of these skills to everyday life was seen as important, and several ways in which this happened, including the use of breathing spaces, were discussed. In addition, several of the concepts and categories offered support to cognitive accounts of mood disorder and the role of MBCT in reducing relapse.

Gen Hosp Psychiatry. 2001 Jul-Aug; 23(4):183-92

Health-related quality of life in a heterogeneous patient population.

Health-related quality of life was enhanced as demonstrated by improvement on all indices of the SF-36, including vitality, bodily pain, role limitations caused by physical health, and social functioning (all  $P < .01$ ). Alleviation of physical symptoms was revealed by a 28% reduction on the MSCL ( $P < .0001$ ). Decreased psychological distress was indicated on the SCL-90-R by a 38% reduction on the Global Severity Index, a 44% reduction on the anxiety subscale, and a 34% reduction on the depression subscale (all  $P < .0001$ ). One-year follow-up revealed maintenance of initial improvements on several outcome parameters.

Am J Health Promot. 2001 Jul-Aug; 15(6):422-32

Evaluation of a Wellness-Based Mindfulness Stress Reduction intervention: a controlled trial.

Intervention subjects reported significant decreases from baseline in effect of daily hassles (24%), psychological distress, (44%), and medical symptoms (46%) that were maintained at the 3-month follow-up compared to control subjects (repeated measures analysis of variance [ANOVA];  $p < .05$ ).

Self-selected community residents can improve their mental and physical health by participating in a stress reduction intervention offered by a university wellness program.

Br J Med Psychol. 2001 Jun; 74(Pt 2):197-212

A qualitative study of mindfulness-based cognitive therapy for depression.

Support Care Cancer. 2001 Mar; 9(2):112-23

The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up.

Patients' scores decreased significantly from before to after the intervention on the POMS and SOSI total scores and most subscales, indicating less mood disturbance and fewer symptoms of stress, and these improvements were maintained at the 6-month follow-up. More advanced stages of cancer were associated with less initial mood disturbance, while more home practice and higher initial POMS scores predicted improvements on the POMS between the pre- and post-intervention scores. Female gender and more education were associated with higher initial SOSI scores, and improvements on the SOSI were predicted by more education and greater initial mood disturbance.

J Abnorm Psychol. 2000 Feb; 109(1):150-5

Mindfulness-based cognitive therapy reduces overgeneral autobiographical memory in formerly depressed patients

Whereas control patients showed no change in specificity of memories recalled in response to cue words, the treatment group showed a significantly reduced number of generic memories. Although such a memory deficit may arise from long-standing tendencies to encode and retrieve events generically, such a style is open to modification

Psychosom Med. 2000 Sep-Oct; 62(5):613-22

Mood and symptoms of stress in cancer outpatients.

After the intervention, patients in the treatment group had significantly lower scores on Total Mood Disturbance and subscales of Depression, Anxiety, Anger, and Confusion and more Vigor than control subjects. The treatment group also had fewer overall Symptoms of Stress; fewer Cardiopulmonary and Gastrointestinal symptoms; less Emotional Irritability, Depression, and Cognitive Disorganization; and fewer Habitual Patterns of stress. Overall reduction in Total Mood Disturbance was 65%, with a 31% reduction in Symptoms of Stress.

J Behav Med. 1998 Dec; 21(6):581-99

Effects of mindfulness-based stress reduction on medical and premedical students

Findings indicate that participation in the intervention can effectively (1) reduce self-reported state and trait anxiety, (2) reduce reports of overall psychological distress including depression, (3) increase scores on overall empathy levels, and (4) increase scores on a measure of spiritual experiences assessed at termination of intervention. These results (5) replicated in the wait-list control group, (6) held across different experiments, and (7) were observed during the exam period. Future research should address potential long-term effects of mindfulness training for medical and premedical students.

Psychosom Med. 1998 Sep-Oct; 60(5):625-32

Rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA).

Cox-proportional hazards regression analysis showed that subjects in the tape groups reached the Halfway Point (p .013) and the Clearing Point (p .033) significantly more rapidly than those in the no-tape condition, for both UVB and PUVA treatments.

A brief mindfulness meditation-based stress reduction intervention delivered by audiotape during ultraviolet light therapy can increase the rate of resolution of psoriatic lesions in patients with psoriasis

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Psychother Psychosom. 1997; 66(2):97-106

Effects on psychological symptomatology, sense of control, and spiritual experiences.

compared with controls, evidenced significantly greater changes in terms of: (1) reductions in overall psychological symptomatology; (2) increase in overall domain-specific sense of control and utilization of an accepting or yielding mode of control in their lives, and (3) higher scores on a measure of spiritual experiences.

The techniques of mindfulness meditation, with their emphasis on developing detached observation and awareness of the contents of consciousness, may represent a powerful cognitive behavioral coping strategy for transforming the ways in which we respond to life events. They may also have potential for relapse prevention in affective disorders.

Gen Hosp Psychiatry. 1995 May; 17(3):192-200

Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders

Repeated measures analysis showed maintenance of the gains obtained in the original study on the Hamilton [ $F(2,32) 13.22; p < 0.001$ ] and Beck [ $F(2,32) 9.83; p < 0.001$ ] anxiety scales as well as on their respective depression scales, on the Hamilton panic score, the number and severity of panic attacks, and on the Mobility Index-Accompanied and the Fear Survey. A 3-year follow-up comparison of this cohort with a larger group of subjects from the intervention who had met criteria for screening for the original study suggests generalizability of the results obtained with the smaller, more intensively studied cohort. Ongoing compliance with the meditation practice was also demonstrated in the majority of subjects at 3 years.

We conclude that an intensive but time-limited group stress reduction intervention based on mindfulness meditation can have long-term beneficial effects in the treatment of people diagnosed with anxiety disorders

Behav Res Ther. 1995 Jan; 33(1):25-39

How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help

. This analysis provides the basis for the development of Attentional Control Training, a new approach to preventing relapse that integrates features of cognitive therapy and mindfulness training and is applicable to recovered depressed patients.

Med Hypotheses. 1995 Jan; 44(1):39-46.

Meditation, melatonin and breast/prostate cancer: hypothesis and preliminary data

The main outcome measure was the total excretion of urinary 6-sulphatoxymelatonin. Multiple linear regression (Proc GLM in SAS) was performed to test the effect of meditation (RM vs NM) on 6-sulphatoxymelatonin. The results of the study were that after controlling for the non-

significant effect of menstrual period interval, we found an effect of meditation group (RM vs NM:  $b$  1.983;  $F$  6.78;  $p$  0.02) and age (for each integer year:  $b$  0.169;  $F$  8.41;  $p$  0.01).

The conclusion is that study results are consistent with our hypothesis and indicate that melatonin might be a useful parameter in testing similar psycho-social inter

Am J Psychiatry. 1992 Jul; 149(7):936-43

Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders.

Repeated measures analyses of variance documented significant reductions in anxiety and depression scores after treatment for 20 of the subjects—changes that were maintained at follow-up. The number of subjects experiencing panic symptoms was also substantially reduced. A comparison of the study subjects with a group of nonstudy participants in the program who met the initial screening criteria for entry into the study showed that both groups achieved similar reductions in anxiety scores on the SCL-90-R and on the Medical Symptom Checklist, suggesting generalizability of the study findings.

A group mindfulness meditation training program can effectively reduce symptoms of anxiety and panic and can help maintain these reductions in patients with generalized anxiety disorder, panic disorder, or panic disorder with agoraphobia.

Behav Res Ther. 1992 Mar; 30(2):175-89

Two controlled evaluations of multicomponent psychological treatment of irritable bowel syndrome

In Study 1 ( $n$  10 per condition) there were nonsignificant trends for the multicomponent (relaxation, thermal biofeedback, and cognitive therapy) treatment to be superior to the attention-placebo (pseudo-meditation and EEG alpha suppression biofeedback) condition. In Study 2 ( $n$  = 30 per condition), we found no advantage for the multicomponent treatment over the attention-placebo condition

J Pers Soc Psychol. 1989 Dec; 57(6):950-64.

Transcendental meditation, mindfulness, and longevity: an experimental study with the elderly.

The MF group improved most, followed by TM, on perceived control and word fluency. After 3 years, survival rate was 100% for TM and 87.5% for MF in contrast to lower rates for other groups

J Behav Med. 1985 Jun; 8(2):163-90

The clinical use of mindfulness meditation for the self-regulation of chronic pain

Statistically significant reductions were observed in measures of present-moment pain, negative body image, inhibition of activity by pain, symptoms, mood disturbance, and psychological symptomatology, including anxiety and depression. Pain-related drug utilization decreased and activity levels and feelings of self-esteem increased. Improvement appeared to be independent of gender, source of referral, and type of pain. A comparison group of pain patients did not show significant improvement on these measures after traditional treatment protocols. At follow-up, the improvements observed during the meditation training were maintained up to 15 months post-meditation training for all measures except present-moment pain. The majority of subjects reported continued high compliance with the meditation practice as part of their daily lives.

Percept Mot Skills. 1984 Jun; 58(3):775-84

Visual sensitivity and mindfulness meditation.

After the retreat, practitioners could detect shorter single-light flashes and required a shorter interval to differentiate between successive flashes correctly. The control group did not change on either measure. Phenomenological reports indicate that mindfulness practice enables practitioners to become aware of some of the usually preattentive processes involved in visual detection.

The results support the statements found in Buddhist texts on meditation concerning the changes in perception encountered during the practice of mindfulness.

Percept Mot Skills. 1984 Jun; 58(3):727-33

Differences in visual sensitivity among mindfulness meditators and non-meditators

Meditation practitioners were able to detect light flashes of shorter duration than the non-meditators.

The results support the statements found in Buddhist texts on meditation concerning the changes in perception encountered during the practice of mindfulness.

Gen Hosp Psychiatry. 1982 Apr; 4(1):33-47.

An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results.

Data are presented on 51 chronic pain patients who had not improved with traditional medical care. The dominant pain categories were low back, neck and shoulder, and headache. Facial pain, angina pectoris, noncoronary chest pain, and GI pain were also represented. At 10 weeks, 65% of the patients showed a reduction of greater than or equal to 33% in the mean total Pain Rating Index (Melzack) and 50% showed a reduction of greater than or equal to 50%. Similar decreases were recorded on other pain indices and in the number of medical symptoms reported. Large and significant reductions in mood disturbance and psychiatric symptomatology accompanied these changes and were relatively stable on follow-up. These improvements were independent of the pain category

We conclude that this form of meditation can be used as the basis for an effective behavioral program in self-regulation for chronic pain patients. Key features of the program structure, and the limitations of the present uncontrolled study are discuss