Summary of Scientific Research on the Transcendental Meditation and TM-Sidhi Programme

Dr Roger Chalmers

Table of Contents

Table of Contents

(continued)

Introduction

Transcendental Meditation, as taught by Maharishi Mahesh Yogi, is a simple technique practised for 15-20 minutes twice daily, sitting comfortably with eyes closed. It can be learned easily by anyone regardless of age, educational background, or culture. The technique is effortless and requires no belief, nor any change in lifestyle or diet.

More than seven million people have learned Transcendental Meditation (TM) around the world over the past 65 years. Instruction involves a standard seven-step course taught by qualified teachers who have undergone an extensive and systematic training programme, ensuring quality and consistency in instruction worldwide.

Scientific research on Transcendental Meditation comprises more than 600 studies conducted at over 250 independent universities and research institutions in 33 countries [1-50, 52-444, 448-470, 472-481]. These studies have demonstrated a wide range of benefits for mind, body, behaviour, and society (see Table 1, page 4), and have appeared in many leading, peer-reviewed journals (see Table 2, pages 5-6).

See Table 1, page 4

TABLE 1

Research Findings on Transcendental Meditation

- Reduced need for medical care and decreased health care costs [4-8, 399]
- 48% reduction in the rate of major clinical events (all-cause mortality, non-fatal myocardial infarction and stroke) in patients with coronary heart disease [9]
- Reduction of major risk factors for cardiovascular disease and improved cardiovascular health in both normal subjects and patients with heart disease [9-50, 52, 60, 62-64, 98, 316, 318, 320, 396, 408-409, 413-414, 425, 427, 429, 476-477]
- Healthier ageing and increased longevity [4, 8, 12, 15-17, 95-102, 106-109]
- Improvements in common chronic disorders, including hypertension, coronary heart disease, heart failure, type 2 diabetes, asthma, fibromyalgia, post-traumatic stress disorder, insomnia, ADHD [9-50, 52-59, 62, 65-94, 289, 396, 404, 409, 413-414, 418, 420-421, 425-426, 429, 459-460, 476-477]
- Improved quality of life and mental health for patients with breast cancer and other chronic disorders [53, 21, 59, 415]
- A unique state of deep rest during Transcendental Meditation [110-168, 416, 436, 438, 455]
- Increased orderliness and integration of brain functioning [110-113, 115-119, 130, 151-188, 402-404, 407, 416, 436-438, 462, 472, 479]
- Reduced physical and mental stress [9, 22-24, 35-38, 45-46, 49-50, 53, 56, 61-62, 66-67, 71, 84, 114, 116, 135-139, 141, 170, 178-179, 189-196, 200, 204, 212, 239-246, 281, 288-289, 316, 318-320, 343-361, 365, 401, 406, 410, 417-421, 423, 426, 428, 430-435, 449-454, 456, 462-464, 474, 478-479]
- Growth of positive psychological health and enhanced cognitive development [201-238, 12, 31, 180-182, 187-188, 277, 279-282, 290, 401, 404, 416, 434-435, 437, 451, 458, 462-464, 473-475]
- Reduced anxiety, depression, hostility, and other forms of psychological distress [200, 9, 21-22, 31, 53, 56, 61, 67, 71, 211-212, 217, 240-246, 266-267, 269, 277, 288-291, 295, 316, 318-320, 343-344, 347-348, 351-352, 359, 401, 410, 417-421, 423, 426, 428, 430-435, 449-454, 456, 473-475, 479]
- Increased intelligence and creativity; improved memory, learning ability, and academic performance; higher graduation and college acceptance rates; lower school dropout; improved social-emotional learning [266-268, 270-280, 282-287, 290-292, 400, 404, 422, 464, 474-475]
- Improved perception, mind-body coordination, and athletic performance [266, 274-276, 296-315, 101, 179, 184-186, 397]
- Increased job satisfaction and performance; improved occupational health [61-62, 287, 316-334, 423, 451, 458, 462-463]
- Improved relationships, including in marriage, families, at work, and in schools [56, 316-318, 335-339, 401, 464]
- Decreased smoking, alcohol consumption and drug abuse [60, 56, 62-64, 246-265, 316, 318, 398]
- Effective rehabilitation of offenders [340-365, 403, 424, 430-432]
- Improved quality of life for society: reduced crime, violent crime, homicide, and murder; decreased accidents, accident fatalities, infant mortality, and drug-related deaths; increased economic prosperity; more effective leadership [366-395, 439-444, 465, 468, 470, 480]
- Reduced civil and international conflict; decreased deaths and injuries from war and terrorism; increased progress towards peace [385-395, 405, 444, 465-467, 469-470, 481]

TABLE 2

Scientific and professional journals that have published original research or reviews on Transcendental Meditation

Medicine

American Journal of Cardiology
Archives of Internal Medicine
Circulation: Cardiovascular Quality and Outcomes
Stroke
Hypertension
American Journal of Hypertension
Journal of Nuclear Cardiology
Journal of Human Hypertension
Current Hypertension Reports
Current Hypertension Reviews
Integrative Cancer Therapies
Respiration
Behavioral Medicine
Journal of Preventative Cardiology
Cardiology in Review
Cardiology Research and Practice
American Journal of Managed Care
Japanese Journal of Industrial Health
Japanese Journal of Public Health
American Journal of Health Promotion
Health and Quality of Life Outcomes
Journal of the Association of Physicians of India
AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV
The Permanente Journal
Psychosomatic Medicine
Lancet
Le Médecin du Québec
Schweizerische Ärztezeitung
Est-Medicine
Journal of Human Stress
Ugeskrift for Læger
Biologische Medizin
Zeitschrift fur Allgemeinmedizin
Medizinische Klinik
Lakartidningen (Swedish Medical Association Journal)
Medical Hypotheses
Journal of Behavioral Medicine
Homeostasis
Ethnicity and Disease
Journal of the American Society of Hypertension
Clinical Rheumatology
Clinical and Experimental Rheumatology
Health Care for Women International
Journal of the National Medical Association
Journal of Aging and Health
Socialstyrelsen (Swedish Health Board publication)
Acta Medica Okayama
Health Promotion
Harefuah, Journal of the Israel Medical Association
Canadian Medical Association Journal
Military Medicine
Health Promotion
International Archives of Nursing and Health Care
British Journal of Nursing
Journal of Holistic Nursing
International Journal for Human Caring
Journal for Nurses in Professional Development
Journal of the American Association of Nephrology Nurses and Technicians
New Zealand Medical Journal
Australian Family Physician
New Zealand Family Physician
Australian Dental Journal
Journal of the American Society of Psychosomatic Dentistry and Medicine
Complementary Medicine International
Complementary Therapies in Medicine
Evidence-Based Complementary and Alternative Medicine
Alternative Therapies in Clinical Practice
Focus on Alternative and Complementary Therapies
Journal of Alternative and Complementary Medicine
Alternative Therapies

Physiology and Neuroscience

Science
American Journal of Physiology
Scientific American
International Journal of Neuroscience
Annals of the New York Academy of Sciences
Brain and Cognition
NeuroReport
Cognitive Processing
Experimental Neurology
Journal of Applied Physiology
Consciousness and Cognition
Neuroscience and Biobehavioral Reviews
Electroencephalography and Clinical Neurophysiology
Biological Psychology
Psychophysiology
Psychoneuroendocrinology
International Journal of Psychophysiology
Biomedical Research
L'Encephale
Sleep
Dreaming
Biofeedback
Stress
International Journal of Dream Research
Indian Journal of Physiology and Pharmacology
Journal of Neural Transmission
Signal Processing
Physiology and Behavior
Revista Internacional De Ciencias Del Deporte
Human Physiology (Fiziologiya Cheloveka)
Bulletin of Experimental Biology and Medicine (Byulleten' Eksperimental'noi Biologii i Meditsiny)
Zeitschrift für Elektroenzephalographie und Elektromyographie EEG-EMG
Proceedings of the San Diego Biomedical Symposium
Hormones and Behavior
Journal of Psychosomatic Research
Revue d'Electroencéphalographie et de Neurophysiologie Clinique
Progress in Brain Research
Experientia
Biofeedback and Self-Regulation
Psychopathometrie

Continued…

TABLE 2

(continued)

Scientific and professional journals that have published original research or reviews on Transcendental Meditation

Psychology and Psychiatry

The Lancet Psychiatry
American Journal of Psychiatry
Journal of Clinical Psychiatry Journal of Clinical Psychology
Journal of Psychology
American Psychologist
British Journal of Psychology
American Journal of Psychiatry
Journal of Clinical Psychiatry
Journal of Personality and Social Psychology
Journal of Social Behavior and Personality
Hospital and Community Psychiatry
Mind & Brain, The Journal of Psychiatry
Perceptual and Motor Skills
Memory and Cognition
Psychological Reports
Psychological Reports: Mental & Physical Health
Journal of Traumatic Stress
Psychological Trauma: Theory, Research, Practice, and Policy
Journal of Counseling and Development
Journal of Personality and Individual Differences
Psychological Studies
Journal of Counseling Psychology
Journal of Humanistic Psychology
Journal of Personality Assessment
Journal of Indian Psychology
Zeitschrift für Klinische Psychologie
Gedrag: Tijdschrift voor Psychologie
Psychotherapie-Psychosomatik Medizinische Psychologie
Western Psychologist
Psychologia
Modern Psychological Studies

Education

Journal of Indian Education
British Journal of Educational Psychology
Intelligence
Education
Educational Technology
Contemporary School Psychology
Journal of Adult Development
Higher Education Research and Development
Journal of Creative Behavior
Journal of Indian Education
ASEAN Journal of Education
Journal of Moral Education
Journal of Instructional Psychology
Current Issues in Education
College Student Journal
Explore

Management

Journal of Business and Psychology
Academy of Management Journal
Human Resource Management
Journal of Transnational Management Development
Journal of Management Education
Career Development International
Journal of Organizational Change Management
Anxiety, Stress and Coping
Journal of Managerial Psychology
Management Decision
The Learning Organization: an International Journal
Leadership and Organization Development Journal
The TQM Magazine

Sociology and Rehabilitation

Journal of Conflict Resolution
Social Indicators Research
Journal of Mind and Behavior
Psychology, Crime and Law
Journal of Crime and Justice
Criminal Justice and Behavior
Journal of Criminal Justice
SAGE Open
Studies in Asian Social Science
Journal of Health and Environmental Research
International Journal of Comparative and Applied Criminal Justice
Criminal Law Journal
Journal of Consciousness Studies
Ratio Juris
Journal of Offender Rehabilitation
International Journal of Offender Therapy and Criminology
Caribbean Journal of Criminology and Social Psychology
FBI Law Enforcement Bulletin
Social Science Perspectives Journal
Journal of Scientific Exploration
Proceedings of the American Statistical Association
Proceedings of the Midwest Management Society
Alcoholism Treatment Quarterly
International Journal of the Addictions
Bulletin of the Society of Psychologists in Addictive Behaviors
Addictive Behaviors
Bulletin on Narcotics
Drug Forum

Decreased Need for Medical Care – Reduced Hospital Admissions and Outpatient Consultations

A study of data from major US health insurer Blue Cross/Blue Shield examined medical care utilization over five consecutive years among 2,000 subscribers practising Transcendental Meditation, as compared to norms and control groups matched by age, gender, occupation, and health insurance terms (drawn from a total sample of 600,000). Both hospital admission and outpatient consultation rates were over 50% lower for subjects practising TM than norms or controls. In the over-40 age group, the reduction was over 70%. In contrast to controls, the TM group showed relatively little rise in health care needs with advancing age [4].

Rates of hospital admission for medical and surgical conditions were 60-70% lower in the Transcendental Meditation group, with reductions in all 17 disease categories studied. For example, admissions were 87% less for heart and blood vessel disorders, 55% less for tumours, 73% less for respiratory disorders, 87% less for neurological problems, and 30% less for infections [4].

These findings are corroborated by an eleven-year study of Blue Cross/Blue Shield data for individuals practising TM in conjunction with a comprehensive natural health programme—Maharishi's Vedic Approach to Health. Again, marked reductions in medical care utilization were found compared with normative data and matched control groups. Overall medical expenditure was 59% lower than norms and 57% lower than controls, with 80% fewer hospital admissions and 55% fewer outpatient visits to the doctor. TM subjects over 45 years spent 88% fewer days in hospital than controls. Hospital admission rates were 92% lower for immune, endocrine, and metabolic disorders; 92% lower for cardiovascular disease; 92% lower for mental health and substance abuse; and 94% lower for musculoskeletal disorders [5].

Reduced Health Care Costs

Reduced need for medical treatment as a result of Transcendental Meditation is also indicated by a 14-year controlled retrospective study of medical expenses for 2,836 people enrolled in the Quebec provincial health insurance scheme. Monthly data on payments to doctors were adjusted to account for age, inflation, and other influences using normative data provided by the Quebec government. Before beginning Transcendental Meditation, payments did not differ significantly between TM and control groups. After learning the technique, the TM group showed a progressive decline in payments to doctors compared to controls: the average annual difference was 13%, leading to a cumulative reduction of 55% after six years [6-7].

These results have been extended by analyses of Quebec health insurance data for two important subgroups: the highest-cost 10% of subjects; and individuals over 65 years. In most populations, the higher medical needs of these subgroups contribute very strongly to overall health care costs. For high-cost subjects, the TM group's payments decreased by 11%

over one year, with a cumulative reduction of 28% after five years compared to controls [399]. For older individuals, the TM group showed a five-year cumulative cost reduction of 70% [8]. This finding is consistent with research indicating that TM counters deleterious effects of ageing and promotes longevity (see page 13) [12, 15-17, 95-102].

Reduction of Major Risk Factors for Disease

Transcendental Meditation ameliorates many important risk factors for disease, including major risk factors for heart disease, stroke, and cancer. Findings include reductions in: high blood pressure; insulin resistance; left ventricular mass index; smoking; alcohol consumption; drug abuse; obesity; physical and mental stress; and various forms of psychological distress such as anxiety, depression, and hostility. TM also enhances protective factors including improved occupational health and job satisfaction; more harmonious relationships; and positive psychological health and well-being [see Table 1, page 4, for references].

Reduction of High Blood Pressure, Improved Cardiovascular Health, Reduced Cardiovascular Events, and Decreased Mortality

A multi-centre US research team has conducted a series of randomized controlled trials (RCTs) investigating effects of Transcendental Meditation on cardiovascular health, with particular emphasis on prevention of cardiovascular disease in African-Americans (a high-risk group for vascular disease). This research has been supported by grants totalling more than $26 million, principally from the US National Institutes of Health (NIH). These and other RCTs have shown:

- In a nine-year investigation of patients with coronary heart disease, TM led to a 48% reduction in the rate of major clinical events (all-cause mortality plus non-fatal myocardial infarction and stroke) compared to controls who received education on risk factor reduction. Regularity of TM was significantly associated with longer survival; subjects who practised the technique regularly showed a 66% risk reduction for major clinical events. TM also reduced blood pressure and psychosocial distress [9].
- TM improved blood flow to the heart muscle over 12 weeks in patients with coronary heart disease (CHD), both when combined with standard cardiac rehabilitation and when used alone (see page 9) [476]
- TM prevented increase in left ventricular mass index (LVMI) over six months in hypertensive adults (average age 53 years) compared to a control group who received health education [477]. In another randomized controlled trial, TM reduced LVMI in pre-hypertensive adolescents compared to controls [408]. By preventing progression of LVMI in these studies, TM counteracted an early sign of left ventricular hypertrophy, which is the strongest predictor of cardiovascular mortality apart from age.

- TM produced clinically significant reductions in systolic and diastolic blood pressure, without adverse side-effects [9-18, 22-25, 32-45, 413-414]. TM was effective in lowering systolic and diastolic blood pressure in both high- and low-risk groups on six measures of hypertension risk: psychosocial stress, obesity, alcohol use, physical inactivity, dietary sodium-potassium ratio, and a composite measure of these factors [11].
- Over one year, subjects practising TM demonstrated reduced use of antihypertensive medication relative to control groups [13]. A cost-effectiveness analysis indicated that TM compared favourably with pharmacological treatment for hypertension [14].
- Pooled data from two randomized studies on older people with elevated blood pressure showed that TM was associated with a 23% reduction in all-cause mortality and a 30% decrease in cardiovascular deaths [15-17].
- In patients with stable CHD, TM decreased both blood pressure and insulin resistance—key components of the 'metabolic syndrome' associated with many major disorders of modern society, including CHD, type 2 diabetes, and hypertension. TM also increased stability of the cardiac autonomic nervous system [18].
- TM reduced carotid artery atherosclerosis compared to a control group who received health education [19-20, 427].
- TM improved functional capacity and quality of life in patients with chronic heart failure. TM subjects also showed reduced depression and had fewer hospitalizations [21].
- In university students, TM reduced blood pressure; decreased total psychological distress, anxiety, depression, and anger/hostility; and improved coping [22].
- In pre-hypertensive adolescents, TM decreased blood pressure at rest and during acute laboratory stress; and decreased ambulatory blood pressure during daily activity [23, 24].

Improved Cardiac Rehabilitation—Increased Myocardial Flow Reserve

In a ground-breaking randomized controlled pilot trial funded by the US National Heart, Lung and Blood Institute, researchers investigated the effect of TM on blood flow to the heart muscle using positron emission tomography (PET). Patients with coronary heart disease (CHD) who practised TM over 12 weeks showed improvement in myocardial flow reserve (MFR)—the ratio of maximal coronary blood flow under stress to the flow at rest. PET measurement of MFR is a strong independent predictor of cardiac mortality and has been found to be superior to conventional imaging methods in predicting clinical outcomes in patients with CHD [476].

TM improved MFR both when added to standard cardiac rehabilitation and when used alone. MFR increased by 20.7% for TM and cardiac rehabilitation combined, 12.8% for TM alone,

and 5.8% for cardiac rehabilitation alone, while patients who received only usual medical care showed a 10.3% decrease.

In patients practising TM (with or without cardiac rehabilitation), resting coronary blood flow increased in all three major vascular regions of the heart muscle, as well as for the heart as a whole, whereas non-meditating subjects showed no change or a small decrease. Over the 12-week study period, resting coronary blood flow to the whole heart increased by 36% in patients practising TM, compared to a small decrease in non-meditating subjects.

The finding of improved myocardial blood flow supports earlier research showing benefits from TM for patients with angina pectoris (cardiac pain on exercise) who had angiographically-proven coronary artery disease and positive exercise-stress tests. TM improved exercise tolerance and maximum workload achieved during a standard exercise test, and delayed the onset of electrocardiographic evidence of myocardial ischaemia (shortage of oxygen in the heart muscle) [26].

A British study found positive effects from Transcendental Meditation on exercise ECG testing and quality of life in patients with cardiac syndrome X (anginal chest pain, positive response to exercise stress testing, and normal coronary angiogram). Despite a generally good prognosis, this distressing and disabling condition often necessitates expensive and invasive investigations, and recurrent hospital admissions; drug treatment is frequently unsatisfactory [27].

Other controlled studies on TM have shown: reduced cardiovascular risk factors and levels of the stress hormone cortisol in post-menopausal women [28]; reduced cholesterol levels independent of changes in diet, medication, or weight [29-30, 320]; and more effective weight reduction and improved psychological health in obese subjects on a weight reducing diet [31].

Toward an Optimal Non-Pharmacological Approach to High Blood Pressure

A systematic review and meta-analysis of randomized controlled trials from 107 published studies on stress reduction and high blood pressure found that TM reduced both systolic and diastolic blood pressure, while other methods of meditation and relaxation, biofeedback, and stress management did not produce significant effects [32]. Further meta-analyses by independent teams have confirmed that TM leads to clinically important reductions in blood pressure [33, 425, 429]. Authors conclude that sustained blood pressure changes of the magnitude produced by TM would be associated with substantially decreased risk of heart attack and stroke, the leading cause of mortality worldwide [33]. These findings are supported by other reviews on TM and cardiovascular health [34-50, 396, 409, 413-414].

Non-pharmacological measures, including diet, weight management and physical activity, have long been recognized as important aspects of therapy for hypertension [51, 445-446]. Research findings indicate that Transcendental Meditation can contribute to an optimal non-pharmacological treatment and preventive programme for high blood pressure because the technique:

- produces clinically significant blood pressure reductions in both hypertensive and pre-hypertensive subjects (with greater effects in subjects with higher initial blood pressure);
- is continued by a high proportion of subjects (in contrast to lower continuation rates for relaxation techniques);
- has documented acceptability and effectiveness in a wide range of populations;
- is effective in reducing high blood pressure when used as sole treatment or in concert with medication;
- reduces high blood pressure in 'real-life' environments outside the clinic;
- is free from harmful side-effects or adverse reactions;
- also reduces other cardiovascular risk factors and improves health in a general way;
- reduces rates of major clinical events (death, heart attack and stroke), and decreases mortality from both cardiovascular disease and all causes [9-24, 30-50, 52, 396, 408-409, 413-414, 429].

American Heart Association Scientific Statement 2013
International Society of Hypertension Guidelines 2020

A scientific statement from the American Heart Association (AHA) in 2013 concluded that the Transcendental Meditation technique lowers blood pressure and recommends that TM may be considered in clinical practice for prevention and treatment of hypertension [413-414].

After considering meta-analyses and clinical trials, the report found that Transcendental Meditation is the only meditation practice that has been shown to lower blood pressure. Indeed, according to the AHA report, 'Because of many negative studies or mixed results and a paucity of available trials, all other meditation techniques [including mindfulness] received a "Class III, no benefit, Level of Evidence C" recommendation. Thus, other meditation techniques are not recommended in clinical practice to lower BP at this time.' [413]

The AHA statement surveyed eleven randomized controlled trials (RCTs) on TM and blood pressure, with more than 1200 subjects, as well as two well-conducted meta-analyses. Most of the RCTs have been competitively reviewed and externally funded, rigorously conducted in collaboration with leading academic medical centres, blinded, independently monitored, published in peer-reviewed journals, and replicated. The beneficial effect of TM on blood pressure has been confirmed by numerous investigators, in multiple populations, and with ambulatory monitoring [414].

Prevention of major clinical events is the purpose of any anti-hypertensive therapy and the ultimate test of its effectiveness. The AHA report noted research on Transcendental Meditation demonstrating substantially reduced rates of major clinical events (death, heart attack and stroke) [9]; such hard event outcome trials are not available for other meditation and relaxation procedures. Moreover, in addition to reducing high blood pressure, TM improves multiple factors relevant to cardiovascular health, which likely contribute to the technique's observed preventive effects [34-50, 55, 409, 413-414]

This AHA Scientific Statement represents an important research landmark as the first time that Transcendental Meditation was recognized and recommended for consideration by a national medical organization that provides professional practice guidelines to physicians, health care payers, and policymakers [414].

More recently, the 2020 International Society of Hypertension Global Hypertension Practice Guidelines include Transcendental Meditation among recommended lifestyle modifications to lower blood pressure, on the basis of randomized clinical trials [482].

Improved Quality of Life and Mental Health for Patients with Breast Cancer and Other Chronic Disorders

Breast cancer is the commonest malignancy in women in Britain and USA, affecting 11% of UK women, especially after age 50. Impairment of quality of life and psychological health affect both newly diagnosed and long-term survivors. Psychosocial stress has been implicated as contributing to the onset, progression, and mortality from this disease. A pioneering trial examined effects of TM on quality of life and mental well-being in 130 women with breast cancer (stages II to IV, average age 63.8 years) [53]. Funding for the study included grants from the US National Institutes of Health National Center for Complementary and Alternative Medicine.

Patients were randomly assigned to learn TM or act as controls, following stratification to ensure that groups were well matched for age, stage of cancer, and timing of metastases in stage IV patients (spread of cancer to distant sites). All patients received standard medical care. Well-documented measures were administered six-monthly over an average 18-month intervention period. Compared to controls, subjects practising TM showed improvements in overall quality of life, emotional well-being, social well-being, and mental health [53].

Other long-term health problems also impair quality of life and psychological well-being, which in turn can adversely affect physical health. National guidelines for UK doctors emphasize screening for depression in patients with chronic disorders, including heart disease. A randomized trial of patients with chronic heart failure found that TM improved quality of life and reduced depression, as well as improving functional capacity and reducing hospitalizations [21]. Two further randomized studies have found reduced symptoms of

depression as a result of TM in patients at increased risk of cardiovascular disease (see 'Improved Mental Health and Well-Being', page 20) [242].

Stress has also been implicated in the pathogenesis and progression of HIV [415]. In a community-based randomized controlled trial of people with HIV, subjects who practised TM for six months showed improvements in both general and HIV-specific health-related quality of life compared to control subjects who received education on healthy eating. The TM group exhibited improved total and general health scores on Functional Assessment of HIV Infection compared to controls. Increased vitality and physical well-being were also observed in TM subjects, but not in controls [415].

Family and professional caregivers (carers) often experience high levels of stress, to the detriment of their mental health and well-being. In a recent pilot study, caregivers who practised TM over a two-month period showed reductions in perceived stress and mood disturbance—including decreased anxiety, depression, anger, confusion and fatigue—and an increase in spiritual well-being (faith in the future and purposefulness) [433].

Benefits for Common Health Problems

Transcendental Meditation has been recommended by doctors in many countries for its contribution to prevention of disease, management of common disorders, and promotion of positive health. Benefits of Transcendental Meditation have been documented for a range of common clinical problems, including hypertension, coronary heart disease, and heart failure [9-50, 413-414, 425, 429]; asthma [54]; fibromyalgia [459-460]; post-traumatic stress disorder [56, 401, 418-421, 449-450, 453-454, 456]; type 2 diabetes [55]; migraine [57]; ADHD [289, 404]; sleep disturbance [56, 62, 67-68, 343-344, 404]; occupational stress [61-62, 316, 318, 320, 423]; anxiety, depression, and substance misuse [see Table 1, page 4, for references]; as well as in improving quality of life and mental health in patients with chronic disorders, including breast cancer, coronary heart disease, heart failure, HIV, and chronic renal failure [53, 9, 21, 59, 65-94, 415]. In some original studies and reviews, TM has been investigated in conjunction with other aspects of a comprehensive natural health programme—Maharishi's Vedic Approach to Health [5, 20, 55, 89-94, 459-460].

Healthier Ageing and Increased Longevity

It has been observed that many effects of Transcendental Meditation are opposite to deteriorations usually seen with ageing (see Table 3, pages 14-15). Other findings indicate a strengthening of factors known to favour longevity, such as cardiovascular health, work satisfaction, positive health habits, good mental health, happiness, and intelligence (see references in Table 1, page 4; and Table 3, pages 14-15).

TABLE 3

Effects of the Transcendental Meditation Programme Opposite to Detrimental Effects of the Ageing Process

PHYSIOLOGY

Increase **with ageing;** ***Decrease*** **with TM**

Blood pressure – systolic [9-13, 15-18, 22-24, 29, 32-34, 40, 52, 96-98, 320, 413-414]
Blood pressure – diastolic [9-11, 13, 15-18, 22-24, 29, 32-34, 40, 52, 320, 413-414]
Atherosclerosis [19-20]
Heart failure [21]
Major cardiovascular events (death, myocardial infarction, stroke) [9]
Visual evoked potentials – P300 latency [102]
Reflex latency (monosynaptic reflex) [197]
Reflex recovery time (paired H-reflex) [198]
Muscular contraction time (fast and mixed muscles) [197]
Susceptibility to stress [22-23, 28, 114, 170, 178-179, 189-192, 194-195, 316, 365]
Erythrocyte sedimentation rate [100]
Insomnia (time to fall asleep) [343-344, 67-68, see also 56, 62]
Sleep disturbance (awakenings per night) [343-344, 67-68; see also 56, 62]
Daytime sleep [68; see also 178]

Decrease **with ageing;** ***Increase*** **with TM**

Cardiovascular efficiency [21, 23, 26, 314-315]
Vital capacity [314-315]
Cerebral blood flow [124, 127, 166]
EEG alpha power [110-113, 115-119, 151-160, 162, 169, 402, 416]
Temperature homeostasis [103]
Neuromuscular co-ordination [314-315]
Periodontal health [75]
Physical health and well-being in later life [9-13, 21, 28, 53]
Longevity [12, 15-17]

BIOCHEMISTRY

Increase **with ageing;** ***Decrease*** **with TM**

Serum cholesterol [29-30, 318]
Insulin resistance [18]

Decrease **with ageing;** ***Increase*** **with TM**

DHEAS (dehydroepiandrosterone sulphate) [99]
Efficiency of endocrine control (pituitary-thyroid axis) [193]
Glucose tolerance [104-105]

TABLE 3

Effects of the Transcendental Meditation Programme Opposite to Detrimental Effects of the Ageing Process
(continued)

PERCEPTION AND MIND-BODY CO-ORDINATION

Decrease **with ageing; *Increase* with TM**

Visual perception [12, 184, 276, 308]
Dichotic listening [306]
Field independence [274-276, 298-299, 397]
Perceptual flexibility [12, 184, 276, 307, 309]
Perceptual-motor performance [101, 297, 309-311]
Complex sensory-motor performance [310-311]

Increase **with ageing; *Decrease* with TM**

Auditory threshold [96-97, see also 1-2]
Behavioural rigidity [12, 309]
Reaction time – simple [101, 296, 314-315]
Reaction time – complex [297, 184]

PSYCHOLOGY

Decrease **with ageing; *Increase* with TM**

Fluid intelligence [266-267, 270, 275, 101]
Creativity [266, 277-278, 283]
Learning ability [12, 279, 284]
Memory – verbal [284]
Memory – visual [101]
Organization of memory [285]
Cognitive flexibility [12, 266, 276, 184-185]
Self-evaluation of health and well-being [12, 61, 71]
Mental health and well-being in later life [12, 9, 21, 53, 109, 242]

Increase **with ageing; *Decrease* with TM**

Depression [21, 56, 61, 211-212, 242, 319, 401, 418, 423, 449, 454, 456]

REQUIREMENTS FOR HEALTH CARE

Increase **with ageing; *Decrease* with TM**

Patient days in hospital (medical and surgical) [4-5; see also 21]
Outpatient visits (medical and surgical) [4-5]
Health care costs [6-8, 399]
Rise in health care needs with advancing age [4]
Rise in health care costs with advancing age [8]

In keeping with these observations, a study employing a standardized ageing index found that the biological age of middle-aged individuals practising Transcendental Meditation was significantly younger than both their chronological age and the biological age of non-meditating controls. The longer subjects had been practising TM, the greater the degree to which biological age was younger than chronological age [95]. A British study subsequently found similar results in a younger population [96-97].

A meticulously controlled, randomized study from Harvard University found that elderly individuals who learned Transcendental Meditation showed greater improvements in cognitive and behavioural flexibility, learning ability, self-assessment of well-being and ageing, systolic blood pressure, and staff assessment of mental health than subjects taught either a relaxation procedure or 'mindfulness' training, or who acted as a no-treatment control group. Those who learned the relaxation procedure (which attempted to imitate TM) showed no improvement on any measure. A clear majority of TM subjects rated their technique as personally useful and easy to practise, in contrast to lower ratings for the other methods [12].

After three years, all those who had learned Transcendental Meditation were still living in contrast to lower survival rates for the other three groups and for the remaining inhabitants of the institutions where the study was conducted [12]. Moreover, significantly greater longevity in the TM group was subsequently maintained over a 15-year follow-up period. Average survival times were 2.2 years (18%) longer for cardiovascular mortality and 1.73 years (19%) longer for all-cause mortality in the TM group, compared to the other three groups combined [17].

These findings are supported by an eight-year randomized controlled study showing reduced cardiovascular and all-cause mortality in elderly African Americans with mild high blood pressure [16]. A third analysis combined data from these two studies, totalling 202 subjects. Mortality rates were significantly reduced among TM subjects compared to controls: 23% lower for all-cause mortality, and 30% lower for cardiovascular mortality [15].

Increased health care needs and costs are among the most important correlates of ageing. As discussed above, a 14-year study of medical expenses among people over 65 years in Quebec showed that individuals practising TM had markedly reduced annual change in payments to doctors compared to matched controls, with a cumulative difference of 70% after five years [8]. An earlier American study of health insurance data also found relatively little increase in health care needs with advancing age among individuals practising Transcendental Meditation, in contrast to a marked increase seen in a normative control group [4].

Middle-aged and older individuals practising TM have been found to maintain higher levels of the hormone *dehydroepiandrosterone sulphate* (DHEAS) than controls. DHEAS usually declines steadily throughout adult life; low levels have been linked to a variety of diseases

and to increased mortality. On average, DHEAS levels in individuals practising TM were comparable to levels of non-meditators who were 5-10 years younger—a difference that could not be explained by variations in diet, weight, or exercise [99].

In another study, individuals practising Transcendental Meditation were found to have lower average erythrocyte sedimentation rate (ESR) and a higher frequency of zero ESR compared to controls. Increased ESR is correlated with ageing and is a well-established marker of inflammation [100].

Ageing research has focused extensively on the role of *free radicals*—small, highly reactive molecules or molecular fragments which can powerfully oxidize and damage vital bio-molecules, injuring tissues and disrupting physiological repair mechanisms. Free radicals are thought to be involved in key aspects of ageing and are also implicated in many major diseases, including coronary heart disease, cancer, Alzheimer's disease, diabetes, and inflammatory disorders such as rheumatoid arthritis [94]. A recent study examined free radical activity, as measured by ultraweak photon emissions, at 12 anatomical locations in 60 middle-aged male subjects practising either TM or other forms of meditation, or acting as non-meditating controls. Subjects who practised TM showed significantly lower free radical activity than both controls (at all 12 anatomical sites) and practitioners of other types of meditation (at 11 out of 12 sites). Compared to non-meditating controls, free radical activity was 27% lower among TM subjects, compared to 17% lower in practitioners of other techniques [106-107].

An earlier study found lower blood levels of lipid peroxides (another index of free radical activity) in elderly people who practised Transcendental Meditation compared to non-meditating peers [108]. Lower lipid peroxide levels in older long-term participants in TM have been found to correlate with better performance on tests of fluid reasoning, verbal intelligence, long-term memory, and speed of processing, suggesting a link between free radical activity and cognitive functioning in later life [109].

Physiological Changes during TM: a Unique State of Restful Alertness

Physiological research over 50 years has shown that Transcendental Meditation gives rise to a unique physiological state characterized by: deep rest [110-134]; increased orderliness and integration of brain functioning [110-113, 115-119, 130, 151-175, 416, 436-438, 462]; increased blood flow to the brain [124, 127, 166, 455]; decreased peripheral vascular resistance [128]; features opposite to the physiological and biochemical effects of stress (including high and stable galvanic skin resistance [110-112, 114, 121, 131, 314], decreased plasma cortisol [135-136], reduced arterial blood lactate [110-112, 114, 122, 124, 126], and deep muscle relaxation [150, 158]); and other distinctive neuroendocrine changes [137-149].

Taken together, these studies clearly distinguish the physiology of TM from sleep, drowsiness, or ordinary relaxation. Researchers have concluded that TM gives rise to a fourth major state of consciousness—Transcendental Consciousness—which is both experientially and physiologically distinct from waking, sleeping, and dreaming. Like these three states, Transcendental Consciousness has its own unique correlates, aptly described as a state of 'restful alertness' in mind and body [111, 115-119, 129-130, 151, 155-156, 161-162, 416, 436-438, 455].

EEG ('brain wave') studies show that while the level of excitation in the nervous system is reduced during TM, wakefulness increases [110-113, 115-119, 130, 151-164, 167-168, 407, 416, 436, 438]. At the same time, integration between different areas of the brain is enhanced [115-119, 151-164, 402-404, 416, 436, 438], with high EEG coherence[1] between front and back of the brain and between right and left cerebral hemispheres [115, 119, 130, 151, 154-156, 159-160, 162, 170, 403-404, 416, 462].

High EEG coherence during TM has been found to correlate with higher scores on measures of creativity, intelligence, concept learning, academic performance, mathematical skills, moral reasoning, emotional stability, neuromuscular efficiency, self-development, self-awareness, and experiences of higher states of consciousness; and with lower anxiety and neuroticism [115, 117, 119, 130, 155-156, 170, 172-175, 180, 187-188, 205].

A comprehensive review of different forms of meditation identified characteristics of practice and EEG patterns that clearly distinguish TM from other methods. Specifically, during TM, high power and coherence in the alpha-1 frequency band spread globally over the cerebral cortex, indicating that the technique brings the whole brain to a state of restful alertness [119]. Other forms of meditation show different EEG patterns, for example prominent gamma frequencies for methods employing focused attention [119, 438].

TM is further characterized by high levels of activation of the brain's Default Mode Network (DMN), a network of brain areas that show higher activity during rest and self-referential mental activity, and lesser activation with goal-directed thinking and behaviour. DMN activation during TM strongly indicates that the technique does not involve focused attention or cognitive control, and is consistent with the effortless nature of the practice. By contrast, all other forms of meditation—including methods using focused attention or open monitoring, and mindfulness meditation—show DMN de-activation, consistent with active cognitive processing [438, 151].

In addition, TM is the only technique for which EEG correlates have been documented in randomized controlled trials, and also the only practice for which specific physiological

[1]**EEG coherence** measures the correlation between brain waves from different areas of the cerebral cortex, providing an index of orderliness and integration in brain functioning [159-160].

correlates (including characteristic EEG patterns), have been identified both for experiences of Transcendental Consciousness during meditation, and for experiences of higher states of consciousness developed through regular practice of the technique [119, 151, 162, 178, 180-182, 402, 404, 416, 437, 472]. Highly integrated EEG patterns characteristic of the advanced TM-Sidhi programme have also been identified, and correlated with classical descriptions of this practice from the ancient Vedic Literature, as brought to light by Maharishi Mahesh Yogi [402, 169, 171].

Based on neurophysiological and psychological studies on TM, the experience of transcending has been proposed as a key driver of higher brain and cognitive development in adult life [416, 437].

Sophisticated neurophysiological and neuroimaging techniques are shedding further light on TM's integrative effects on the brain: a recent functional magnetic resonance imaging (fMRI) study found that cerebral blood flow during TM was higher in executive and attentional areas of the brain (anterior cingulate and dorsolateral prefrontal cortices) and lower in arousal areas (pons and cerebellum) [455]. The authors note that this pattern is consistent with the effortless nature of TM and has not been documented with other forms of meditation.

This result also complements a magneto-encephalographic (MEG) study which identified pre-frontal and cingulate cortical areas as generators of the high alpha EEG activity seen during TM [153]. Positron emission tomography (PET) has also highlighted the role of the prefrontal cortex (the highest level of regulation in the brain), showing increased blood flow to this region during TM [166], consistent with the findings of earlier cardiovascular research [124, 127].

Neurophysiological Effects of Regular TM Practice: Increased Brain Connectivity Correlated with Reduced Psychological Distress

Regular practice of TM is associated with sustained increases in brain integration [178-188, 178, 438, 462, 479], including during challenging cognitive tasks (see page 32) [178, 462], and with reductions in physiological and biochemical correlates of stress [189-196, 359, 365, 478] and increased neurological efficiency [197-199].

A landmark functional magnetic resonance imaging (fMRI) study found that reduction of anxiety, depression and perceived stress resulting from three-month's TM practice was correlated with increased functional connectivity between specific brain regions—the posterior cingulate cortex, precuneus, and left superior parietal lobule. Additionally, TM was associated with increased connectivity between the posterior cingulate cortex and right insula. No changes in psychological measures or brain function were found in a non-meditating control group [479].

The authors note that brain regions showing increased connectivity with TM are involved in modulation of emotions and the balance between internal and external awareness. They conclude that TM may effectively counteract dysfunctional brain changes associated with psychological distress [479]. In addition, brain regions exhibiting increased connectivity in this study include components of the Default Mode Network (DMN, see page 18), which may therefore play a key role in the neurophysiological basis of both immediate and longer-term effects of TM.

These results are supported by an earlier randomized controlled trial in which educational administrators and staff who practised TM over a four-month period showed increased scores on an EEG index of brain integration together with improved mental health, decreased stress, and increased emotional intelligence [462-463].

A previous fMRI investigation found that regular practice of TM reduced distress associated with painful stimuli without impairing sensory acuity [179].

Improved Mental Health and Well-Being

A large body of research has demonstrated that Transcendental Meditation produces comprehensive improvements in mental health, enhancing positive aspects of psychological and social functioning, reducing various forms of distress, and developing a more stable, balanced, and resilient personality. Findings include:

- Increased self-actualization and enhanced self development [201, 203-238, 475]
- Improved self-concept and increased self-esteem [220, 319, 58, 211, 215-216, 218, 225, 229, 280, 290, 473-475]
- Increased emotional well-being, stability, and maturity [22, 31, 53, 61, 67, 201, 212, 244, 246, 267, 281-282, 338, 343-344, 462-464, 473-475]
- Increased emotional intelligence [463]
- Improved social-emotional learning [464]
- Increased autonomy and independence [217, 277]
- Decreased anxiety [200, 417, 22, 56, 61, 211-212, 225, 240-242, 244, 246, 269, 277, 289, 291, 316, 351-352, 343-344, 347-348, 401, 430, 433, 462, 473, 479]
- Decreased depression [21-22, 56, 61, 211-212, 225, 241-242, 244, 246, 269, 316, 319, 401, 423, 430, 433, 449, 453-454, 456, 462, 473]
- Reduced anger, aggression and hostility [9, 22, 31, 343-344, 347-348, 433]
- Decreased irritability and impulsiveness [61, 217, 241, 289, 338, 343-344]
- Improvements in post-traumatic stress disorder (PTSD) [56, 401, 418-421, 430-432, 449-450, 452-454, 456]
- Reduced perceived stress [423, 433, 463, 474, 474, 479]
- Decreased behavioural rigidity [12, 309, 359]

- Increased sociability, friendliness, tolerance, and good humour [31, 215, 217, 223, 225, 246, 359]
- Less sensitivity to criticism and greater trust [211]
- Increased ability to be objective, fair-minded, and reasonable [338]
- Increased social maturity [223]
- Greater moral maturity and higher moral reasoning [227-228, 235, 279, 173, 474]
- Increased tolerance and appreciation of others [215, 217, 277, 336]
- Enhanced capacity for warm interpersonal relationships [31, 211, 219, 225, 246, 338]
- Improved personal, family, and work relationships [56, 226, 316-318, 335-339, 401]
- Increased marital harmony and adjustment [335, 338-339]
- Decreased occupational burnout [423, 451]
- Decreased stress, reduced mood disturbance, and increased spiritual well-being (faith in the future and purposefulness) for caregivers [433]
- Improvements in attention deficit hyperactivity disorder (ADHD) [289, 404]

Increased Self-Actualization – Enhanced Personal Development

In a meta-analysis of 42 independent research results, Transcendental Meditation proved three times as effective as other meditation and relaxation procedures in increasing self-actualization, an overall measure of positive mental health and personal development. Further analysis revealed that the technique is highly effective in developing three independent components of this dimension: emotional maturity, a resilient sense of self, and a positive, integrated perspective of self and the world [201, 203-238].

Decreased Anxiety

A systematic review and meta-analysis of 146 independent outcomes found that Transcendental Meditation was more than twice as effective in reducing trait anxiety[2] as other techniques (including progressive muscular relaxation, methods claimed to induce a 'relaxation response', and other forms of meditation). Only TM showed a positive correlation between duration of regular practice and reduction of anxiety. The greater effectiveness of TM remained highly significant when only the strongest and most rigorous studies were included in the analysis. This result remained robust even when analyses were limited to randomized controlled trials (RCTs) by researchers known to be neutral or sceptical towards TM, and when other potentially confounding factors were controlled [200].

These findings are supported and extended by a more recent systematic review and meta-analysis of RCTs, which confirmed that TM was effective in reducing trait anxiety, with

[2] ***Trait anxiety*** denotes anxiety that is (or has become) a persisting feature of a person's psychological make-up and response to situations and events.

greater effects seen in subjects with high anxiety levels before starting the technique [417, 434]. Studies using repeated measures showed substantial reductions in anxiety within two weeks of learning TM, and sustained improvements after one and three years. No other alternative active treatment was more effective than TM. Moreover, TM had a greater effect in decreasing anxiety than was observed with mindfulness in a previous meta-analysis [417].

TM was also noted to be exceptional in the breadth and depth of beneficial effects associated with anxiety reduction, including decreases in depression, post-traumatic stress disorder, neuroticism, autonomic stress reactivity, sleep disturbance, anger, hostility, and drug misuse; and improvements in blood pressure, cardiovascular health, brain integration, intelligence, creativity, and perceptual ability [417]. The analysis found no evidence that author affiliation influenced outcomes: effect sizes of studies conducted by researchers from Maharishi University of Management were not greater than those of studies from independent universities, consistent with previous findings [417, 200].

These results are corroborated by an earlier meta-analysis which examined 51 studies of the effects of different meditation techniques on measures of psychological health and well-being, comprising more than 9700 research subjects and 400 outcome findings. TM was found to be markedly more effective than other techniques in improving psychological variables; this result was maintained when only studies of highest validity and strongest experimental design were included [202].

A recent functional MRI study found that decreased anxiety, depression and perceived stress resulting from TM practice was correlated with increased connectivity in specific areas of the brain (see page 19) [479].

Decreased Depression

Depression, like anxiety, is a massive worldwide problem with far-reaching consequences for health, society, and the economy. In a high-quality randomized controlled trial in military veterans with post-traumatic stress disorder (PTSD), TM led to clinically-meaningful reductions in both depression and PTSD severity, with improvements not inferior to a gold-standard trauma-based psychological therapy for PTSD [456]. For further details of this trial and other studies showing reduced depression in subjects with PTSD, see page 23 [56, 401, 418-421, 430-432, 449-450, 452-454, 456].

Depression is an important risk factor for development and progression of cardiovascular disease and other chronic disorders. In a randomized controlled trial (RCT), TM reduced depression in patients with chronic heart failure, as well as improving functional capacity and quality of life, and reducing hospitalizations [21]. Two more RCTs investigated depression levels in subjects aged over 55 who were at increased cardiovascular risk: respectively, Native Hawaiians with at least one other major cardiovascular risk factor; and African

Americans with ultrasound evidence of carotid artery atherosclerosis. TM decreased depressive symptoms over a 9 to12 month period compared to controls who received health education. The largest improvements were found in those with indications of clinically significant depression, with an average 48% reduction in depressive symptoms [242].

Depression and anxiety have a major impact on occupational health and performance. A random-assignment study of employees at a high-security government agency found that Transcendental Meditation reduced depression and anxiety, and improved self-concept, over a three-year period in comparison to controls who participated in an educational corporate stress-management programme [319].

In another RCT, conducted on secondary schoolteachers and support staff at a residential therapeutic school for children with severe behavioural problems, TM was effective in reducing depression, perceived stress, and overall teacher burnout [423]. In addition, TM has been found to reduce depression in caregivers (carers) who also experienced reductions in perceived stress, anxiety, anger, confusion and fatigue [433].

Improvements in Post-Traumatic Stress Disorder

Post-traumatic stress disorder (PTSD) is a complex, serious, and disabling condition which affects 10-20 percent of military veterans, as well as huge numbers of civilians impacted by war and many other types of trauma. PTSD is associated with a range of other mental, physical, and social health problems, including not only depression, anxiety, substance misuse, and suicide, but also cardiovascular disorders, metabolic dysfunction, and possibly increased dementia risk, in addition to major difficulties with employment and occupational health. PTSD is often difficult to treat, with many patients not recovering even after many years, at great cost to themselves, their families, and society as a whole [450, 456].

In a high-quality randomized controlled trial in 203 military veterans with PTSD funded by the US Department of Defense (US Army Medical Research), TM was compared with Prolonged Exposure therapy (PE)—a well-documented, Veterans Administration-approved psychological treatment for PTSD which involves repeated exposure to trauma-related reminders and memories. Both treatments were also compared to a control group who received PTSD-related health education [456].

TM led to clinically-meaningful reductions in PTSD severity and depression over the three-month study period, as well as improvements in mood disturbance and quality of life. Reductions in PTSD and depression with TM were comparable (significantly non-inferior) to the effects of PE. Both TM and PE groups showed significantly greater improvements than the health education control group. Overall, 61 percent of the veterans in the TM group showed clinically-meaningful improvement in PTSD symptoms, compared to 42 percent with PE and 32 percent with health education. Effect sizes for reduction of PTSD symptoms and

depression ranged from 0.90 to 1.2 for TM; 0.63 to 0.89 for PE; and 0.14 to 0.34 for health education [456].

TM remained significantly non-inferior to PE after co-varying for baseline scores, number of PTSD medications, gender, and number of years since discharge from the armed force; and after additionally co-varying for antidepressant and antipsychotic medications at baseline, change in number of PTSD medications, baseline social support, number of treatment sessions attended, and treatment expectancy [456].

An editorial accompanying this study in *The Lancet Psychiatry* journal further observes [450]:

- TM offers a gentle approach requiring minimal effort to practise, a factor that might contribute to adherence, which is key to gaining maximum benefit.
- TM does not involve concentration or control of the mind as is required with other meditation or mindfulness practices—factors that can be difficult for those with intrusive thoughts and hyperarousal experienced in PTSD.
- TM does not involve trauma exposure, which can be challenging for those with PTSD.
- TM is self-administered, self-empowering, completely transportable, and inconspicuous; the practice is therefore consistent with military culture, and also highly relevant to modern civilian life [419].
- Physiological effects documented during TM, which include changes opposite to the stress response, may contribute to the technique's benefits for PTSD (see page 17).

This study confirms on a larger and more methodologically-rigorous scale previous findings that TM reduces severity of PTSD in military veterans, active military service members, and civilians [56, 401, 418-421, 426, 449-450, 453-454]. Benefits of TM in this field were first documented in a pioneering trial of Vietnam War veterans with PTSD: subjects practising TM showed improvements in all aspects of the syndrome studied, including reductions in severity of delayed stress syndrome and emotional numbness; decreases in depression, anxiety, insomnia, and alcohol consumption; improvement in family problems; and reduced difficulty in obtaining employment. In contrast, a control group who received standard treatment with psychotherapy showed no significant change on any measure [56].

In another controlled study of 74 US active duty military service members with PTSD or anxiety, subjects practising TM showed reduced medication usage and an overall decrease in severity of psychological symptoms compared to matched controls over a six-month period [426].

These findings are further supported by several uncontrolled pilot investigations:

- In a study of 46 veterans, practice of TM for one month was associated with clinically significant decreases in PTSD symptoms in 87% of subjects, with a median 57% reduction in symptom severity. In 80% of subjects, symptoms scores had dropped below the clinical level. Improvements were sustained three months after starting TM. Greater regularity of TM practice was associated with more marked reduction in symptoms, consistent with a dose-response effect [453].
- 29 veterans who practised TM for two months showed reduced PTSD symptoms and experiential avoidance, decreased depressive and somatic symptoms, and improved quality of life. Improvements were maintained or enhanced over the study period. The authors conclude that TM appears to be an acceptable and effective treatment for veterans with PTSD [454].
- Veterans with PTSD following exposure to moderate or heavy-moderate combat in the Iraq and Afghanistan wars showed a 50% reduction in PTSD-related symptoms including reduced stress, decreased depression, and marked improvements in relationships and overall quality of life after eight weeks' practice of TM [401].
- Case studies have also indicated the feasibility of providing TM training to active duty soldiers with PTSD in Defense Department medical facilities, including those with traumatic brain injury, depression, or substance abuse. Practice of TM was associated with reductions in PTSD symptoms and distress, and improvement in social role performance [418].

The above findings lend support to a survey of potential approaches to improving soldier resilience which concluded that Transcendental Meditation had the most supporting evidence across five domains of resilience: physical, emotional, spiritual, social, and family life [419].

Reduced PTSD Symptoms in War Refugees and University Students

Two studies have examined effects of Transcendental Meditation on PTSD in civilian refugees of the devastating Congo war. Marked reductions in severe post-traumatic stress symptoms were found after 30 days practice of TM, with sustained improvements after 135 days. In contrast, symptom scores for control subjects matched for age, sex, and baseline symptoms showed an upward trend [420]. A second study of Congolese war refugees found that striking reductions in PTSD symptoms were evident within ten days of learning TM, with further reductions after 30 days [421].

Research has indicated a high prevalence of traumatic experiences among adolescents and children in South Africa, with estimates of PTSD prevalence ranging from 8% to 38%. In a study of South African university students with PTSD, TM led to rapid, sustained, and clinically important improvements in PTSD symptoms and depression at 15, 60, and 105 days follow-up. At the final assessment, average PTSD symptom and depression scores for the TM group had fallen below the clinical level. By contrast, a comparison group of non-meditating students with PTSD at another college showed no improvement. Further analysis

showed that greater regularity of TM was associated with more marked improvement in symptoms [449].

TM has also been investigated in other circumstances of exceptional stress. A study from Japan found reduced mental and physical stress symptoms after instruction in TM in 171 residents of two cities (Sendai and Ishinomaki) directly affected by the 2011 earthquake and tsunami disaster, as compared to control subjects [428].

A single-blind, controlled study examined effects of TM in vulnerable women in Uganda. Subjects were primarily single, illiterate mothers living in poverty and facing high levels of physical and psychological stress. Over a three-month period, subjects practising TM showed improvements in self-efficacy, perceived stress, and mental and physical well-being compared to a control group (for whom TM instruction was delayed until after the study). TM was well-accepted with 88% of subjects reporting regular twice-daily practice. Further assessment at 8 and 36 months indicated that women practising TM experienced improvements in health, relationships, and employment rates [452].

Trauma experiences among incarcerated men and women are more prevalent than in the general population and are associated with increased recidivism and other mental and physical health problems. In two four-month randomized controlled trials conducted in Oregon, TM decreased trauma symptoms and psychological distress in both male and female prison inmates compared to control subjects (see page 37) [430-432].

Workplace studies have also found TM to be effective in reducing stress and enhancing resilience, with associated benefits for job performance and occupational health (see page 35).

Reduced Smoking, Alcohol Consumption, and Drug Abuse

TM has consistently been found to reduce the use of tobacco, alcohol, and non-prescribed drugs in a wide variety of settings and populations [60, 56, 62-64, 246-265, 316, 318, 398]. A systematic review and meta-analysis of 198 studies (including 19 on Transcendental Meditation) found that TM produced marked, sustained, and highly significant reductions in smoking, alcohol consumption, and illicit drug use, with larger effects than other treatments including standard therapies, other forms of meditation, relaxation training, educational programmes, anxiety management, counselling to counteract peer pressure, biofeedback, hypnosis, acupuncture and sensory deprivation [60].

Over an 18-24 month period, abstinence ranged from 51% to 89% for people practising TM, compared to 21% for good conventional substance abuse programmes. In contrast to high early relapse rates with standard programmes, reductions in smoking and alcohol consumption with TM increased gradually over time, while initial marked reductions in illicit drug use were sustained [60].

Overall, research in this area indicates that the longer individuals practise TM, the more likely it is that they will stop or markedly reduce smoking, alcohol consumption, or drug abuse [60, 64]. These results are remarkable given that TM does not involve advice on lifestyle change or substance use. Instead, the marked reductions observed with TM appear to be internally motivated, based on the comprehensive benefits of the technique for physical and mental health and well-being [253-255].

See page 28

Research on Transcendental Meditation in comparison to other types of meditation and relaxation

Transcendental Meditation is unique in the range and depth of research into its effects: no other method of meditation or relaxation has been shown to reproduce the physiological changes observed during TM, or to replicate its wide-ranging benefits for mind, body, behaviour, and society [189, 119].

Randomized controlled trials have shown that, compared to various forms of relaxation and meditation, TM is more effective in reducing high blood pressure [10-12]; decreasing atherosclerosis [19]; decreasing cardiovascular and all-cause mortality in subjects with mild hypertension [15-17]; increasing cognitive flexibility, well-being, and longevity in the elderly [12, 17]; increasing general intelligence, practical intelligence, creativity and speed of cognitive processing [266]; improving perceptual awareness (increased field independence) [266]; and decreasing anxiety [266]. TM was also more effective than an educational corporate stress management programme in reducing anxiety and depression and improving self-concept [319].

Systematic reviews and meta-analyses, integrating data from multiple studies, have shown that TM is more effective than other methods of meditation and relaxation in reducing high blood pressure [32], enhancing overall psychological health (self-actualization) [201], decreasing anxiety [200], and improving psychological outcomes in general [202]. An updated meta-analysis of randomized controlled trials found that TM was more effective in reducing anxiety than treatment as usual. Moreover, no alternative active treatment was more effective than TM, or produced the same wide range of associated beneficial effects. TM had a stronger effect in reducing anxiety than was observed with mindfulness-based therapy in a previous meta-analysis [417].

Meta-analyses have also shown that TM promotes deeper rest and decreases physiological indicators of stress more effectively than ordinary relaxation [114], and is strikingly more successful in combating smoking, alcohol consumption, and drug abuse than conventional substance abuse programmes or other forms of meditation or relaxation [60].

An **American Heart Association (AHA) Scientific Statement** from 2013 found TM to be the only type of meditation that has been shown to lower blood pressure, and recommended that TM may be considered in clinical practice for prevention and treatment of hypertension. The AHA report concluded that there is not enough scientific evidence to recommend other methods of meditation or relaxation [413-414].

A review of EEG research on different forms of meditation identified characteristic patterns of integrated brain functioning that clearly distinguish TM from other methods [119, 438, 472]. In addition, TM is the only technique for which EEG correlates have been documented in randomized controlled trials [119, 151, 162, 178, 402, 404, 462], and also the only practice for which specific physiological correlates have been identified both for experiences of Transcendental Consciousness during meditation, and for experiences of higher states of consciousness developed through regular practice of TM [117, 155, 180-182, 416, 436-438]. A functional MRI study found that cerebral blood flow during TM was higher in attentional and executive areas of the brain and lower in arousal areas, a result that has not been demonstrated with other forms of meditation [455].

Comprehensive Benefits for Education

Transcendental Meditation is being increasingly employed in education as a technology to facilitate optimal cognitive, intellectual, social and emotional development. Research findings include:

- Increased intelligence and creativity [266-268, 223, 270, 275, 277-280, 283, 101, 474-475]
- Improved memory, learning ability, and cognitive flexibility [266, 12, 174-175, 279, 284-285, 475]
- Improved academic achievement in school, university, and postgraduate students [271-273, 282, 397, 400]
- Higher graduation and college acceptance rates; and lower school dropout [422]
- Enhanced cognitive and self development [201, 203, 222, 224, 226, 231-238, 280, 287, 290, 334, 474-475]
- Improved attention, perception, and mind-body co-ordination [266, 101, 179, 184-185, 270, 274-275, 289, 296-315, 397, 475]
- Increased orderliness and integration of brain functioning [178, 110-113, 115-119, 130, 151-177, 179-188, 402-404, 455, 479]
- Improvement on both verbal-analytical and visual-spatial tasks (indicating improved functioning of both left and right cerebral hemispheres) [101, 185, 266-268, 274-279, 283-284, 305, 397, 404]
- Increased field independence (indicating greater ability to maintain broad comprehension while focusing sharply) [266, 274-275, 298-300, 397]
- Improved athletic performance [313-315]
- Comprehensive benefits for mental health and well-being [12, 22, 56, 61, 67, 71, 200-246, 266-267, 269, 280-282, 289-293, 316-321, 334-339, 347-348, 359, 435, 449-454, 446, 462-464, 473-475, 479]
- Greater moral maturity and higher moral reasoning [227-228, 235, 279, 173, 474]
- Increased orientation towards positive values [226]
- Increased social maturity in college students [223]
- Decreased sleepiness in college students [178]
- Decreases in total psychological distress, anxiety, depression, anger/hostility, and blood pressure, and improved coping, in university students [22]
- Reduced post-traumatic stress disorder (PTSD) and depression in university students with PTSD [449]
- Improved social-emotional learning in middle school students [464]
- Reduced anxiety and greater resilience in ninth-grade students [435]
- Decreased general psychological distress and reduced anxiety in racial and ethnic minority secondary school students [410]
- Reduced blood pressure in pre-hypertensive adolescents and young adults [22-24, 34]

- Reduced alcohol consumption, drug abuse, and smoking [60, 62-64, 246-265, 316, 318, 398]
- Reduced perceived stress, depression, and burnout in secondary schoolteachers and support staff [423]
- Benefits in special and remedial education:
    - Improved academic achievement in at-risk urban middle school students [400]
    - Increased intelligence and improved self-concept among children from low income families [280]
    - Reduced behaviour problems in school—decreased absenteeism, rule infractions, and suspension days [288]
    - Improvements in children with attention deficit hyperactivity disorder (ADHD): improved EEG ('brain wave') patterns, cognitive performance, and behaviour [404]; reduced stress and anxiety; and improvements in ADHD symptoms and executive function [289]
    - Increased independence and self-supportiveness, improved self-regard, and decreased dropout rate from school in economically-deprived adolescents with learning problems [290]
    - Decreased anxiety, examination anxiety, and school dislike in children with learning problems [291]
    - Benefits for learning disabled subjects: improvements in social behaviour, cognitive functioning, intelligence, physical health; and normalization of neuroendocrine measures [292, 87]
    - Improvement in autism: decreased echolalic behavior [293]
    - Decreased stuttering [294]
    - Improved social behaviour, increased self-regard, and decreased anxiety among juvenile offenders [351-352]

Holistic Cognitive Development and Increased Intelligence

Three randomized controlled trials (RCTs) on high school students in Taiwan found that Transcendental Meditation produced greater improvements in speed of cognitive processing, cognitive flexibility, creativity, general intelligence, practical intelligence, and field independence, and also reduced anxiety, compared to a traditional Chinese meditation technique or napping [266]. The authors note that, as in earlier research on TM and intelligence, the technique produced unexpected improvements in basic cognitive abilities that do not usually develop beyond early adolescence [266-267, 270, 275].

In another RCT, Canadian secondary school students who practised TM over a 14-week period showed improvements in intellectual performance (problem-solving ability), creativity, tolerance, self-esteem, autonomy and independence, innovation, energy levels, and ability to deal with abstract and complex situations, as well as decreased anxiety, compared to control students [277].

In a ten-year longitudinal study, American university students practising the Transcendental Meditation and TM-Sidhi programme increased significantly on a measure of self development (Loevinger's ego-development scale), in comparison to control students at three other universities [203]. Another study found that American university students practising TM rated important people in their lives (parents and spouse) significantly more positively than did control students [226].

In Cambodian students taking a one-year preparatory course before university, TM led to increased intelligence and self-esteem, improved physical health, and decreased depression and anxiety, compared to control students [268-269]

Improved Academic Performance and Higher Graduation Rates

In a randomized controlled trial, British master's degree engineering students who learned TM showed improved performance on standard examinations after six months, compared with control students [271].

Another investigation examined academic achievement in Californian middle school students who were below proficiency level in English and mathematics. All subjects were from the same school and continued with the standard curriculum and instruction; 97% of subjects were from ethnic minorities. Over a three-month period, students who learned TM showed improved scores on both English and mathematics scales of the California Standard Tests, in contrast to non-meditating control subjects [400].

A study conducted at a US East Coast urban high school showed a 15% higher graduation rate among students practising TM compared to non-meditating controls, after taking into account student grade point average. When only students with low academic performance were compared, graduation rate was 25% higher for TM subjects than controls. Students practising TM were also less likely to drop out of school, or enter prison, and were more likely to be accepted at post-secondary educational institutions [422]. Consistent with these results, a four-month randomized trial found that adolescent African American children who learned TM showed reductions in absenteeism, school rule infractions, and suspension days compared to a control group who participated in health education [288].

Improved Social-Emotional Learning

Social-emotional learning is gaining increased recognition as an important goal of education. A four-month study of 50 middle school students (6th grade) found improvements in social-emotional competencies as a result of TM, as compared to 50 non-meditating students from a matched control school within the same West Coast urban public school district. Improvements with TM were particularly pronounced for students in high-risk subgroups, who also showed decreased negative emotional symptoms compared to controls. Within the overall improvement in social-emotional learning, the TM group showed benefits in the

specific areas of decision-making, goal-directed behaviour, personal responsibility, relationship skills, and optimistic thinking [464].

Increased Brain Integration in College Students

A randomized controlled trial (RCT) found that college students who practised TM over a three-month period showed increased scores on an electroencephalographic (EEG) index of brain integration compared to non-meditating control students. The TM group also showed reduced sleepiness and had no increase in physiological stress levels (measured by skin resistance responses) despite impending final examinations, in contrast to the expected increase seen in controls [178]. By increasing integration in brain functioning, TM develops the essential foundation for more effective learning, enhanced personal growth, and greater success in any field of life (see page 17).

In another RCT, increased scores on the brain integration index were found in educational administrators and staff who practised TM over a four-month period; the TM group also showed decreased stress and improved mental health [462-463].

Improved Health and Reduced Stress for Students, Teachers, and Staff

A three-month RCT of American university students found that TM reduced blood pressure; decreased total psychological distress, anxiety, depression, and anger/hostility; and improved coping [22]. Previous randomized trials on pre-hypertensive adolescents found that TM reduced blood pressure both at rest and during acute laboratory stress, and decreased ambulatory blood pressure during normal daily activity [23, 24].

Research has indicated a high prevalence of traumatic experiences among adolescents and children in South Africa. Thirty-four South African university students with post-traumatic stress disorder (PTSD) who practised TM showed rapid, marked and sustained reductions in PTSD symptoms and depression, as compared to non-meditating students with PTSD at another college. Greater regularity of TM was associated with more marked improvement in symptoms [449].

Workplace stress and burnout are pervasive problems among teachers and staff in schools, with major deleterious impacts on mental and physical health, and on both individual and institutional performance. In a four-month RCT of 40 secondary schoolteachers and support staff at a residential therapeutic school for children with severe behavioural problems, Transcendental Meditation was effective in reducing perceived stress, depression, and overall teacher burnout [423].

Improvements in ADHD

A random-assignment trial investigated effects of Transcendental Meditation in 18 students, aged 11-14 years, with attention deficit hyperactivity disorder (ADHD). After three months,

children practising TM showed improvements in brain integration, cognitive functioning, and behaviour compared to controls, as measured by: improvement in EEG ('brain wave') abnormalities associated with ADHD (decreased theta/beta ratios); increased EEG coherence, indicating increased integration between different areas of the brain; increased Letter Fluency; and positive changes in cognitive and behavioural functioning reported by parents in five areas—ability to focus on schoolwork, organizational abilities, ability to work independently, happiness, and quality of sleep [404]. These findings are corroborated by an earlier study on children with ADHD which found that TM reduced stress and anxiety, and improved ADHD symptoms and executive function [289].

Consciousness-Based Education in Practice

Transcendental Meditation has been taught to school and university students for more than 50 years and is currently being utilized in over 800 educational institutions with more than 450,000 students in over 60 countries, including:

Africa: Cape Verde, Mali, Egypt, Togo, Guinea Bissau, Ghana, São Tome and Principe, Kenya, Uganda, Mozambique, Zambia, South Africa.

Asia: India, Nepal, Mongolia, Thailand, Japan, Philippines, Malaysia, Indonesia.

Australia and the Pacific: Australia, Solomon Islands.

Europe: Spain, Portugal, United Kingdom, Ireland, Belgium, The Netherlands, Denmark, Sweden, Italy, Bosnia and Herzegovina, Hungary, Greece, Republic of Georgia, Ukraine.

Latin America: Cuba, Jamaica, Puerto Rico (U.S.), Mexico, Dominican Republic, Haiti, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Bolivia, Brazil, Colombia, Peru, Ecuador, Chile, Argentina, Venezuela, Guyana, Suriname, Uruguay, Paraguay, Curaçao.

North America: Canada, United States.

Additionally, in nine countries – India, Nepal, United States, South Africa, Thailand, United Kingdom, Australia, Netherlands, and Canada – schools or higher educational institutions have implemented the Consciousness-Based approach to education developed by Maharishi Mahesh Yogi, where all students and teachers practise the Transcendental Meditation or TM-Sidhi programmes and academic disciplines are taught in light of the Science of Consciousness. In India, the Consciousness-Based system is being utilized in: 200 schools in 16 states with 104,000 students; a Consciousness-Based university; four branches of Maharishi Institute of Management; and four Maharishi Colleges; as well as schools for traditional knowledge with 25,000 students. In total, 46,000 Indian students are practising the TM-Sidhi programme [www.consciousnessbasededucation.org].

The longest established educational institutions employing Consciousness-Based Education —Maharishi University of Management (founded in 1972) and Maharishi School, both in Fairfield, Iowa, USA—have consistently delivered outstanding educational outcomes, and their students have repeatedly won regional, national, and international awards in many fields, including science, mathematics, creative thinking, literature, and sport [www.maharishischool.org and www.mum.edu].

Maharishi School in Iowa was ranked #1 Best Private High School in Iowa for 2019 by Niche.com, as well as #1 Most Diverse Private High School and the #1 K-12 (kindergarten to 12th grade) Private School in Iowa.

Over the past 30 years, Maharishi School has had 96% of graduates accepted at accredited universities, including Harvard, MIT, Stanford, Johns Hopkins, Wellesley, and University of California at Berkeley. The school has had 18 National Merit Scholars **(**the highest academic honour for the top 1% of national entrants)**,** twice the national average over the past 3 decades, as well as over 100 Finalists, Semifinalists, and Commended Scholars. Maharishi School students have also won over 100 international, national, and state competitions for science, engineering, mathematics, sports, arts, poetry, drama and extracurricular activities.

For example, in Destination ImagiNation, an international creative problem-solving competition, Maharishi School students have been first placed winners in the Global Finals seven times, achieved 35 other top ten awards, and been state champions 60 times (with most wins in the state 2000-2017). Maharishi School has also achieved first place in the American High School Math Exam on four occasions, and ranked first in Iowa according to the Mathematical Association of America. At Science & Engineering Fairs, Maharishi School students have been state champions 47 times (and received multiple national and international awards at prestigious competitions. They have also won 18 Iowa state championships for speech (drama).

In the United Kingdom, Maharishi School in Skelmersdale, Lancashire is another well-established school offering consciousness-based education at primary and secondary levels. Founded in 1986, the school's consistently excellent outcomes—both academically and in the overall development and well-being of its pupils—resulted in achievement of Free School status in 2011, since when the school has been financed entirely by the UK government. Despite being non-selective in terms of ability, the 2019 national school league tables placed Maharishi School second out of 155 secondary schools in Lancashire for the progress made by its pupils. The school's Progress 8 score of 0.83 puts it in the top 1.8% of schools nationwide. (Progress 8 is the UK Department of Education's key measure for how much progress pupils have made between the end of primary school and the end of secondary school). In a further accolade, Maharishi School was recently named the top secondary

school in West Lancashire by *Lancashire Live's Real Schools Guide 2020*, which aims to give a more comprehensive picture than traditional league tables and takes into account 51 different data points [www.maharishischool.com]

Improved Occupational Health and Job Performance

Studies conducted in occupational settings have shown that TM improves health and performance in the workplace [61-62, 287, 316-334]. Findings include:

- Improved job performance [317-318]
- Increased job satisfaction [316-317]
- Improved relationships at work [316-318]
- Increased productivity [317]
- Increased employee effectiveness [316]
- Increased contribution of managers to the organization [318]
- Improved leadership [321]
- Enhanced management development [287, 322-334]
- Improved health and well-being (physical and mental) [61-62, 316, 318-320, 423, 462-463]
- Improved health-related behaviour in employees and managers [62, 316, 318]
- Increased energy and decreased fatigue [316, 318, 363, 463]
- Reduced stress in employees and managers [61, 316, 318, 320, 423, 463]
- Reduced job tension, anxiety, depression, total mood disturbance, and insomnia [61, 316, 319, 423, 462]
- Reduced stress, depression, and burnout in secondary schoolteachers and support staff [423]
- Decreased stress, increased emotional intelligence, improved psychological health, and increased brain integration in educational administrators and staff [462-463]
- Improved occupational health for nurses: improved resilience, decreased compassion fatigue, and reduced burnout [449]; increased inner well-being and improved job performance [458]
- Reduced difficulty in obtaining employment for people with post-traumatic stress disorder [56]

Work-related stress and occupational burnout are major problems in education. In a four-month randomized controlled trial (RCT) of 40 secondary schoolteachers and support staff at a residential therapeutic school for children with severe behavioural problems, TM was effective in reducing perceived stress, depression, and overall teacher burnout [423].

Another four-month RCT examined effects of TM in 96 central office administrators and staff in the San Francisco Unified School District. Compared to controls, subjects practising TM showed:

- reduced perceived stress [463]
- increased emotional intelligence – including improvements in general mood, stress management, adaptability, intrapersonal awareness, and reality testing [463]
- improved psychological health – including reductions in total mood disturbance, anxiety, depression, fatigue and confusion; and increased vigour [462]
- increased scores on an EEG index of brain integration [462]

Health-care professionals face particular challenges in terms of occupational stress. A four-month study of nurses who practised TM found improved resilience, increased compassion satisfaction and reduced burnout [451]. The authors conclude that TM offers an innovative self-care programme for developing resilience and reducing compassion fatigue. In another study, graduate nursing students who learned TM experienced increased balance of mind; greater feelings of happiness, peace, and integrity; and enhanced job performance [458].

Consistent with these findings, family and professional caregivers who practised TM over a two-month period showed reductions in perceived stress and mood disturbance—including decreased anxiety, depression, anger, confusion and fatigue—and an increase in spiritual well-being (faith in the future and purposefulness) [433].

An RCT of employees at a high-security government agency found that TM led to reductions in anxiety and depression after 12 weeks, in comparison to controls who participated in an educational corporate stress-management programme. When retested after three years, the TM group showed not only sustained reductions in anxiety and depression, but also improved self-concept compared to controls [319].

In a five-month study conducted by researchers from Japan's National Institute of Industrial Health (a branch of the Japanese Ministry of Labour), industrial employees practising Transcendental Meditation showed increased emotional stability and reductions in anxiety, tendency to neurosis, impulsiveness, physical complaints, insomnia and smoking compared to controls. Depression also decreased in the TM group, despite lower initial levels [61-62]. Overall, employees practising Transcendental Meditation improved significantly on 10 out of 14 dimensions, whereas controls improved on only one [61].

Another study examined stress, health, and employee development in two settings in the automotive industry: a large manufacturing plant of a Fortune 100 corporation and a small sales distribution company. Employees who learned TM showed greater improvement than matched control subjects on a wide variety of measures, including improved general health and reductions in physiological arousal, anxiety, job tension, insomnia, fatigue, and consumption of cigarettes and hard liquor [316]. Practice of TM also led to increased job satisfaction,

improved employee effectiveness, and better work and personal relationships, confirming the findings of an earlier study [316-317].

Further analysis identified three factors underlying this wide range of improvements through TM: 'occupational coherence', 'physiological settledness', and 'job and life satisfaction'. The effect size of TM in reducing physiological arousal, anxiety, and alcohol/cigarette use, and in enhancing personal development, was substantially larger than for other forms of meditation and relaxation reported in four previous meta-analyses [316].

A three-month prospective study at a medical equipment company compared managers who learned Transcendental Meditation to matched controls who were similar in age, education level, ethnicity, marital status, hours worked per week, job type and level of responsibility in the organization. Managers who practised TM made an increased 'organizational contribution' compared to controls, as measured by a combined index of productivity, leadership practices, work relationships, vitality, mental health, job satisfaction, and anger. TM also led to reduced alcohol consumption; healthier habits of exercise, diet, and sleep; decreased serum cholesterol; increased energy and less fatigue; improved mental health; reduced stress-related physical symptoms; and reduction in perceived stress (the degree to which situations were perceived as overloading, uncontrollable or unpredictable) [318].

A controlled study of employees at a South African firm found that TM was effective in reducing psychological stress and decreasing both systolic and diastolic blood pressure over a five-month period [320]. In another study, employees at a food sales company who learned TM showed greater improvement on a composite measure of leadership behaviour over an eight-month period than non-meditating controls [321].

Effective Rehabilitation of Offenders

Research spanning more than 40 years demonstrates that Transcendental Meditation is effective in correcting and preventing criminal behaviour. These studies have used some of the most sophisticated and widely validated measures of mental health and developmental maturity available in the social sciences [340-365, 424].

A study conducted at Harvard University on maximum security inmates in Massachusetts showed that the criminal mindset can be altered by Transcendental Meditation. Prisoners who learned the technique significantly improved on measures of psychopathology, including decreased aggression, anxiety, and schizophrenic symptoms. Furthermore, subjects practising TM increased their self development by more than one level on Loevinger's ego (self) development scale—from the dependent, exploitative orientation that is commonly found in criminals to the more responsible, self-monitoring, self-respecting, and communicative orientation of law-abiding citizens. Such holistic effects on

development in adults are remarkable, especially among people previously thought to be most resistant to change [347-348].

In another maximum security prison study, inmates who learned TM showed reductions in anxiety, resentment, negativism, suspicion, verbal hostility, neuroticism, and tendency to assault, as well as decreased insomnia and improved quality of sleep compared to controls [343-344].

Trauma experiences among incarcerated men and women are more prevalent than in the general population, and are associated with increased recidivism and other mental and physical health problems. In two four-month randomized controlled trials conducted in Oregon, TM decreased trauma symptoms and psychological distress in both male and female prison inmates compared to control subjects. In the first study, on male prisoners, TM reduced total trauma symptoms, anxiety, depression, dissociation, sleep disturbance and perceived stress. Subgroup analysis on subjects with high trauma levels showed a greater magnitude of effect from TM on all outcomes [430]. In the second investigation, which employed different measures with female inmates, TM reduced total trauma, intrusive thoughts, and hyperarousal [431]. A companion editorial examines these studies in light of previous research and advocates TM as an evidence-based mind-body approach to prevention and promotion of health and well-being [432]. These studies complement research showing improvements in post-traumatic stress disorder in war refugees and veterans as a result of TM [56, 401, 418-421].

Transcendental Meditation can also facilitate rehabilitation of juvenile offenders: young people referred to juvenile court for a legal offence showed improved social behaviour and increased self-regard after learning TM. Anxiety levels were also reduced, a result corroborated by a later study [351-352].

Other studies also strongly support these findings [340-342, 345-346, 349-350, 353-365]. A narrative and quantitative review of the application of TM in eight correctional settings involving almost 1500 inmates found that the technique leads to positive changes in health, psychological development, and behaviour [341]. Another review examining changes in brain chemistry of criminals found that stress-related neuroendocrine abnormalities known to be associated with aggression and crime were alleviated by TM [360; see also 403].

The ultimate test for any rehabilitation programme is whether it reduces the frequency with which former offenders commit new crimes and return to prison (recidivism). Two studies, one with a 15-year follow-up after release, found that TM markedly decreased recidivism rates, with up to 47% reduction compared to controls participating in other treatment programmes [340, 342, 349]. In keeping with these results, a large-scale study of 11,000

prisoners and 900 prison officers in Senegal found that TM reduced recidivism rates to only 8%, as well as markedly decreasing prison violence and health problems [345].

In a pioneering, community-based rehabilitation programme, six Missouri judges sentenced over 100 probationers (whose offences ranged from drunken driving to manslaughter) to learn TM. The programme achieved remarkable success, with extremely low rates of re-offending based on promotion of more balanced, successful, and law-abiding lives for participants [346].

Improved Quality of Life for Society as a Whole – the Maharishi Effect

Every individual continuously contributes to, and is influenced by, the quality of life in society. In Maharishi's analysis, the quality of life in any social group, from a family to the whole world, is governed by the *collective consciousness* of all the members of that group. Just as the thinking and behaviour of individuals is determined by their level of consciousness, so the functioning of society is governed by the degree of integration in its collective consciousness [447, 470].

When collective consciousness is coherent and free from stress, a powerful influence of positivity and harmony permeates all areas of society, benefitting everyone. On the other hand, when stress builds up in collective consciousness, its negative and discordant effects pervade the whole community. If not relieved, accumulation of stress in collective consciousness leads inevitably to disorders of collective health, such as crime, violence, social turbulence, and economic failures, eventually threatening the very integrity of the nation.

According to Maharishi, the influence of Transcendental Meditation on society does not depend solely on social interaction on the surface level of life through speech or behaviour, but results primarily from enlivenment of a universal source of coherence and harmony which is fundamental to both individual consciousness and the collective consciousness of society as a whole. Thus, when an individual experiences the most settled state of mind—pure consciousness—during TM, a coherent and life-supporting influence is generated not only at all levels of individual life, but also in the collective functioning of the entire society [447].

Based on this principle, Maharishi predicted in 1960 that if even a small fraction of the population were to practise TM, positive changes would be observed not only in their own lives but also throughout the community. This prediction was first investigated in 1974 in a number of American cities where 1% of the population had learned TM. When the 1% threshold was reached, a substantial reduction in crime rate was observed, in contrast to previous crime trends in these cities and to the continuing rise of crime in matched control cities with far fewer meditators [366].

This result has been confirmed and extended by larger and increasingly more rigorous investigations, which have demonstrated that the percentage of the population practising TM is a reliable predictor of decreases in crime, suicides, and accidents even after controlling for demographic factors that are known to influence these parameters. For example, scientists found that the observed improvements in quality of life could not be explained by changes in population size and density, residential stability, college population, ethnic distribution, unemployment rate, average income, percentage of the population living below the poverty level, age distribution, average level of education, police coverage, or previous crime trends. Further research found evidence of a direct causal relationship between numbers practising TM and reduction of crime rate in two separate random samples, one of 160 cities and the other of 80 metropolitan areas in the United States [367, 372].

This phenomenon, representing a transition to a more coherent and harmonious state in society, was named the *Maharishi Effect* in recognition of Maharishi Mahesh Yogi, who had both predicted it and made possible its practical implementation. More than 50 separate studies have now been conducted on this effect (see Table 4, page 42) [366-395, 439-444, 465-470].

Research on Groups Practising the Transcendental Meditation and TM-Sidhi Programme

Scientific interest in this field grew sharply when it was observed that the level of coherence in society was greatly intensified when Transcendental Meditation and the advanced TM-Sidhi programme, including Yogic Flying, are practised together in a group. As a result, the number needed to generate the Maharishi Effect was found to be greatly reduced, to as little as the *square root of one percent of the population*. This figure is a very small fraction of any large social system: approximately 800 for the United Kingdom, 1,800 for the United States, and 8,700 for the world as a whole. These relatively small numbers have made it practically possible to test this formula repeatedly in cities, provinces, states, whole nations, and even the entire world [367-395, 439-442, 444, 448, 465-470].

The rise in coherence and harmony in society created by groups utilizing this technology has been repeatedly verified through increasingly well-controlled studies, including prospective projects, employing the most rigorous experimental designs and statistical methods available in the social sciences. Many have appeared in leading journals, including *Journal of Conflict Resolution; Social Indicators Research; Psychology, Crime and Law; The Journal of Mind and Behavior; Psychological Reports; Journal of Social Behavior and Personality; SAGE Open; Studies in Asian Social Science; Journal of Offender Rehabilitation; Journal of Consciousness Studies;* and *Journal of Health and Environmental Research.*

The results of these investigations, summarized in Table 4 (page 42), reach exceptionally high levels of statistical significance: taken together, they establish the Maharishi Effect on a level of proof unprecedented in sociological research. A fascinating feature of these studies is that diverse and apparently unrelated social parameters are found to improve simultaneously, consistent with the understanding that this technology enlivens a source of orderliness and integration that is common to all aspects of life [376, 385-386, 390, 439-442, 447, 467-468, 470-471].

See Table 4, page 42

TABLE 4

Research Findings on the Maharishi Effect – Large Scale Sociological Effects of the Transcendental Meditation and TM-Sidhi Programme

- Decreased crime (research on: Merseyside, UK 1988-1991; Netherlands 1979, 1981; Washington DC, USA 1981-83, 1993; Puerto Rico, USA 1984; Metro Manila, Philippines 1984; Union Territory of Delhi, India 1980-81; Israel 1983; Jerusalem, Israel 1983; USA 2007-2010) [367-372, 375, 385-386, 439, 442]
- Decreased violent crime (Washington DC 1993; USA 2007-2010) [369, 439, 442]
- Decreased homicide and murder (USA 2007-2010) [439, 442]
- Decreased violent fatalities (homicide, suicide, and motor vehicle accidents) (USA 1982-1985) [371]
- Decreased motor vehicle and/or aircraft accidents and fatalities (Netherlands 1979, 1981; USA 1979; Jerusalem, Israel 1983; Worldwide 1983-84) [375-376, 385-387]
- Decreased motor vehicle and other accidental fatalities (USA 2007-2010) [440]
- Decreased infant mortality (USA 2007-2010) [441]
- Decreased drug-related deaths (USA 2007-2010) [441]
- Reduction of notifiable infectious diseases (USA and Australia 1983-84) [387]
- Increased economic prosperity and confidence:
  - increased national economic strength and competitiveness (New Zealand and Norway 1994-1998) [443]
  - decrease in an index of unemployment and inflation (USA 1979-1988; Canada 1979-1988) [378-381]
  - increases in stock market indices (USA 1979; UK 1982-83; Israel 1983; Worldwide 1983-84) [376, 382, 385-387]
  - increased patent applications (indicating increased creativity) (USA, UK, South Africa, and Australia 1983-84) [387]
  - improved social and economic development (Cambodia 1993-2008) [468]
- Improvements in overall quality of state and national life (as measured by composite indices including data on crime, suicides, accidents, fetal deaths, infant mortality, infectious diseases, pollution, alcohol and cigarette consumption, gross national product, days lost through strikes, patent applications, higher educational attainment, and divorce rates) (USA 1976-1983; Canada 1972-1986; Israel 1983; Philippines 1979-81; Metro Manila, Philippines 1984-85; Rhode Island, USA 1978; Iowa, USA 1979-1986) [370, 373-374, 376-377, 383, 385-386, 444]
- Reduced conflict and increased progress towards peace in major world trouble-spots:
  - decreased war deaths, war injuries, and intensity of conflict (Lebanon 1983-85) [385-386, 388]
  - decreased socio-political violence (Cambodia 1993-2008) [467]
  - decreased international conflict (Worldwide 1983-84 and 1978) [387, 389, 448]
  - increased progress towards peaceful resolution of conflict (Lebanon 1983-1985) [388]
- Reduced casualties and injuries from international terrorism (Worldwide 1983-85) [389]
- More positive interactions between the superpowers (USA and Soviet Union 1984-1987) and increased friendliness in statements of US Head of State (USA and Soviet Union 1979-1986) [390-391, 465-466]
- Increased harmony in international affairs (Worldwide 1983-84 and 1978) [387, 389, 448]

Recent Advances in Research on the Maharishi Effect – Sustained Reductions in Homicide, Violent Crime, Murder, Accidental Fatalities, Infant Mortality, and Drug-Related Deaths

Ten recent studies confirm and extend previous research on the Maharishi Effect, demonstrating sustained improvements in multiple social measures and further strengthening the validity of statistical analysis through a battery of diagnostic tests [439-444, 465-468]. Four of these studies examined effects of a large assembly practising the Transcendental Meditation and TM-Sidhi programme in Iowa from 2007-2010, when group size consistently exceeded (or was near to) the critical threshold predicted to generate the Maharishi Effect for the United States as a whole [439-442].

Compared to trends in the 50-month pre-intervention period (when group size was well below the critical threshold), the 48-month intervention period showed cumulative reductions in US national mortality rates from: homicide (21.2% decrease); motor vehicle accident fatalities (13.5% decrease); other accidental fatalities (20.5% decrease); drug-related deaths (20.5% decrease); and infant mortality (12.5% decrease) [439-441]. Reductions were also found for rates of violent crime (18.4% decrease) and murder (28.4% decrease), measured in a sample of 206 urban areas (total population 60 million in 2010) [439, 442].

These findings are of major practical significance, translating into expected reductions over the four-year intervention period of: 8,157 fewer homicides; 19,435 fewer fatalities from motor vehicle accidents; 16,759 fewer fatalities from other accidents; 26,425 fewer drug-related deaths; and 992 fewer infant deaths [439-441]. There were also 186,774 fewer violent crimes and 4,136 fewer murders than expected in the 206 urban areas studied [439, 442]. Interestingly, although these urban areas initially had higher murder rates than the country as a whole, they experienced a greater decrease during the experimental period [439, 442].

The authors examine other possible explanations for these results, but none was found to account for the findings. Notably, in contrast to all previous major economic downturns since World War 2, violent crime failed to rise during the severe recession that followed the global financial crisis of 2008 [439, 442].

These findings are corroborated by more than 30 previous studies showing reduced crime and violence through the Maharishi Effect since 1974 [366-372, 375, 385-386]. For example, in a notable prospective test, 4000 participants in the TM-Sidhi programme gathered in Washington, DC for a six-week demonstration project in 1993. Predictions were lodged in advance with a 27-member independent review panel and advertised in the Washington Post. Results showed a significant decrease in total violent crime corresponding with increases in the size of the coherence-creating group: the maximum decrease was 23.3% when group size peaked in the final week of the project. Analysis showed that the results could not be explained by other known and potential influences on crime [369]. Subsequent retrospective

investigations of this project have also found: reductions in accidents, emergency psychiatric calls, and hospital trauma cases; decreased complaints against police; improvement in a quality of life index; and increased approval ratings for President Clinton [384, 480].

Reductions in crime rate were also observed when assemblies of experts in the TM-Sidhi programme exceeded the square root of one percent of the population of the Union Territory of Delhi, India; Metro Manila, Philippines; Puerto Rico, USA [370]; and Metropolitan Merseyside, UK [368]. The latter study documented sustained crime reductions when the coherence-creating group was maintained over a number of years: during this period, Merseyside crime rate declined from the third highest among the eleven largest UK metropolitan areas to the lowest [368]. Sustained improvements in multiple indicators of quality of life were also found in a US study, including reduced fatalities due to homicide, suicide, and motor vehicle accidents, and improvement in economic indicators, when a stable coherence-creating group in Iowa exceeded the size predicted to influence the USA, or both the USA and Canada [373, 377-381].

Increased Economic Prosperity and National Competitiveness

Another recent analysis examined the economic fortunes of the two countries with the highest per capita participation in Transcendental Meditation—New Zealand and Norway—both of which passed the predicted coherence threshold of 1% of the population instructed in TM in 1993. Scores on the Institute for Management Development (IMD) *Index of National Competitive Advantage* increased significantly for both countries when they passed the 1% threshold, in comparison to 44 other developed nations over a 7-year period. Subsidiary analysis and Organisation for Economic Co-operation and Development (OECD) data confirmed that the economic improvements were unusually broad-based, sustained, and balanced in nature, with five years of high growth, low unemployment, and low inflation [443]. For New Zealand, a cost-benefit analysis of coherence creation through Transcendental Meditation conservatively estimated the gain to the nation at $320 for every $1 invested in implementing the programme [443].

These results complement previous findings of improvement in economic indicators at national and international levels as a result of the Maharishi Effect, including decreases in an index of unemployment and inflation (USA and Canada) [378-381], increased stock market indices (USA,UK, Israel, and Worldwide) [376, 382, 385-387], and increased patent applications (USA, UK, South Africa and Australia) [387].

Decreased Socio-Political Violence and Improved Social and Economic Development

In another recent study, group practice of Transcendental Meditation and the TM-Sidhi programme in Cambodia between 1993 and 2008 was associated with a 96.2% decline

in socio-political violence compared to the preceding three years [467].The reduction in violence commenced in January 1993 with the establishment of Maharishi Vedic University (MVU) in Cambodia, when more than 550 students began practising TM twice daily in a group. From 1994, 100-200 students also practised the advanced TM-Sidhi programme as part of their Consciousness-Based education curriculum. In total, 1250 students at three MVU campuses contributed to the increased coherence in collective consciousness during the study period.

This innovative investigation is the first to employ an explanatory mixed-methods research design to explore the growth of social coherence, using both time series analysis and qualitative content analysis of news articles. Researchers analysed monthly data on socio-political violence obtained from automated content-analysis of news reports performed by a leading independent research organization [467].

A previous case study of Cambodian development from 1980-2015 document the remarkable economic and social transformation of the country after the founding of MVU. Using the Social Impact Assessment model, data on gross domestic product (GDP), gross national income, inflation, poverty, health and education were analysed to assess the influence of the coherence-creating group of students practising TM on poverty removal and social well-being. In 1990, Cambodia, devastated by decades of war, was the poorest country in the world. After establishment of MVU, Cambodia's GDP growth rates averaged 8.9%, and poverty was reduced by 63% between 1994 and 2008. By 2010, Cambodia was ranked 63rd out of 152 countries on the international scale of poverty, an unprecedented jump of 89 places in less than one generation [468].

A similarly dramatic transformation from the most extreme poverty and decades of war to lasting peace and growing prosperity was also seen in Mozambique, where in 1993 President Joaquim Alberto Chissano introduced TM to 18,000 soldiers, with 3,000 also learning the TM-Sidhi programme. Thirty years of war ended (followed by stable peace for the past 25 years), and national prosperity soared, including an economic growth rate of 19% (when only 6% was predicted). Traffic accidents remained stable despite a 300% increase in the number of vehicles in circulation. A case study of the nation's transformation also noted favourable rain patterns associated with the size of the coherence-creating group [469].

Decreased Conflict and Increased Progress Towards Peace

The Maharishi Effect has been repeatedly shown to calm even the most extreme forms of societal stress and disorder, as evidenced by reduced war intensity and international conflict, decreased deaths and injuries from war and international terrorism, increased progress toward peaceful resolution of conflict, reduced international tension, and increased harmony in international affairs [385-391, 395, 444, 448, 468-470].

For example, war intensity in the Lebanese conflict was reduced on days when a group practising the TM-Sidhi programme in Jerusalem over a 2-month period reached sufficient size to generate the Maharishi Effect for the region. Improvements were also found in composite indices of quality of life (including data on crime, motor vehicle accidents, fires, national mood, and the stock market) for both Jerusalem and Israel as a whole when the group was large enough to predict effects at the city or national levels [385-386, 395].

In a recent factor analysis of these results, the quality of life index proved reliably sensitive to important factors influencing collective consciousness, such as major political and climatic events. However, the effect of the group practising the Transcendental Meditation and TM-Sidhi programme on the quality of life index was substantially greater than any of the cultural, military, political, or climatic events studied, and generated improvements both in parameters that are predominantly collectively motivated (decreased war intensity, increased stock prices, improved national mood) and in parameters that are predominantly individually motivated (decreased crime, accidents, and fires), with the strongest impact seen on the collectively-motivated measures [444].

The finding of reduced war in Lebanon was subsequently replicated for all seven assemblies of TM-Sidhi experts of sufficient size to predict the Maharishi Effect for the region during the peak of the conflict between 1983 and 1985, including groups located in or close to Lebanon and larger assemblies further afield [388]. Statistical analysis controlled for temperature, holidays, and weekends, and results were found to be independent of alternative explanations. Multiple indicators of reduced conflict also replicated the findings when combining intervention periods, including: 71% reduction in war-related fatalities; 68% decrease in war-related injuries; and 48% reduction in level of conflict [388].

Other investigations have documented calming of conflict on a wider international scale, including: decreased hostilities in major world trouble-spots when groups practising the TM-Sidhi programme assembled in the affected areas [448]; and reduced international conflict and increased harmony in worldwide affairs when a group achieved the size predicted to generate the Maharishi Effect for the entire world [387]. A subsequent study examining the effect on world events of three such large assemblies found a 72% reduction in international terrorism, a 33% decrease in international conflict, and increased world stocks [389].

Recent analyses also strengthen evidence for the impact of large groups practising the TM and TM-Sidhi programme on improving relations between the United States and Soviet Union in years preceding the end of the Cold War [465-466, 390-391].

World Peace – an Achievable Goal through the Maharishi Effect

With the discovery of the Maharishi Effect, world peace and prosperity become, for the first time, achievable and sustainable goals [471, 481]. Permanent maintenance of several groups

of 8,700 individuals collectively practising the Transcendental Meditation and TM-Sidhi programme—more than enough to generate a continuous powerful influence of coherence and positivity for the entire world—would cost no more than a few advanced military aircraft [392-393, 405]. Moreover, based on research findings on the Maharishi Effect, it can be anticipated that investment in establishing and maintaining coherence-creating groups will be readily recouped through the massive fiscal benefits consequent upon reduced conflict, increased international peace and cooperation, reduction of major social problems (such as crime, accidents, and unemployment), and improved economic performance.

References:

1. Orme-Johnson DW, Farrow JT. *Scientific Research on the Transcendental Meditation and TM-Sidhi programme: Collected Papers, Volume 1*. Rheinweiler, West Germany: MERU Press, 1977
2. Chalmers RA *et al. Scientific Research on the Transcendental Meditation and TM-Sidhi programme: Collected Papers, Volumes 2, 3 and 4*. Vlodrop, Netherlands: MERU Press, 1989
3. Wallace RK *et al. Scientific Research on the Transcendental Meditation and TM-Sidhi programme*: *Collected Papers, Volume 5*. Fairfield, Iowa: Maharishi University of Management Press, 1991.
4. Orme-Johnson DW. Medical care utilization and the Transcendental Meditation program. *Psychosomatic Medicine* 1987 49:493-507
5. Orme-Johnson DW, Herron R. An innovative approach to reducing medical care utilization and expenditures. *American Journal of Managed Care* 1997 3:135-144
6. Herron RE, Hillis SL. The impact of the Transcendental Meditation program on government payments to physicians in Quebec: an update—accumulative decline of 55% over a 6-year period. *American Journal of Health Promotion* 2000 14:284-291
7. Herron RE *et al*. The impact of the Transcendental Meditation program on government payments to physicians in Quebec. *American Journal of Health Promotion* 1996 10:208-216
8. Herron RE, Cavanaugh KL. Can the Transcendental Meditation program reduce medical expenditures of older people? A longitudinal cost-reduction study in Canada. *Journal of Social Behavior and Personality* 2005 17:415-442
9. Schneider RH *et al*. Stress reduction in the secondary prevention of cardiovascular disease: randomized, controlled trial of Transcendental Meditation and health education in blacks. *Circulation: Cardiovascular Quality and Outcomes* 2012 5:750-758
10. Schneider RH *et al*. A randomized controlled trial of stress reduction for hypertension in older African Americans. *Hypertension* 1995 26:820-827
11. Alexander CN *et al.* Trial of stress reduction for hypertension in older African Americans: II. Sex and risk subgroup analysis. *Hypertension* 1996 28:228-237
12. Alexander CN *et al*. Transcendental Meditation, mindfulness, and longevity: an experimental study with the elderly. *Journal of Personality and Social Psychology* 1989 57:950-964
13. Schneider RH *et al.* A randomized controlled trial of stress reduction in African Americans treated for hypertension for over one year. *American Journal of Hypertension* 2005 18:88-98
14. Herron R *et al*. Cost-effective hypertension management: comparison of drug therapies with an alternative program. *American Journal of Managed Care* 1996 2:427-437
15. Schneider RH *et al.* Long-term effects of stress reduction on mortality in persons >/=55 years of age with systemic hypertension. *American Journal of Cardiology* 2005 95:1060-1064
16. Barnes VA *et al*. Impact of Transcendental Meditation on mortality in older African Americans with hypertension—eight-year follow-up. *Journal of Social Behavior and Personality* 2005 17:201-216
17. Alexander CN *et al*. Randomized controlled trial of stress reduction on cardiovascular and all-cause mortality in the elderly: results of 8-year and 15-year follow-ups. *Circulation* 1996 93:629

18. Paul-Labrador M *et al.* Effects of a randomized controlled trial of Transcendental Meditation on components of the metabolic syndrome in subjects with coronary heart disease. *Archives of Internal Medicine* 2006 166:1218-1224
19. Castillo-Richmond A *et al*. Effects of stress reduction on carotid atherosclerosis in hypertensive African Americans. *Stroke* 2000 31:568-573
20. Fields JZ *et al.* Effect of a multimodality natural medicine program on carotid atherosclerosis in older subjects: a pilot trial of Maharishi Vedic Medicine. *American Journal of Cardiology* 2002 89:952-958
21. Jayadevappa R *et al*. Effectiveness of Transcendental Meditation on functional capacity and quality of life of African Americans with congestive heart failure: a randomized control study. *Ethnicity and Disease* 2007 17:72-77
22. Nidich SI, Rainforth MV, Haaga DA, Hagelin J, Salerno JW, Travis F, Tanner M, Gaylord-King C, Grosswald S, Schneider RH. A randomized controlled trial on effects of the Transcendental Meditation program on blood pressure, psychological distress, and coping in young adults. *American Journal of Hypertension* 2009 22:1326-1331
23. Barnes VA *et al.* Impact of Transcendental Meditation on cardiovascular function at rest and during acute stress in adolescents with high normal blood pressure. *Journal of Psychosomatic Research* 2001 51:597-605
24. Barnes VA *et al.* Impact of stress reduction on ambulatory blood pressure in African American adolescents. *American Journal of Hypertension* 2004 17:366-369
25. Wenneberg SR *et al.* A controlled study of the effects of Transcendental Meditation on cardiovascular reactivity and ambulatory blood pressure. *International Journal of Neuroscience* 1997 89:15-28
26. Zamarra JW *et al*. Usefulness of the Transcendental Meditation program in the treatment of patients with coronary artery disease. *American Journal of Cardiology* 1996 77:867-870
27. Cunningham CH *et al*. The effects of Transcendental Meditation on symptoms and electrocardiographic changes in patients with cardiac syndrome X: a pilot study. *American Journal of Cardiology* 2000 85:653-655
28. Walton KG *et al*. Lowering cortisol and CVD risk in postmenopausal women: a pilot study using the Transcendental Meditation program. *Annals of the New York Academy of Sciences* 2004 1032:211-215
29. Cooper M, Aygen M. Effect of meditation on serum cholesterol and blood pressure. *Harefuah, Journal of the Israel Medical Association* 1978 95:1-2
30. Cooper M, Aygen M. Transcendental Meditation in the management of hypercholesterolemia. *Journal of Human Stress* 1979 5:24-27
31. Bauhofer U. Das programm der Transzendentalen Meditation in der Behandlung von Adipositas. In *Collected Papers, Volume 3* (pp.2196-2206) – see reference 2
32. Rainforth MV *et al*. Stress reduction programs in patients with elevated blood pressure: a systematic review and meta-analysis. *Current Hypertension Reports* 2007 9:520-528
33. Anderson JW *et al*. Blood pressure response to Transcendental Meditation: a meta-analysis. *American Journal of Hypertension* 2008 21:310-316
34. Barnes VA, Orme-Johnson DW. Clinical and pre-clinical applications of the Transcendental Meditation program in the prevention and treatment of essential hypertension and cardiovascular disease in youth and adults. *Current Hypertension Reviews* 2006 2:207-218
35. Walton KG *et al*. Review of controlled research on the Transcendental Meditation program and cardiovascular disease—risk factors, morbidity and mortality. *Cardiology in Review* 2004 12:262-266
36. Walton KG *et al.* Psychosocial stress and cardiovascular disease part 2: effectiveness of the Transcendental Meditation program in treatment and prevention. *Behavioral Medicine* 2002 28:106-123
37. Walton KG *et al*. Psychosocial stress and cardiovascular disease 3: clinical and policy implications of research on the Transcendental Meditation program. *Behavioral Medicine* 2005 30:173-183
38. Schneider RH *et al.* Stress reduction in the prevention and treatment of cardiovascular disease in high risk underserved populations: a review of controlled research on the Transcendental Meditation program. *Journal of Social Behavior and Personality* 2005 17:159-180
39. Alexander CN *et al*. The effects of Transcendental Meditation compared to other methods of relaxation in reducing risk factors, morbidity, and mortality. *Homeostasis* 1994 352:243-264
40. Agarwal BL, Kharbanda A. Effect of transcendental meditation on mild and moderate hypertension. *Journal of the Association of Physicians of India* 1981 29:591-596

41. Barnes VA, Orme-Johnson DW. El impacto de la reduccion del estres en el hypertension esencial y las enfermedades cardiovasculares. *Revista Internacional De Ciencias Del Deporte* (International Journal of Sports Science) 2008 4:1-30
42. Schneider RH *et al.* Behavioral treatment of hypertensive heart disease in African Americans: rationale and design of a randomized controlled trial. *Behavioral Medicine* 2001 27:83-95
43. Orme-Johnson DW, Barnes VA, Schneider RH. Transcendental Meditation for primary and secondary prevention of coronary heart disease. In: R Allan, J Fisher (eds), *Heart & Mind: the Practice of Cardiac Psychology*, *2nd edition* (pp.365-379). Washington DC: American Psychological Association, 2011
44. Schneider RH *et al.* The Transcendental Meditation program: reducing the risk of heart disease and mortality and improving quality of life in African Americans. *Ethnicity and Disease* 2001 11:159-160
45. Barnes VA *et al.* Stress, stress reduction, and hypertension in African Americans. *Journal of the National Medical Association* 1997 89:464-476
46. Kondwani KA, Lollis CM. Is there a role for stress management in reducing hypertension in African Americans? *Ethnicity and Disease* 2001 11:788-792
47. King MS *et al.* Transcendental Meditation, hypertension and heart disease. *Australian Family Physician* 2002 31:164-168
48. Orme-Johnson DW *et al.* Reply to critics of research on Transcendental Meditation in the prevention and control of hypertension. *Journal of Hypertension* 2005 23:1107-1108
49. Walton KG *et al.* Stress reduction and preventing hypertension: preliminary support for a psychoneuroendocrine mechanism. *Journal of Alternative and Complementary Medicine* 1995 1:263-283
50. Calderon R *et al.* Stress, stress reduction and hypercholesterolemia in African Americans and whites: a review. *Ethnicity and Disease* 1999 9:451-462
51. James PA *et al.* Evidence-based guideline for the management of high blood pressure in adults. Report from the panel members appointed to the Eighth Joint National Committee (JNC 8). *Journal of the American Medical Association* 2014 311(5):507-520. doi:10.1001/jama.2013.284427
52. Schneider RH *et al.* In search of an optimal behavioral treatment for hypertension: a review and focus on Transcendental Meditation. In EH Johnson *et al.* (eds), *Personality, Elevated Blood Pressure, and Essential Hypertension* (pp.291-312). Washington DC: Hemisphere Publishing, 1992
53. Nidich SI, Fields JZ, Rainforth MV, Pomerantz R, Cella D, Kristeller J, Salerno JW, Schneider RH. A randomized controlled trial of the effects of Transcendental Meditation on quality of life in older breast cancer patients. *Integrative Cancer Therapies* 2009 8:228-234
54. Wilson AF *et al.* Transcendental Meditation and asthma. *Respiration* 1975 32:74-80
55. Elder C *et al*. Randomized trial of a whole-system Ayurvedic protocol for type 2 diabetes. *Alternative Therapies* 2006 12:24-30
56. Brooks JS, Scarano T. Transcendental Meditation in the treatment of post-Vietnam adjustment. *Journal of Counseling and Development* 1985 64:212-215
57. Lovell-Smith HD. Transcendental Meditation and three cases of migraine. *New Zealand Medical Journal* 1985 98:443-445
58. Farinelli L. Possibilità di applicazioni della technologia della coscienza in aspetti di medicina preventiva: una ricerca pilota. Doctoral thesis, Faculty of Medicine and Surgery, University of Padova at Verona, Italy. Summarized in *Collected Papers, Volume 3* (pp.1830-1846) – see reference 2
59. Doner DW. The Transcendental Meditation technique—a self-care program for the dialysis/transplant patient. *Journal of the American Association of Nephrology Nurses and Technicians* 1976 3:119-125
60. Alexander CN *et al*. Treating and preventing alcohol, nicotine, and drug abuse through Transcendental Meditation: a review and statistical meta-analysis. *Alcoholism Treatment Quarterly* 1994 11:13-87
61. Haratani T, Hemmi T. Effects of Transcendental Meditation on mental health of industrial workers. *Japanese Journal of Industrial Health* 1990 32:656
62. Haratani T, Hemmi T. Effects of Transcendental Meditation on health behavior of industrial workers. *Japanese Journal of Public Health* 1990 37:729
63. Royer A. The role of the Transcendental Meditation technique in promoting smoking cessation: a longitudinal study. *Alcoholism Treatment Quarterly* 1994 11:221-238

64. Gelderloos P *et al*. Effectiveness of the Transcendental Meditation program in preventing and treating substance misuse: a review. *International Journal of the Addictions* 1991 26:293-325
65. Jedrczak A *et al.* Transcendental Meditation and health: an overview of experimental research and clinical experience. *Health Promotion* 1988 2:369-376
66. Knight S. Use of Transcendental Meditation to relieve stress and promote health. *British Journal of Nursing* 1995 4:315-318
67. Ljunngren G. The influence of Transcendental Meditation on neuroticism, use of drugs and insomnia. *Lakartidningen* 1977 74:4212-4214
68. Fuson JW. The effect of the Transcendental Meditation program on sleeping and dreaming patterns. Doctoral dissertation, Yale Medical School, New Haven, Connecticut, USA, 1976. Summarized in *Collected Papers, Volume 2* (pp.880-896) – see reference 2
69. Browne GE *et al*. Improved mental and physical health and decreased use of prescribed and non-prescribed drugs through the Transcendental Meditation programme. In *Collected Papers, Volume 3* (pp.1884-1892) – see reference 2
70. Kirtane L. Transcendental Meditation: a multipurpose tool in clinical practice. In *Collected Papers, Volume 3* (pp.1826-1830) – see reference 2
71. Overbeck K-D. Auswirkungen der Technik der Transzendentalen Meditation (TM) auf die psychische und psychosomatische Befindlichkeit. *Psychotherapie-Psychosomatik Medizinische Psychologie* 1982 32:188-192
72. Heidelberg R. Transzendentale meditation in der geburtshilflichen psychoprophylaxe. MD thesis, Medical Faculty, Free University of Berlin, 1979. Summarized in *Collected papers, Volume 3* (pp.1792-1815) – see reference 2
73. Lovell-Smith HD. Transcendental Meditation—treating the patient as well as the disease. *New Zealand Family Physician* 1982 9:62-65
74. Scurfield L. Transcendental Meditation. *Australian Family Physician* 2001 30:735-736
75. Seiler G, Seiler V. The effects of Transcendental Meditation on periodontal tissue. *Journal of the American Society of Psychosomatic Dentistry and Medicine* 1979 26:8-12
76. Toane EB. The Transcendental Meditation program. *Canadian Medical Association Journal* 1976 114:1095-1096
77. Rasmussen SG *et al.* Præsentation af en sundhedsmodel. *Ugeskrift for Læger* 1983 145:1900-1902
78. Gräf D, Pfisterer G. Der Nutzen der Technik der Transzendentalen Meditation für die ärztliche Praxis. *Erfahrungsheilkunde* 1978 27:594-596
79. Stutz E. Transzendentale Meditation in der Behandlung Drogenabhängiger. *Das öffentliche Gesundheilswesen* 1977 39:759-766
80. Werner O. Das Programm der Transzendentalen Meditation in der Medizin. *Schweizerische Ärztezeitung* 1978 39:1722-1726
81. Blicher B *et al.* Méditation Transcendantale revue de la littérature scientifique. *Le Médecin du Québec* 1980 15:46-66
82. Stutz E. Transzendentale Meditation in der Medizin. *Medizinische Klinik* 1977 72:905-908
83. Gräf D. Die Technik der Transzendentalen Meditation und ihre Wirkungen auf die Gesundheit. *Erfahrungsheilkunde* 1978 27:99-102
84. Kanellakos DP. Transcendental consciousness: expanded awareness as a means of preventing and eliminating the effects of stress. In CD Speilberger, IG Sarason (eds), *Stress and Anxiety, Volume 5* (pp.261-315). Washington DC: Hemisphere Publishing Corporation, 1978
85. Gräf D. Die Transzendentale Meditation (TM) und ihre therapeutischen Möglichkeiten. *Zeitschrift für Allgemeinmedizin* 1978 54:701-709
86. Kroener D. Transzendentale Meditation und ihre Indikationen für den niedergelassenen Arzt. *Biologische Medizin* 1980 9:122-127
87. Subrahmanyam S, Porkodi K. Neurohumoral correlates of Transcendental Meditation. *Journal of Biomedicine* 1980 1:73-88
88. Sharma HM, Alexander CN. Maharishi Ayur-Veda research review. Part 1: Transcendental Meditation. *Complementary Medicine International* 1996 3:21-28

89. Walton KG, Pugh ND. Stress, steroids, and 'Ojas': neuroendocrine mechanisms and current promise of ancient approaches to disease prevention. *Indian Journal of Physiology and Pharmacology* 1995 39:3-36
90. Nader T *et al*. Improvements in chronic diseases with a comprehensive natural medicine approach: a review and case series. *Behavioral Medicine* 2000 26:34-46
91. Schneider RH *et al.* Disease prevention and health promotion in the aging with a traditional system of natural medicine: Maharishi Vedic Medicine. *Journal of Aging and Health* 2002 14:57-78
92. Schneider RH *et al*. Future trends in use—focus on a traditional system of natural medicine. In N Cherniack, P Cherniack (eds), *Alternative Medicine for the Elderly* (pp.73-87). New York: Springer-Verlag, 2003
93. Schneider RH *et al*. Cardiovascular disease prevention and health promotion with the Transcendental Meditation program and Maharishi Consciousness-Based Health Care. *Ethnicity & Disease* 2006 16 S4:15-26
94. Sharma H, Clark C. *Contemporary Ayurveda: Medicine and Research in Maharishi Ayur-Veda*. Philadelphia: Churchill Livingston, 1998
95. Wallace RK *et al.* The effects of the Transcendental Meditation and TM-Sidhi program on the aging process. *International Journal of Neuroscience* 1982 16:53-58
96. Toomey M *et al*. The practice of the Transcendental Meditation and TM-Sidhi programme reverses the physiological ageing process. In *Collected Papers, Volume 3* (pp.1871-1878) – see reference 2
97. Toomey M *et al*. The Transcendental Meditation and TM-Sidhi programme and reversal of the ageing process: a longitudinal study. In *Collected Papers, Volume 3* (pp.1878-1883) – see reference 2
98. Wallace RK *et al.* Systolic blood pressure and long-term practice of the Transcendental Meditation and TM-Sidhi program: effects of TM on systolic blood pressure. *Psychosomatic Medicine* 1983 45:41-46
99. Glaser JL *et al.* Elevated serum dehydroepiandrosterone sulfate levels in practitioners of the Transcendental Meditation (TM) and TM-Sidhi programs. *Journal of Behavioral Medicine* 1992 15:327-341
100. Smith D *et al.* Erythrocyte sedimentation rate and Transcendental Meditation. *Alternative Therapies in Clinical Practice* 1997 4:35-37
101. Jedrczak A *et al.* The TM-Sidhi programme, age, and brief tests of perceptual-motor speed and non-verbal intelligence. *Journal of Clinical Psychology* 1986 42:161-164
102. Goddard PH. Reduced age-related declines in P300 latency in elderly practicing Transcendental Meditation. *Psychophysiology* 1989 26:S29
103. McDonagh JM, Egenes T. The Transcendental Meditation technique and temperature homeostasis. In *Collected Paper, Volume 1* (pp.261-262) – see reference 1
104. Tabogi S. Effetti indotti dal programma di Meditazione Trascendentale sulla tolleranza glicidica. Doctoral thesis, Faculty of Medicine and Surgery, University of Trieste, Italy, 1983. Summarized in *Collected Papers, Volume 4* (pp.2289-2295) – see reference 2
105. Yee AC, Dissanayake AS. Glucose tolerance and the Transcendental Meditation program (a pilot study). Paper presented at the International Congress on Research on Higher States of Consciousness at the Faculty of Science, Mahidol University, Bangkok, Thailand, 4-6 December 1980. Also in *Collected Papers, Volume 3* (pp.1846-1850) – see reference 2
106. Van Wijk EP *et al*. Differential effects of relaxation techniques on ultraweak photon emission. *Journal of Alternative and Complementary Medicine* 2008 14:241-250
107. Van Wijk EP *et al*. Anatomical characterization of human ultraweak photon emission in practitioners of Transcendental Meditation and control subjects. *Journal of Alternative and Complementary Medicine* 2006 12:31-38
108. Schneider RH *et al.* Lower lipid peroxide levels in practitioners of the Transcendental Meditation program. *Psychosomatic Medicine* 1998 60:38-41
109. Nidich SI *et al.* Effect of the Transcendental Meditation program on intellectual development in community-dwelling older adults. *Journal of Social Behavior and Personality* 2005 17:217-226
110. Wallace RK. Physiological effects of Transcendental Meditation. *Science* 1970 167:1751-1754
111. Wallace RK *et al*. A wakeful hypometabolic physiologic state. *American Journal of Physiology* 1971 221:795-799
112. Wallace RK *et al*. The physiology of meditation. *Scientific American* 1972 226:84-90
113. Gallois P. Modifications neurophysiologiques et respiratoires lors de la pratique des techniques de relaxation. *L'Encephale* 1984 10:139-144

114. Dillbeck MC, Orme-Johnson DW. Physiological differences between Transcendental Meditation and rest. *American Psychologist* 1987 42:879-881
115. Travis FT. Relationship between meditation practice and transcendent states of consciousness. *Biofeedback* 2004 32:33-36
116. Jevning R *et al*. The physiology of meditation: a review. A wakeful hypometabolic integrated response. *Neuroscience and Biobehavioral Reviews* 1992 16:415-424
117. Travis FT, Pearson C. Pure consciousness: distinct phenomenological and physiological correlates of 'Consciousness Itself'. *International Journal of Neuroscience* 2000 100:77-89
118. Travis FT *et al.* Physiological patterns during practice of the Transcendental Meditation technique compared with patterns while reading Sanskrit and a modern language. *International Journal of Neuroscience* 2001 109:71-80
119. Travis F, Shear J. Focused attention, open monitoring and automatic self-transcending: categories to organize meditations from Vedic, Buddhist and Chinese traditions. *Consciousness and Cognition* 2010 19:1110-1118
120. Wilson AF *et al.* Marked reduction of forearm carbon dioxide production during states of decreased metabolism. *Physiology and Behavior* 1987 41:347-352
121. Wolkove N *et al.* Effect of Transcendental Meditation on breathing and respiratory control. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 1984 56:607-612
122. Jevning R *et al*. Metabolic control in a state of decreased activation: modulation of red cell metabolism. *American Journal of Physiology* 1983 245 (Cell Physiol.14):C457-C461
123. Jevning R *et al*. Modulation of red cell metabolism by states of decreased activation: comparison between states. *Physiology and Behavior* 1985 35:679-682
124. Jevning R *et al*. Redistribution of blood flow in acute hypometabolic behavior. *American Journal of Physiology* 1978 235:R89-R92
125. Jevning R *et al*. Muscle and skin blood flow and metabolism during states of decreased activation. *Physiology and Behavior* 1982 29:343-348
126. Jevning R *et al*. Forearm blood flow and metabolism during stylized and unstylized states of decreased activation. *American Journal of Physiology* 1983 245 (Regulatory Integrative Comp. Physiol.14):R110-R116
127. Jevning R *et al*. Effects on regional cerebral blood flow of Transcendental Meditation. *Physiology and Behavior* 1996 59:399-402
128. Barnes VA *et al.* Acute effects of Transcendental Meditation on hemodynamic functioning in middle-aged adults. *Psychosomatic Medicine* 1999 61:525-531
129. Travis FT, Wallace RK. Autonomic patterns during respiratory suspensions: possible markers of Transcendental Consciousness. *Psychophysiology* 1997 34:39-46
130. Badawi K *et al.* Electrophysiologic characteristics of respiratory suspension periods occurring during the practice of the Transcendental Meditation program. *Psychosomatic Medicine* 1984 46:267-276
131. Farrow JT, Hebert JR. Breath suspension during the Transcendental Meditation technique. *Psychosomatic Medicine* 1982 44:133-153
132. Garnier D *et al.* Pulmonary ventilation during the Transcendental Meditation technique: applications in preventive medicine. *Est-Medicine* 1984 4:867-870
133. Allison J. Respiratory changes during Transcendental Meditation. *Lancet* 1970 7651:833
134. Farrell DJ. The reduction in metabolic rate and heart rate of man during meditation. In LE Mount (ed.), *Energy Metabolism* (pp.279-282). EAAP Publication # 26. London: Butterworth & Co., 1980
135. Jevning R *et al*. Adrenocortical activity during meditation. *Hormones and Behavior* 1978 10:54-60
136. Jevning R *et al*. The Transcendental Meditation technique, adrenocortical activity, and implications for stress. *Experientia* 1978 34:618-619
137. Infante JR *et al.* Catecholamine levels in practitioners of the Transcendental Meditation technique. *Physiology and Behavior* 2001 72:141-146
138. Infante JR, Peran F, Rayo JI, Serrano J, Dominguez ML, Garcia L, Duran C, Sanchez R, Roldan A. Daytime hormonal rhythms in practitioners of the Transcendental Meditation-Sidhi program. *Biomedical Research* 2010 21:161-166

139. Infante JR, Peran F, Martinez M, Roldan A, Poyatos R, Ruiz C *et al.* ACTH and beta-endorphin in Transcendental Meditation. *Physiology and Behavior* 1998 64:311-315
140. Tooley GA *et al.* Acute increases in night-time plasma melatonin levels following a period of meditation. *Biological Psychology* 2000 53:69-78
141. Bujatti M, Riederer P. Serotonin, noradrenaline, dopamine metabolites in Transcendental Meditation. *Journal of Neural Transmission* 1976 39:257-267
142. Elias AN, Wilson AF. Serum hormonal concentrations following Transcendental Meditation: potential role of gamma aminobutyric acid. *Medical Hypotheses* 1995 44:287-291
143. Elias AN *et al*. Ketosis with enhanced GABAergic tone promotes physiological changes in Transcendental Meditation. *Medical Hypotheses* 2000 54:660-662
144. O'Halloran JP *et al.* Hormonal control in a state of decreased activation: potentiation of arginine vasopressin secretion. *Physiology and Behavior* 1985 35:591-595
145. Lang R *et al.* Sympathetic activity and Transcendental Meditation. *Journal of Neural Transmission* 1979 44:117-135
146. Jevning R *et al*. Plasma thyroid hormones, thyroid stimulating hormone, and insulin during acute hypometabolic state in man. *Physiology and Behavior* 1987 40:603-606
147. Jevning R *et al*. Plasma prolactin and growth hormone during meditation. *Psychosomatic Medicine* 1978 40:329-333
148. Jevning R *et al*. Behavioural alteration of plasma phenylalanine concentration. *Physiology and Behavior* 1977 19:611-614
149. McCuaig LW. Salivary electrolytes, proteins and pH during Transcendental Meditation. *Experientia* 1974 30:988-989
150. Kemmerling T. Wirkung der Transzendentalen Meditation auf den Muskeltonus. *Psychopathometrie* 1978 4:437-438
151. Travis FT *et al.* A self-referential default brain state: patterns of coherence, power, and eLORETA sources during eyes-closed rest and the Transcendental Meditation practice. *Cognitive Processing* 2010 11:21-30
152. Hebert JR *et al.* Enhanced EEG alpha time-domain phase synchrony during Transcendental Meditation: implications for cortical integration theory. *Signal Processing* 2005 85:2213-2232
153. Yamamoto S *et al.* Medial prefrontal cortex and anterior cingulate cortex in the generation of alpha activity induced by Transcendental Meditation: a magnetoencephalographic study. *Acta Medica Okayama* 2006 60:51-58
154. Travis F, Arenander A. Cross-sectional and longitudinal study of effects of Transcendental Meditation practice on interhemispheric frontal asymmetry and frontal coherence. *International Journal of Neuroscience* 2006 116:1519-38
155. Travis FT. Autonomic and EEG patterns distinguish transcending from other experiences during Transcendental Meditation practice. *International Journal of Psychophysiology* 2001 42:1-9
156. Arenander A, Travis FT. *Brain patterns of Self-awareness*. In B Beitman, J Nair (eds), *Self-Awareness Deficits*. New York: WW Norton, 2004
157. Banquet JP, Sailhan M. Analyse E.E.G. d'états de conscience induits et spontanés. *Revue d'Electroencéphalographie et de Neurophysiologie Clinique* 1974 4:445-453
158. Banquet JP. Spectral analysis of the EEG in meditation. *Electroencephalography and Clinical Neurophysiology* 1973 35:143-151
159. Levine PH. The coherence spectral array (COSPAR) and its application to the spatial ordering of the EEG. *Proceedings of the San Diego Biomedical Symposium* 1976 15:237-247
160. Dillbeck MC, Bronson EC. Short-term longitudinal effects of the Transcendental Meditation technique on EEG power and coherence. *International Journal of Neuroscience* 1981 14:147-151
161. Travis FT *et al.* Cortical plasticity, contingent negative variation, and transcendent experiences during practice of the Transcendental Meditation technique. *Biological Psychology* 2000 55:41-55
162. Travis FT, Wallace RK. Autonomic and EEG patterns during eyes-closed rest and Transcendental Meditation (TM) practice: a basis for a neural model of TM practice. *Consciousness and Cognition* 1999 8:302-18
163. Lyubimov NN. Changes in electroencephalogram and evoked potentials during application of a special form of psychological training (meditation). *Human Physiology (Fiziologiya Cheloveka)* 1999 25:171-180

164. Istratov EN *et al.* Dynamic characteristics of modified consciousness during and after Transcendental Meditation. *Bulletin of Experimental Biology and Medicine* 1996 121:117–119. (Translated from *Byulleten' Eksperimental'noi Biologii i Meditsiny* 1996 121:128-130)
165. Hebert JR, Lehmann D. Theta bursts: an EEG pattern in normal subjects practising the Transcendental Meditation technique. *Electroencephalography and Clinical Neurophysiology* 1977 42:397-405
166. Newberg AB *et al.* Cerebral glucose metabolic changes associated with a meditation based relaxation technique. *Society of Nuclear Medicine* 2006 47:314P
167. Wandhofer A *et al.* Shortening of latencies of human auditory evoked brain potentials during the Transcendental Meditation technique. *Zeitschrift für Elektroenzephalographie und Elektromyographie EEG-EMG* 1976 7:99-103
168. McEvoy TM *et al.* Effects of meditation on brainstem auditory evoked potentials. *International Journal of Neuroscience* 1980 10:165-170
169. Orme-Johnson DW, Gelderloos P. Topographic brain mapping during Yogic Flying. *International Journal of Neuroscience* 1988 38:427-434
170. Gaylord C *et al.* The effects of the Transcendental Meditation technique and progressive muscular relaxation on EEG coherence, stress reactivity, and mental health in black adults. *International Journal of Neuroscience* 1989 46:77-86
171. Travis FT, Orme-Johnson DW. EEG coherence and power during Yogic Flying: investigating the mechanics of the TM-Sidhi program. *International Journal of Neuroscience* 1990 54:1-12
172. Orme-Johnson DW, Haynes CT. EEG phase coherence, pure consciousness, creativity, and TM-Sidhi experiences. *International Journal of Neuroscience* 1981 13:211-217
173. Nidich S *et al.* Kohlbergian moral perspective responses, EEG coherence, and the Transcendental Meditation and TM-Sidhi program. *Journal of Moral Education* 1983 12:166-173
174. Dillbeck MC, Araas-Vesely S. Participation in the Transcendental Meditation program and frontal EEG coherence during concept learning. *International Journal of Neuroscience* 1986 29:45-55
175. Dillbeck MC *et al.* Frontal EEG coherence, H-reflex recovery, concept learning, and the TM-Sidhi program. *International Journal of Neuroscience* 1981 15:151-157
176. Orme-Johnson DW *et al*. Intersubject EEG coherence: is consciousness a field? *International Journal of Neuroscience* 1982 16:203-209
177. Travis FT, Orme-Johnson DW. Field model of consciousness: EEG coherence changes as indicators of field effects. *International Journal of Neuroscience* 1989 49:203-211
178. Travis F *et al.* Effects of Transcendental Meditation practice on brain functioning and stress reactivity in college students. *International Journal of Psychophysiology* 2009 71:170-176
179. Orme-Johnson DW *et al*. Neuroimaging of meditation's effect on brain reactivity to pain. *NeuroReport* 2006 17:1359-1363
180. Travis FT *et al.* Patterns of EEG coherence, power and contingent negative variation characterize the integration of transcendental and waking states. *Biological Psychology* 2002 61:293-319
181. Mason LI *et al*. Electrophysiological correlates of higher states of consciousness during sleep in long-term practitioners of the Transcendental Meditation program. *Sleep* 1997 20:102-110
182. Mason LI, Orme-Johnson DW. Transcendental consciousness wakes up in dreaming and deep sleep. *International Journal of Dream Research* 2010 3:28-32
183. Williams P, West M. EEG responses to photic stimulation in persons experienced at meditation. *Electroencephalography and Clinical Neurophysiology* 1975 39:519-522
184. Banquet JP, Lesèvre N. Event-related potentials in altered states of consciousness. *Progress in Brain Research* 1980 54:447-453
185. Bennett JE, Trinder J. Hemispheric laterality and cognitive style associated with Transcendental Meditation. *Psychophysiology* 1977 14:293-296
186. Travis FT, Tecce JJ. Effects of distracting stimuli on CNV amplitude and reaction time. *International Journal of Psychophysiology* 1998 31:45-50
187. Travis FT. The junction point model: a field model of waking, sleeping, and dreaming relating dream witnessing, the waking/sleeping transition, and Transcendental Meditation in terms of a common psychophysiologic state. *Dreaming* 1994 4:91-104

188. Travis F *et al.* Psychological and physiological characteristics of a proposed Object-Referral/Self-Referral continuum of self-awareness. *Consciousness and Cognition* 2004 13:401-420

189. Orme-Johnson DW, Walton KG. All approaches to preventing and reversing the effects of stress are not the same. *American Journal of Health Promotion* 1998 12:297-299

190. MacLean CR *et al*. Effects of the Transcendental Meditation program on adaptive mechanisms: changes in hormone levels and responses to stress after four months of practice. *Psychoneuroendocrinology* 1997 22:277-295

191. MacLean CR *et al*. Altered responses of cortisol, GH, TSH and testosterone to acute stress after four months' practice of Transcendental Meditation (TM). *Annals of the New York Academy of Sciences* 1994 746:381-384

192. Levitsky DK. Effects of the Transcendental Meditation program on neuroendocrine indicators of chronic stress (dehydroepiandrosterone, tension, anxiety). Doctoral dissertation, Maharishi University of Management, Fairfield, Iowa, USA. Ann Arbor, Michigan: *UMI Dissertation Services*, no. 9806955, 1998

193. Werner OR *et al.* Long-term endocrinologic changes in subjects practising the Transcendental Meditation and TM-Sidhi program. *Psychosomatic Medicine* 1986 48:59-66

194. Orme-Johnson DW. Autonomic stability and Transcendental Meditation. *Psychosomatic Medicine* 1973 35:341-349

195. Mills PJ *et al.* Beta-adrenergic receptor sensitivity in subjects practicing Transcendental Meditation. *Journal of Psychosomatic Research* 1990 34:29-33

196. Walton KG *et al.* Effect of group practice of the Transcendental Meditation program on biochemical indicators of stress in non-meditators: a prospective time series study. *Journal of Social Behavior and Personality* 2005 17:339-376

197. Warshal D. Effects of the Transcendental Meditation technique on normal and Jendrassik reflex time. *Perceptual and Motor Skills* 1980 50:1103-1106

198. Wallace RK *et al.* Modification of the paired H-reflex through the Transcendental Meditation and TM-Sidhi program. *Experimental Neurology* 1983 79:77-86

199. Wallace RK *et al*. Academic achievement and the paired Hoffman reflex in students practicing meditation. *International Journal of Neuroscience* 1984 24:261-266

200. Eppley K *et al*. Differential effects of relaxation techniques on trait anxiety: a meta-analysis. *Journal of Clinical Psychology* 1989 45:957-974

201. Alexander CN *et al*. Transcendental Meditation, self-actualization, and psychological health: a conceptual overview and statistical meta-analysis. *Journal of Social Behavior and Personality* 1991 6:189-247

202. Ferguson PC. An integrative meta-analysis of psychological studies investigating the treatment outcomes of meditation techniques. Doctoral thesis, School of Education, University of Colorado, Boulder, Colorado, USA, 1981. Summarized in *Collected Papers, Volume 3* (pp.2039-2049) – see reference 2

203. Chandler HM *et al.* Transcendental Meditation and postconventional self-development: a 10-year longitudinal study. *Journal of Social Behavior and Personality* 2005 17:93-122

204. Travis FT. Transcendental Meditation technique. In WE Craighead, CB Nemeroff (eds), *The Corsini Encyclopedia of Psychology and Behavioral Science* (3rd ed., pp.1705-1706). New York: John Wiley & Sons, 2001

205. Travis FT, Brown S. My brain made me do it: brain maturation and levels of self-development. In AH Pfaffenberger, PW Marko, T Greening (eds), *The Postconventional Personality: Perspectives on Higher Development* (pp.23-38). New York: SUNY Press, 2011

206. Alexander CN. Transcendental Meditation. In RJ Corsini (ed.), *Encyclopedia of Psychology* (2nd ed., pp.5465-5466). New York: Wiley Interscience, 1994

207. Alexander CN *et al*. Transcendental Consciousness: a fourth major state of consciousness beyond sleep, dreaming, and waking. In J Gackenbach (ed.), *Sleep and Dreams: A Sourcebook* (pp.282-312). New York: Garland, 1987

208. Dillbeck MC, Alexander CN. Higher states of consciousness: Maharishi Mahesh Yogi's Vedic psychology of human development. *The Journal of Mind and Behavior* 1989 10:307-334

209. Orme-Johnson DW. An overview of Charles Alexander's contribution to psychology: developing higher states of consciousness in the individual and the society. *Journal of Adult Development* 2000 7:199-215

210. Orme-Johnson DW *et al*. Maharishi's Vedic Psychology: the science of the cosmic psyche. In HS Kao, D Sinha (eds), *Asian Perspectives on Psychology* (pp.282-308). New Delhi, India: Sage Publications, 1997
211. Berg WP, Mulder B. Psychological research on the effects of the Transcendental Meditation technique on a number of personality variables. *Gedrag: Tijdschrift voor Psychologie* (Behaviour: Journal of Psychology) 1976 4:206-218
212. Ferguson PC, Gowan JC. Psychological findings on Transcendental Meditation. *Journal of Humanistic Psychology* 1976 16:51-60
213. Gelderloos P, Beto ZH. The Transcendental Meditation and TM-Sidhi program and reported experiences of transcendental consciousness. *Psychologia* 1989 32:91-103
214. Gelderloos P *et al*. Transcendence and psychological health: studies with long-term participants of the Transcendental Meditation and TM-Sidhi program. *Journal of Psychology* 1990 124:177-197
215. Hanley CP, Spates JL. Transcendental Meditation and social psychological attitudes. *Journal of Psychology* 1978 99:121-127
216. Hjelle JA. Transcendental Meditation and psychological health. *Perceptual and Motor Skills* 1974 39:623-628
217. Penner WJ et al. Does an in-depth Transcendental Meditation course effect change in the personalities of the participants? *Western Psychologist* 1974 4:104-111
218. Seeman W *et al.* Influence of Transcendental Meditation on a measure of self-actualization. *Journal of Counseling Psychology* 1972 19:184-187
219. Nidich SI *et al.* Influence of Transcendental Meditation: a replication. *Journal of Counseling Psychology* 1973 20:565-566
220. Turnbull M, Norris H. Effects of Transcendental Meditation on self-identity indices and personality. *British Journal of Psychology* 1982 73:57-69
221. Tanner MA *et al.* The effects of the Transcendental Meditation program on mindfulness. *Journal of Clinical Psychology* 2009 65:574-589
222. Alexander CN *et al.* Effect of practice of the children's Transcendental Meditation technique on cognitive stage development: acquisition and consolidation of conservation. *Journal of Social Behavior and Personality* 2005 17:21-46
223. Aron A *et al.* The Transcendental Meditation program in the college curriculum: a four-year longitudinal study of effects on cognitive and affective functioning. *College Student Journal* 1981 15:140-146
224. Brown M. Higher education for higher consciousness: a study of students at Maharishi International University. Doctoral dissertation, University of California at Berkeley, California, USA. *Dissertation Abstracts International* 1976 38:649A-650A. Summarized in *Collected Papers, Volume 2* (pp.985-1000) – see reference 2
225. Handmacher BH. Length of time spent in the practice of Transcendental Meditation and sex differences related to intrapersonal and interpersonal orientation. Doctoral thesis, College of Education and Departments of Psychology and Sociology, The Ohio State University, Columbus, Ohio, USA. *Dissertation Abstracts International* 1978 39:676A. Summarized in *Collected Papers, Volume 3* (pp.2020-2028) – see reference 2
226. Gelderloos P *et al*. Cognitive orientation towards positive values in advanced participants of the TM and TM-Sidhi program. *Perceptual and Motor Skills* 1987 64:1003-1012
227. Nidich S *et al.* Moral development and higher states of consciousness. *Journal of Adult Development* 2000 7:217-225
228. Nidich RJ *et al.* Moral development and natural law. *Journal of Social Behavior and Personality* 2005 17:137-149
229. Nystul MS, Garde M. Comparison of self-concepts of Transcendental Meditators and nonmeditators. *Psychological Reports* 1977 41:303-306
230. Travis FT *et al*. The significance of Transcendental Consciousness for addressing the 'hard' problem of consciousness. *Journal of Social Behavior and Personality* 2005 17:123-135
231. Alexander CN, Langer EJ (eds). *Higher stages of human development: Perspectives on adult growth.* New York: Oxford University Press, 1990
232. Alexander CN *et al.* Growth of higher stages of consciousness: Maharishi's Vedic psychology of human development. In CN Alexander, EJ Langer (eds), *Higher stages of human development: Perspectives on adult growth* (pp.286-341). New York: Oxford University Press, 1990

233. Alexander CN *et al.* Major issues in the exploration of adult growth. In CN Alexander, EJ Langer (eds), *Higher stages of human development: Perspectives on adult growth* (pp.3-32). New York: Oxford University Press, 1990
234. Alexander CN *et al.* Advanced human development in the Vedic Psychology of Maharishi Mahesh Yogi: theory and research. In ME Miller, SR Cook-Greuter (eds), *Transcendence and mature thought in adulthood: The further reaches of adult development* (pp.39-70). Lanham, Maryland: Rowman & Littlefield, 1994
235. Nidich SI. A study of the relationship of the Transcendental Meditation program to Kohlberg's stages of moral reasoning. Doctoral thesis. Department of Learning and Development, College of Education, University of Cincinnati, Ohio, USA. *Dissertation Abstracts International* 1975 36:4361A-4362A. Summarized in *Collected Papers, Volume 1* (pp.585-593) – see reference 1
236. Travis FT. From I to I: concepts of Self on an object-referral/ self-referral continuum. In AP Prescott (ed.), *The Concept of Self in Psychology*. New York: Nova Publishing, 2006
237. Dillbeck MC. Testing the Vedic Psychology of the Bhagavad-Gita. *Psychologia* 1983 26:232-240
238. Dillbeck MC. The concept of self in the Bhagavad-Gita and in the Vedic psychology of Maharishi Mahesh Yogi: a further note on testability. *Psychologia* 1990 33:50-56
239. Alexander CN, Sands D. Meditation and relaxation. In FN McGill (ed.), *McGill's Survey of the Social Sciences: Psychology* (pp. 1499-1505). Pasadena, California: Salem Press, 1993
240. Dillbeck MC. The effect of the Transcendental Meditation technique on anxiety level. *Journal of Clinical Psychology* 1977 33:1076-1078
241. Candelent T, Candelent G. Teaching Transcendental Meditation in a psychiatric setting. *Hospital and Community Psychiatry* 1975 26:156-159
242. Nidich SI et al. Reduced symptoms of depression in older minority subjects at risk for cardiovascular disease: randomized controlled mind-body intervention trials. Paper presented at 31st Annual Meeting of the Society of Behavioral Medicine, 9 April 2010, Seattle, Washington, USA.
243. Davis L. Management of depression in general practice. *British Medical Journal* 1986 292:64
244. Kniffki C. Transzendentale Meditation und Autogenes Training—ein Vergleich. In series *Geist und Psyche*. Munich: Kindler Verlag, 1979
245. Ottoson J-O. Transcendental Meditation. Swedish National Health Board publication: *Socialstyrelsen*, 1977 D: nr SN 3-9-1194/73. Summarized in Suurküla J. The Transcendental Meditation technique and the prevention of psychiatric illness. In *Collected Papers, Volume 2* (pp.896-897) – see reference 2
246. Geisler M. Therapeutische Wirkungen der Transzendentalen Meditation auf Drogenkonsumenten. *Zeitschrift für Klinische Psychologie* 1978 7:235-255
247. Shafii M *et al.* Meditation and marijuana. *American Journal of Psychiatry* 1974 131:60-63
248. Shafii M *et al.* Meditation and the prevention of alcohol abuse. *American Journal of Psychiatry* 1975 132:942-945
249. Monahan R. Secondary prevention of drug dependency through the Transcendental Meditation program in metropolitan Philadelphia. *International Journal of the Addictions* 1977 12:729-754
250. Aron A, Aron EN. The pattern of reduction of drug and alcohol use among Transcendental Meditation participants. *Bulletin of the Society of Psychologists in Addictive Behaviors* 1983 2:28-33
251. Aron A, Aron EN. The Transcendental Meditation program's effect on addictive behavior. *Addictive Behaviors* 1980 5:3-12
252. Hawkins MA. Effectiveness of the Transcendental Meditation program in criminal rehabilitation and substance abuse recovery: a review of the research. *Journal of Offender Rehabilitation* 2003 36:47-66
253. O'Connell DF, Alexander CN (eds). *Self recovery: Treating addictions using Transcendental Meditation and Maharishi Ayur-Veda.* New York: Haworth Press, 1994
254. O'Connell DF. The use of Transcendental Meditation in relapse prevention counseling. *Alcoholism Treatment Quarterly* 1991 8:53-68
255. O'Connell DF. Possessing the Self: Maharishi Ayur-Veda and the process of recovery from addictive diseases. *Alcoholism Treatment Quarterly* 1994 11:459-495
256. Orme-Johnson D. Transcendental Meditation as an epidemiological approach to drug and alcohol abuse: theory, research, and financial impact evaluation. *Alcoholism Treatment Quarterly* 1994 11:119-168

257. Sharma HM *et al.* Implementation of the Transcendental Meditation program and Maharishi Ayur-Veda to prevent alcohol and drug abuse among juveniles at risk. *Alcoholism Treatment Quarterly* 1994 11:429-457

258. Staggers Jr F *et al.* Importance of reducing stress and strengthening the host in drug detoxification: the potential offered by Transcendental Meditation. *Alcoholism Treatment Quarterly* 1994 11:297-331

259. Taub E *et al.* Effectiveness of broad spectrum approaches to relapse prevention in severe alcoholism: a long-term, randomised, controlled trial of Transcendental Meditation, EMG biofeedback and electronic neurotherapy. *Alcoholism Treatment Quarterly* 1994 11:187-220

260. Bleick CR. Case histories: using the Transcendental Meditation program with alcoholics and addicts. *Alcoholism Treatment Quarterly* 1994 11:243-269

261. Ellis GA, Corum P. Removing the motivator: a holistic solution to substance abuse. *Alcoholism Treatment Quarterly* 1994 11:271-296

262. Wallace RK. Decreased drug abuse with Transcendental Meditation: a study of 1,862 subjects. In CJ Zarafonetis (ed.), *Drug Abuse: Proceedings of the International Conference* (pp.369-376). Philadelphia: Lea and Febiger, 1972

263. Walton KG, Levitsky D. A neuroendocrine mechanism for the reduction of drug use and addictions by Transcendental Meditation. *Alcoholism Treatment Quarterly* 1994 11:89-117

264. Marcus JB. Transcendental Meditation: a new method of reducing drug abuse. *Drug Forum* 1974 3:113-136

265. Clements G *et al*. The use of the Transcendental Meditation programme in the prevention of drug abuse and in the treatment of drug-addicted persons. *Bulletin on Narcotics* 1988 40:51-56

266. So KT, Orme-Johnson DW. Three randomized experiments on the holistic longitudinal effects of the Transcendental Meditation technique on cognition. *Intelligence* 2001 29:419-440

267. Tjoa A. Increased intelligence and reduced neuroticism through the Transcendental Meditation program. *Gedrag: Tijdschrift voor Psychologie* (Behaviour: Journal of Psychology) 1975 3:167-182

268. Fergusson LC *et al.* Vedic science based education and nonverbal intelligence: a preliminary longitudinal study in Cambodia. *Higher Education Research and Development* 1995 15:73-82

269. Fergusson LC *et al.* Personality and health characteristics of Cambodian undergraduates: a case study of student development. *Journal of Instructional Psychology* 1995 22:308-319

270. Cranson RW *et al.* Transcendental Meditation and improved performance on intelligence-related measures: a longitudinal study. *Journal of Personality and Individual Differences* 1991 12:1105-1116

271. Kember P. The Transcendental Meditation technique and postgraduate academic performance. *British Journal of Educational Psychology* 1985 55:164-166

272. Nidich S *et al.* School effectiveness: achievement gains at the Maharishi School of the Age of Enlightenment. *Education* 1986 107:49-54

273. Nidich SI, Nidich RJ. Increased academic achievement at Maharishi School of the Age of Enlightenment: a replication study. *Education* 1989 109:302-304

274. Fergusson LC. Field independence, Transcendental Meditation, and achievement in college art: a re-examination. *Perceptual and Motor Skills* 1993 77:1104-1106

275. Dillbeck MC *et al.* Longitudinal effects of the TM and TM-Sidhi program on cognitive ability and style. *Perceptual and Motor Skills* 1986 62:731-738

276. Dillbeck MC. Meditation and flexibility of visual perception and verbal problem solving. *Memory and Cognition* 1982 10:207-215

277. Shecter HW. A psychological investigation into the source of the effect of the Transcendental Meditation technique. Doctoral dissertation, Graduate Department of Psychology, York University, North York, Ontario, Canada, 1975. *Dissertation Abstracts International* 1978 38:3372B-3373B. Summarized in *Collected Papers, Volume 1* (pp.403-409) – see reference 1

278. Travis FT. Creative thinking and the Transcendental Meditation technique. *Journal of Creative Behavior* 1979 13:169-180

279. Kotchabhakdi NJ *et al*. Improvement of intelligence, learning ability and moral judgment through the practice of the Transcendental Meditation technique. In *Proceedings of the Second Asian Workshop on Child and Adolescent Development,* Bangkok and Bangsaen, Thailand, 15-24 February 1982. Bangkok: Sri Nakharinwirot University. Also in *Collected Papers, Volume 3* (pp.1998-2011) – see reference 2

280. Dixon C *et al*. Accelerating cognitive and self development: longitudinal studies with preschool and elementary school children. *Journal of Social Behavior and Personality* 2005 17:65-91

281. Benn R. Transcendental Meditation (TM) and emotional functioning in fifth grade students. *Focus on Alternative and Complementary Therapies* 2003 8:480-481

282. Rosaen C, Benn R. The experience of Transcendental Meditation in middle school students: a qualitative report. *Explore* 2006 2:422-425

283. Jedrczak A *et al.* The TM-Sidhi program, pure consciousness, creativity and intelligence. *Journal of Creative Behavior* 1985 19:270-275

284. Abrams AI. Paired-associate learning and recall: a pilot study of the Transcendental Meditation program. In *Collected Papers, Volume 1* (pp.377-381) – see reference 1

285. Miskiman DE. The effect of the Transcendental Meditation program on the organization of thinking and recall (secondary organization). In *Collected Papers, Volume 1* (pp.385-392) – see reference 1

286. Dillbeck MC *et al*. The Transcendental Meditation program as an educational technology: research and applications. *Educational Technology* 1979 19:7-13

287. Schmidt-Wilk J *et al*. Higher education for higher consciousness: Maharishi University of Management as a model for spirituality in management education. *Journal of Management Education* 2000 25:580-611

288. Barnes VA *et al.* Impact of stress reduction on negative school behavior in adolescents. *Health and Quality of Life Outcomes* 2003 1:10

289. Grosswald SJ *et al.* Use of the Transcendental Meditation technique to reduce symptoms of Attention Deficit Hyperactivity Disorder (ADHD) by reducing stress and anxiety: an exploratory study. *Current Issues in Education* [On-line] 2008 10(2). Available: http://cie.ed.asu.edu/volume10/number2/

290. Jackson Y. Learning disorders and the Transcendental Meditation program: retrospects and prospects. A preliminary study with economically deprived adolescents. Doctoral thesis (summary), University of Massachusetts, Amherst, Massachusetts, USA. *Dissertation Abstracts International* 1977 38:3351A. Summarized in *Collected Papers, Volume 2* (pp.1000-1012) – see reference 2

291. Overbeck KD, Tönnies SE. Einige effekte der transzendentalen meditation bei lernbehinderten sonderschülern. Diplomarbeit of first author, Psychologisches Institut III, University of Hamburg, West Germany, 1975. Summarized in *Collected Papers, Volume 2* (pp.963-968) – see reference 2

292. Eyerman J. Transcendental Meditation and mental retardation. *Journal of Clinical Psychiatry* 1981 42:35-36

293. Wood MF. The effectiveness of Transcendental Meditation as a means of improving the echolalic behavior of an autistic student. Paper presented at the International Symposium on Autism Research, Boston, Massachusetts, USA, 14 July 1981. Also in *Collected Papers, Volume 3* (pp.1983-1989) – see reference 2

294. Allen CP. Effects of Transcendental Meditation, electromyographic (EMG) biofeedback relaxation, and conventional relaxation on vasoconstriction, muscle tension, and stuttering: a quantitative comparison. Doctoral dissertation, University of Michigan, Ann Arbor, Michigan, USA. *Dissertation Abstracts International* 1979 40:689B. Summarized in *Collected Papers, Volume 4* (pp.2287-2289) – see reference 2

295. Jones C *et al.* Attacking crime at its source: consciousness-based education in the prevention of violence and anti-social behavior. *Journal of Offender Rehabilitation* 2003 36:229-256

296. Appelle S, Oswald LE. Simple reaction time as a function of alertness and prior mental activity. *Perceptual and Motor Skills* 1974 38:1263-1268

297. Holt WR *et al.* Transcendental Meditation vs pseudo-meditation on visual choice reaction time. *Perceptual and Motor Skills* 1978 46:726

298. Jedrczak A. The Transcendental Meditation and TM-Sidhi program and field independence. *Perceptual and Motor Skills* 1984 59:999-1000

299. Pelletier KR. Influence of Transcendental Meditation upon autokinetic perception. *Perceptual and Motor Skills* 1974 39:1031-1034

300. Gelderloos P *et al.* Field independence of students at Maharishi School of the Age of Enlightenment and a Montessori school. *Perceptual and Motor Skills* 1987 65:613-614

301. Jhansi Rani N, Krishna Rao PV. Meditation and attention regulation. *Journal of Indian Psychology* 1996 14:26-30

302. Jhansi Rani N, Krishna Rao PV. Effects of meditation on attention processes. *Journal of Indian Psychology* 2000 18:52-60

303. Sridevi K, Krishna Rao PV. Temporal effects of meditation and personality. *Psychological Studies* 1998 43:95-105
304. Sridevi K, Krishna Rao PV. Temporal effects of meditation on cognitive style. *Journal of Indian Psychology* 2003 21:38-51
305. Pagano RR, Frumkin LR. The effects of Transcendental Meditation on right hemispheric functioning. *Biofeedback and Self-Regulation* 1977 2:407-415
306. Daniels D. Comparison of the Transcendental Meditation technique to various relaxation procedures. In *Collected Papers, Volume 2* (pp.864-871) – see reference 2
307. Friend KE, Maliszewski M. More on the reliability of the kinesthetic after-effects measure and need for stimulation. *Journal of Personality Assessment* 1978 42:385-391
308. Martinetti RF. Influence of Transcendental Meditation on perceptual illusion. *Perceptual and Motor Skills* 1976 43:822
309. Antes M. The effects of the TM-Sidhi programme on rigidity-flexibility. Diplomarbeit, Department of Psychology, University of Saarland, Saarbrücken, Germany. Summarized in *Collected Papers, Volume 3* (pp.1913-1920) – see reference 2
310. Rimol AGP. The Transcendental Meditation technique and its effects on sensory-motor performance. In *Collected Papers: Volume 1* (pp.326-330) – see reference 1
311. Blasdell KS. The effects of the Transcendental Meditation technique upon a complex perceptual-motor task. In *Collected Papers: Volume 1* (pp.322-325) – see reference 1
312. Mills WW, Farrow JT. The Transcendental Meditation technique and acute experimental pain. *Psychosomatic Medicine* 1981 43:157-164
313. Travis FT *et al*. Invincible Athletics program: aerobic exercise and performance without strain. *International Journal of Neuroscience* 1996 85:301-308
314. Reddy MK *et al.* The effects of the Transcendental Meditation program on athletic performance. In *Collected Papers: Volume 1* (pp.346-358) – see reference 1
315. Reddy MK. The role of the Transcendental Meditation program in the promotion of athletic excellence: long- and short-term effects and their relation to activation theory. *In Collected Papers*, *Volume 2* (pp.907-948) – see reference 2
316. Alexander CN *et al*. Effects of the Transcendental Meditation program on stress reduction, health, and employee development: a prospective study in two occupational settings. *Anxiety, Stress, and Coping* 1993 6:245-262
317. Frew DR. Transcendental Meditation and productivity. *Academy of Management Journal* 1974 17:362-368
318. De Armond D. Effects of the Transcendental Meditation program on psychological, physiological, behavioral and organizational consequences of stress in managers and executives. *Dissertation Abstracts International* 1996 57:4068B
319. Sheppard DH *et al*. The effects of a stress management program in a high security government agency. *Anxiety, Stress and Coping*1997 10:341-350
320. Broome JRN *et al*. Worksite stress reduction through the Transcendental Meditation program. *Journal of Social Behavior and Personality* 2005 17:235-276
321. McCollum B. Leadership development and self development: an empirical study. *Career Development International* 1999 4:149-154
322. Heaton D *et al.* Constructs, methods, and measures for researching spirituality in organizations. *Journal of Organizational Change Management* 2004 17:62-82
323. Schmidt-Wilk J *et al*. Developing consciousness in organizations: the Transcendental Meditation program in business. *Journal of Business and Psychology* 1996 10:429-444
324. Schmidt-Wilk J. Consciousness-based management development: case studies of international top management teams. *Journal of Transnational Management Development* 2000 5:61-85
325. Schmidt-Wilk J. TQM and the Transcendental Meditation program in a Swedish top management team. *The TQM Magazine* 2003 15:219-229
326. Schmidt-Wilk J *et al.* Introduction of the Transcendental Meditation program in a Norwegian top management team. In B Glaser (ed.), *Grounded Theory: 1984-1994*. Mill Valley, California: Sociology Press, 2003

327. Gustavsson B, Harung HS. Organizational learning based on transforming collective consciousness. *The Learning Organization: an International Journal* 1994 1:33-40
328. Harung HS *et al.* A unified theory of leadership: experiences of higher states of consciousness in world-class leaders. *Leadership & Organization Development Journal* 1995 16:44-59
329. Harung HS. Improved time management through human development: achieving most with least expenditure of time. *Journal of Managerial Psychology* 1998 13:406-428
330. Harung H *et al.* Higher development, brain integration, and excellence in leadership. *Management Decision* 2009 47:872-894
331. Heaton D, Harung HS. Vedic Management: enlightening human resources for holistic success. *Chinmaya Management Review* 1999 3:75-84
332. Heaton D, Harung HS. The conscious organization. *The Learning Organization: an International Journal* 1999 6:157-162
333. Heaton D, Harung HS. Awakening creative intelligence and peak performance: reviving an Asian tradition. Chapter in J Kidd *et al*. (eds). *Human Intelligence Deployment in Asian Business.* London: Macmillan, and New York: St. Martin's Press, 2001
334. Alexander CN *et al.* Promoting adult psychological development: implications for management education. *Human Resource Management* 1990 2:133-137
335. Aron EN, Aron A. Transcendental Meditation and marital adjustment. *Psychological Reports* 1982 51:887-890
336. Holeman R, Seiler G. Effects of sensitivity training and Transcendental Meditation on perception of others. *Perceptual and Motor Skills* 1979 49:270
337. Chen ME. A comparative study of dimensions of healthy functioning between families practicing the TM program for five years or for less than a year. *Journal of Holistic Nursing* 1987 5:6-10
338. Marcus SV. The influence of the Transcendental Meditation program on the marital dyad. Doctoral disseration, California School of Professional Psychology, Fresno, California, USA. *Dissertation Abstracts International* 1977 38:3895B. Summarized in *Collected Papers, Volume 4* (pp.2477-2479) – see reference 2
339. Broome VJ. Relationship between participation in Transcendental Meditation and the functionality of marriage. Doctoral dissertation, University of Witwatersrand, Johannesburg, South Africa, 1989.
340. Rainforth M *et al*. Effects of the Transcendental Meditation program on recidivism of former inmates of Folsom Prison: survival analysis of 15-year follow-up data. *Journal of Offender Rehabilitation* 2003 35:181-204
341. Dillbeck MC, Abrams AI. The application of the Transcendental Meditation program to corrections. *International Journal of Comparative and Applied Criminal Justice* 1987 11:111-132
342. Bleick CR, Abrams AI. The Transcendental Meditation program and criminal recidivism in California. *Journal of Criminal Justice* 1987 15:211-230
343. Abrams AI, Siegel LM. The Transcendental Meditation program and rehabilitation at Folsom State Prison: a cross-validation study. *Criminal Justice and Behavior* 1978 5:3-20
344. Abrams AI, Siegel LM. Transcendental Meditation and rehabilitation at Folsom Prison: response to a critique. *Criminal Justice and Behavior* 1979 6:13-21
345. Anklesaria FK, King MS. The Transcendental Meditation program in the Senegalese penitentiary system. *Journal of Offender Rehabilitation* 2003 36:303-318
346. Anklesaria FK, King MS. The Enlightened Sentencing Project: a judicial innovation. *Journal of Offender Rehabilitation* 2003 36:35-46
347. Alexander CN *et al.* Walpole study of the Transcendental Meditation program in maximum security prisoners I: cross-sectional differences in development and psychopathology. *Journal of Offender Rehabilitation* 2003 36:97-126
348. Alexander CN, Orme-Johnson DW. Walpole study of the Transcendental Meditation program in maximum security prisoners II: longitudinal study of development and psychopathology. *Journal of Offender Rehabilitation* 2003 36:127-160
349. Alexander CN *et al.* Walpole study of the Transcendental Meditation program in maximum security prisoners III: reduced recidivism. *Journal of Offender Rehabilitation* 2003 36:161-180

350. Alexander CN *et al* (eds). *Transcendental Meditation in criminal rehabilitation and crime prevention.* Binghamton, New York: Haworth Press, 2003
351. Childs JP. The use of the Transcendental Meditation program as a therapy with juvenile offenders. Doctoral dissertation, Department of Educational Psychology and Guidance, University of Tennessee, Knoxville, Tennessee, USA. *Dissertation Abstracts International* 1974 34:4732A. Summarized in *Collected Papers, Volumes 1* (pp.577-584) – see reference 1
352. Aron A, Aron EN. Rehabilitation of juvenile offenders through the Transcendental Meditation program: a controlled study. Presented at the meeting of the Society of Police and Criminal Psychology, October 1992, Nashville, Tennessee, USA. Also in *Collected Papers, Volume 3* (pp.2163-2166) – see reference 2
353. Camelia CR, Hawkins MA. The use of meditation with at-risk youth in the Netherlands Antilles. *Caribbean Journal of Criminology and Social Psychology* 2005 10:102-140
354. Goodman RS *et al*. The Transcendental Meditation program: a consciousness-based developmental technology for rehabilitation and crime prevention. *Journal of Offender Rehabilitation* 2003 36:1-34
355. Goodman RS *et al*. A consciousness-based approach to human security. In MV Naidu (ed.), *Perspectives on human security* (pp.189-210). Brandon, Manitoba: Canadian Peace Research and Education Association, 2001
356. Hawkins MA *et al.* Consciousness-based approach to rehabilitation of inmates in the Netherlands Antilles: psychosocial and cognitive changes. *Journal of Offender Rehabilitation* 2003 36:205-228
357. Hawkins MA *et al.* Fulfilling the rehabilitative ideal through the Transcendental Meditation and TM-Sidhi programs: primary, secondary, and tertiary prevention. *Journal of Social Behavior and Personality* 2005 17:443-488
358. Magill DL. Cost savings from teaching the Transcendental Meditation program. *Journal of Offender Rehabilitation* 2003 36:319-332
359. Orme-Johnson DW, Moore RM. First prison study using the Transcendental Meditation program: La Tuna Federal Penitentiary. *Journal of Offender Rehabilitation* 2003 36:89-96
360. Walton KG, Levitsky DK. Effects of the Transcendental Meditation program on neuroendocrine abnormalities associated with aggression and crime. *Journal of Offender Rehabilitation* 2003 36:67-88
361. Orme-Johnson, DW. Prison rehabilitation and crime prevention through the Transcendental Meditation and TM-Sidhi program. In LH Hippchen (ed.), *Holistic Approaches to Offender Rehabilitation* (Chapter 19). Springfield, Illinois: Charles C Thomas Press, 1981
362. King MS. Deterrence, rehabilitation and human nature: the need for a holistic approach to offenders. *Criminal Law Journal* 2000 24:335-345
363. King MS. Geraldton Alternative Sentencing Regime: applying therapeutic and holistic jurisprudence in the bush. *Criminal Law Journal* 2002 26:260-271
364. King MS. Natural law and the Bhagavad-Gita: the Vedic concept of natural law. *Ratio Juris* 2003 16:399-415
365. Dillbeck MC. Transcendental Meditation alleviates stress. In J-M Etkins (ed.), *The State of Corrections: Proceedings of American Correctional Association Annual Conferences, 1988* (pp.157-161). Laurel, MD: American Correctional Association, 1989
366. Dillbeck MC *et al*. The Transcendental Meditation program and crime rate change in a sample of forty-eight cities. *Journal of Crime and Justice* 1981 4:25-45
367. Dillbeck MC *et al.* Test of a field model of consciousness and social change: Transcendental Meditation and TM-Sidhi program and decreased urban crime. *Journal of Mind and Behavior* 1988 9:457-486
368. Hatchard GD *et al.* The Maharishi Effect: a model for social improvement. Time series analysis of a phase transition to reduced crime in Merseyside Metropolitan Area. *Psychology, Crime and Law* 1996 2:165-174
369. Hagelin JS *et al.* Effects of group practice of the Transcendental Meditation program on preventing violent crime in Washington, DC: results of the National Demonstration Project, June-July 1993. *Social Indicators Research* 1999 47:153-201
370. Dillbeck MC *et al*. Effects of Transcendental Meditation and the TM-Sidhi program on quality of life indicators: consciousness as a field. *Journal of Mind and Behaviour* 1987 8:67-104
371. Dillbeck MC. Test of a field hypothesis of consciousness and social change: time series analysis of participation in the TM-Sidhi program and reduction of violent death in the US. *Social Indicators Research* 1990 22:399-418
372. Orme-Johnson DW. Preventing crime though the Maharishi Effect. *Journal of Offender Rehabilitation* 2003 36:257-281

373. Orme-Johnson DW *et al*. The long-term effects of the Maharishi Technology of the Unified Field on the quality of life in the United States (1960 to 1983). *Social Science Perspectives Journal* 1988 2:127-146

374. Reeks DL. Improved quality of life in Iowa through the Maharishi Effect. Doctoral thesis, Maharishi University of Management, Fairfield, Iowa, USA. *Dissertation Abstracts International* 1991 51:6155B

375. Burgmans WH *et al*. Sociological effects of the group dynamics of consciousness: decrease of crime and traffic accidents in Holland. In *Collected Papers, Volume 4* (pp.2566-2583) – see reference 2

376. Davies JL, Alexander CN. The Maharishi Technology of the Unified Field and improved quality of life in the United Sates: a study of the First World Peace Assembly, Amherst, Massachusetts, 1979. In *Collected Papers, Volume 4* (pp.2549-2563) – see reference 2

377. Assimakis PD, Dillbeck MC. Time series analysis of improved quality of life in Canada: social change, collective consciousness, and the TM-Sidhi program. *Psychological Reports* 1995 76:1171-1193

378. Cavanaugh KL *et al*. Consciousness and the quality of economic life: empirical research on the macroeconomic effects of the collective practice of the Transcendental Meditation and TM-Sidhi program. *Proceedings of the Midwest Management Society* (pp.183-190). Chicago: Midwest Management Society, 1989

379. Cavanaugh KL, King KD. Simultaneous transfer function analysis of Okun's misery index: improvement in the economic quality of life through Maharishi's Vedic science and technology of consciousness. *Proceedings of the American Statistical Association, Business and Economics Statistics Section* (pp.491-496). Alexandria, Virginia: American Statistical Association, 1988

380. Cavanaugh KL. Time series analysis of US and Canadian inflation and unemployment: a test of a field theoretic hypothesis. *Proceedings of the American Statistical Association, Business and Economics Statistics Section* (pp.799-804). Alexandria, Virginia: American Statistical Association, 1987

381. Cavanaugh KL *et al*. A multiple-input transfer function model of Okun's misery index: an empirical test of the Maharishi Effect. *Proceedings of the American Statistical Association, Business and Economics Statistics Section* (pp.565-570), Alexandria, Virginia: American Statistical Association, 1989

382. Beresford MS, Clements G. The group dynamics of consciousness and the UK stock market. In *Collected Papers, Volume 4* (pp.2616-2623) – see reference 2

383. Dillbeck MC, Rainforth MV. Impact assessment analysis of behavioral quality of life indices: effects of group practice of the Transcendental Meditation and TM-Sidhi program. *Proceedings of the American Statistical Association, Social Statistics Section* (pp.38-43). Alexandria, Virginia: American Statistical Association, 1996

384. Goodman RS *et al*. Congressional bipartisanship through a consciousness-based approach. *Proceedings of the 64th Annual Meeting of the Midwest Political Science Association* 2006 MPSA06 proceeding:137454.doc

385. Orme-Johnson DW *et al*. International peace project in the Middle East: the effects of the Maharishi Technology of the Unified Field. *Journal of Conflict Resolution* 1988 32:776-812

386. Orme-Johnson DW *et al.* The effects of the Maharishi Technology of the Unified Field: reply to a methodological critique. *Journal of Conflict Resolution* 1990 34:756-768

387. Orme-Johnson DW *et al*. The influence of the Maharishi Technology of the Unified Field on world events and global social indicators: the effects of the Taste of Utopia Assembly. In *Collected Papers, Volume 4* (pp.2730-2762) – see reference 2

388. Davies JL, Alexander CN. Alleviating political violence through reducing collective tension: impact assessment analysis of the Lebanon war. *Journal of Social Behavior and Personality* 2005 17:285-338

389. Orme-Johnson DW *et al.* Preventing terrorism and international conflict: effects of large assemblies of participants in the Transcendental Meditation and TM-Sidhi programs. *Journal of Offender Rehabilitation* 2003 36:283-302

390. Gelderloos P *et al*. Creating world peace through the collective practice of the Maharishi Technology of the Unified Field: improved US-Soviet relations. *Social Science Perspectives Journal* 1988 2:80-94

391. Gelderloos P *et al*. The dynamics of U.S.-Soviet relations, 1979-1986: a simultaneous transfer function analysis of U.S.-Soviet relations. A test of the Maharishi Effect. *Proceedings of the American Statistical Association, Social Statistics Section* (pp.297-302). Alexandria, Virginia: American Statistical Association, 1990

392. Orme-Johnson DW. The science of world peace. *International Journal of Healing and Caring* 2003 3:1-9

393. Leffler DR. A Vedic approach to military defense: reducing collective stress through the field effects of consciousness. Doctoral dissertation, Union Institute Graduate School, Cincinnati, Ohio, USA. *Dissertation Abstracts International* 1997 58:3298A. Also available from http://www.davidleffler.com/doctoraldissertation.html

394. Brown CL. Overcoming barriers to use of promising research among elite Middle East policy groups. *Journal of Social Behavior and Personality* 2005 17:489-546

395. Orme-Johnson DW, Oates RM. A field-theoretic view of consciousness: reply to critics. *Journal of Scientific Exploration* 2009 23:139-166

396. Bovee JC. Effects of Transcendental Meditation on blood pressure: a literature review. *Modern Psychological Studies* 2006 11:1-11

397. Fergusson LC. Field independence and art achievement in meditating and nonmeditating college students. *Perceptual and Motor Skills* 1992 75:1171-1175

398. Haaga DA *et al*. Effects of the Transcendental Meditation program on substance use among university students. *Cardiology Research and Practice* – published online at Cardiol Res Pract. 2011:537101

399. Herron R. Changes in physician costs among high-cost Transcendental Meditation practitioners compared with high-cost nonpractitioners over 5 years. *American Journal of Health Promotion* 2011 26:56-60

400. Nidich S *et al*. Academic achievement and Transcendental Meditation: a study with at-risk urban middle school students. *Education* 2011 131:556-564

401. Rosenthal JZ *et al*. Effects of Transcendental Meditation in veterans of Operation Enduring Freedom and Operation Iraqi Freedom with posttraumatic stress disorder: a pilot study. *Military Medicine* 2011 176:626–630

402. Travis F. Comparison of coherence, amplitude, and eLORETA patterns during transcendental meditation and TM-Sidhi practice. *International Journal of Psychophysiology* 2011 81:198-202

403. Travis F. Brain functioning as the ground for spiritual experiences and ethical behavior. *FBI Law Enforcement Bulletin* 2009 78:26-32

404. Travis F *et al*. ADHD, brain functioning, and Transcendental Meditation practice. *Mind & Brain, The Journal of Psychiatry* 2011 2:73-81

405. Khan H *et al*. Create an International Military Yogic-Flying Zone in Kashmir**.** *Pakistan Defence 2011, August 23rd.* Available online at http://www.defence.pk/20110823/create-international-military-yogic-flying-zone-kashmir/

406. Shaw RM, Dettmar DM. Monitoring behavioural stress control using a craniomandibular index. *Australian Dental Journal* 1990 35:147–151

407. Petrenko EV *et al*. Cerebral control of afferent somatosensory projections. *Bulletin of Experimental Biology and Medicine* 1993 116:1046-1048. (Translated from *Byulleten' Eksperimental'noi Biologii i Meditsiny* 1993 116:229-231)

408. Barnes VA *et al*. Impact of Transcendental Meditation on left ventricular mass in African American adolescents. *Evidence-Based Complementary and Alternative Medicine* 2012:923153, 1-6. doi:10.1155/2012/923153

409. Barnes VA, Orme-Johnson DW. Prevention and treatment of cardiovascular disease in adolescents and adults through the Transcendental Meditation Program: a research review update. *Current Hypertension Reviews* 2012 8:227-242

410. Elder C *et al*. Reduced psychological distress in racial and ethnic minority students practicing the Transcendental Meditation Program. *Journal of Instructional Psychology* 2011 38:109-116

411. Dillbeck MC. *Scientific Research on the Transcendental Meditation and TM-Sidhi Programme: Collected Papers, Volume 6.* Vlodrop, Netherlands: MVU Press, 2011

412. Dillbeck MC *et al*. *Scientific Research on the Transcendental Meditation and TM-Sidhi Programme: Collected Papers, Volume 7.* Vlodrop, Netherlands: MVU Press, 2013

413. Brook RD *et al*. Beyond medications and diet: alternative approaches to lowering blood pressure. A scientific statement from the American Heart Association. *Hypertension* 2013 61:1360-1383

414. Schneider RH. Response to AHA scientific statement on alternative methods and BP: evidence for upgrading the ratings for Transcendental Meditation. *Hypertension* 2013 62:e42 http://hyper.ahajournals.org/content/early/2013/10/14/HYPERTENSIONAHA.113.02115.citation

415. Chhatre S *et al*. Effects of behavioral stress reduction Transcendental Meditation intervention in persons with HIV. *AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV* 2013 25:1291-1297. doi.org/10.1080/09540121.2013.764396

416. Travis F. Transcendental experiences during meditation practice. *Annals of the New York Academy of Sciences* 2014 1307:1-8. doi/10.1111/nyas.12316/full

417. Orme-Johnson DW, Barnes VA. Effects of the Transcendental Meditation Technique on trait anxiety: a meta-analysis of randomized controlled trials. *Journal of Alternative and Complementary Medicine* 2013 19:1-12

418. Barnes VA *et al*. Clinical case series: treatment of PTSD with Transcendental Meditation in active duty military personnel. *Military Medicine* 2013 178:e836-40. doi:10.7205/MILMED-D-12-00426

419. Rees B. Overview of outcome data of potential meditation training for soldier resilience. *Military Medicine* 2011 176:1232-1242

420. Rees B *et al*. Reduction in posttraumatic stress symptoms in Congolese refugees practicing Transcendental Meditation. *Journal of Traumatic Stress* 2013 26:295-298

421. Rees B *et al*. Significant reductions in posttraumatic stress symptoms in Congolese refugees within 10 days of Transcendental Meditation practice. *Journal of Traumatic Stress* 2014 27:112-115

422. Colbert RD, Nidich S. Effect of the Transcendental Meditation Program on graduation, college acceptance and dropout rates for students attending an urban public high school. *Education* 2013 133:495-501

423. Elder C *et al*. Effect of Transcendental Meditation on employee stress, depression, and burnout: a randomized controlled study. *The Permanente Journal* 2014 18:19-23. http://dx.doi.org/10.7812/TPP/13-102

424. Orme-Johnson DW. Commentary: the use of meditation in corrections. *International Journal of Offender Therapy and Comparative Criminology* 2011 55:662-664

425. Bai Z *et al*. Investigating the effect of transcendental meditation on blood pressure: a systematic review and meta-analysis. *Journal of Human Hypertension* 2015 29: 653-662. doi:10.1038/jhh.2015.6

426. Barnes VA *et al*. Transcendental Meditation® and psychotropic medication use among active duty military service members with anxiety and PTSD. *Military Medicine* 2016 181:56-63

427. Walton KG *et al*. Trials of Maharishi Ayurveda for cardiovascular disease: a pooled analysis of outcome studies with carotid intima-media thickness. *Journal of Preventive Cardiology* 2014 4(1):615-623

428. Yoshimura M *et al*. Disaster relief for the Japanese earthquake-tsunami of 2011: stress reduction through the Transcendental Meditation® Technique. *Psychological Reports: Mental & Physical Health* 2015 117:1-11

429. Orme-Johnson D. Comment on 'Investigating the effect of transcendental meditation on blood pressure: a systematic review and meta-analysis'. *Journal of Human Hypertension* 2016 30:412. doi:10.1038/jhh.2015.111

430. Nidich S *et al*. Reduced trauma symptoms and perceived stress in male prison inmates through the Transcendental Meditation Program: a randomized controlled trial. *The Permanente Journal* 2016 20(4):16-007. doi.org/10.7812/TPP/16-007

431. Nidich S *et al*. Transcendental Meditation and reduced trauma symptoms in female inmates: a randomized controlled study. *The Permanente Journal* 2017 21(1):16-008. doi.org/10.7812/TPP/16-008

432. Elder C. Mind-body training for at-risk populations: preventive medicine at its best (editorial). *The Permanente Journal* 2017 21(1):16-174. doi.org/10.7812/TPP/16-174

433. Nidich S *et al*. Stress reduction with the Transcendental Meditation program in caregivers: a pilot study. *International Archives of Nursing and Health Care* 2015 1(2):011

434. Orme-Johnson DW, Barnes VA. Comment on 'Meditation programs for psychological stress and well-being'. *Journal of Alternative and Complementary Medicine* 2017 23(1):75-78. doi:10.1089/acm.2016.0273

435. Wendt S *et al*. Practicing Transcendental Meditation in high schools: relationship to well-being and academic achievement among students. *Contemporary School Psychology* 2015 19(4):312-319. doi:10.1007/s40688-015-0066-6

436. Faber PL *et al*. EEG microstates during different phases of Transcendental Meditation practice. *Cognitive Processing* 2017 18(3):307-314. doi:10.1007/s10339-017-0812-y

437. Travis F. Transcending as a driver of development. *Annals of the New York Academy of Sciences* 2016 1373(1):72-77. doi:10.1111/nyas.13071

438. Travis F, Parim N. Default mode network activation and Transcendental Meditation practice: focused attention or automatic self-transcending? *Brain and Cognition* 2017 111:86-94. doi.org/10.1016/j.bandc.2016.08.009

439. Dillbeck MC, Cavanaugh KL. Societal violence and collective consciousness: reduction of US homicide and urban violent crime rates. *SAGE Open* 2016 6(2):1-16. doi:10.1177/2158244016637891

440. Cavanaugh KL, Dillbeck MC. The contribution of proposed field effects of consciousness to the prevention of US accidental fatalities: theory and empirical tests. *Journal of Consciousness Studies* 2017 24(1-2):53-86

441. Dillbeck MC, Cavanaugh KL. Group practice of the Transcendental Meditation® and TM-Sidhi® Program and reductions in infant mortality and drug-related death: a quasi-experimental analysis. *SAGE Open* 2017 7(1):1-15. doi:10.1177/2158244017697164

442. Cavanaugh KL, Dillbeck MC. Field effects of consciousness and reduction in US urban murder rates: evaluation of a prospective quasi-experiment. *Journal of Health and Environmental Research* 2017 3(3-1):32-43. doi:10.11648/j.jher.s.2017030301.13

443. Hatchard G, Cavanaugh KL. The effect of coherent collective consciousness on national quality of life and economic performance indicators—an analysis of the IMD index of national competitive advantage. *Journal of Health and Environmental Research* 2017 3(3-1):16-31. doi:10.11648/j.jher.s.2017030301.12

444. Orme-Johnson DW. Factor analysis of social indicators in the Middle East: effects of cultural, military, political, and climatic events and group practice of the Transcendental Meditation and TM-Sidhi Program. *Journal of Maharishi Vedic Research Institute* 2016 1(1):5-39

445. Hypertension in adults: diagnosis and management. NICE clinical guideline CG127 (2011). https://www.nice.org.uk/guidance/cg127

446. Eckel RH *et al.* AHA/ACC guideline on lifestyle management to reduce cardiovascular risk: a report of the American College of Cardiology/American Heart Association task force on practice guidelines. *Circulation* 2013. doi:10.1161/01.cir.0000437740.48606.d1

447. Maharishi Mahesh Yogi. Maharishi's Absolute Theory of Government. Vlodrop, the Netherlands: Maharishi Vedic University Press, 1994

448. Orme-Johnson DW *et al*. An experimental analysis of the application of the Maharishi Technology of the Unified Field in major world trouble spots: increased harmony in international affairs. In *Collected Papers, Volume 4* (pp.2532-2548) – see reference 2

449. Bandy C *et al*. Reduction of PTSD in South African university students using Transcendental Meditation practice. *Psychological Reports* 2020 123(3):725-740. doi:10.1177/0033294119828036

450. Barnes VA. Transcendental Meditation and treatment for post-traumatic stress disorder (Editorial comment). *The Lancet Psychiatry* 2018 5(12):946-947. doi.org/10.1016/ S2215-0366(18)30423-1

451. Bonamer JR, Aquino-Russell C. Self-care strategies for professional development: Transcendental Meditation reduces compassion fatigue and improves resilience for nurses. *Journal for Nurses in Professional Development* 2019 35(2):93-97. doi:10.1097/NND.0000000000000522

452. Goldstein L *et al*. The effect of transcendental meditation on self-efficacy, perceived stress, and quality of life in mothers in Uganda. *Health Care for Women International* 2018 39(7):734-754. doi.org/10.1080/07399332.2018.1445254

453. Herron R, Rees B. The Transcendental Meditation Program's impact on the symptoms of post-traumatic stress disorder of veterans: an uncontrolled pilot study. *Military Medicine* 2018 183(1-2):e144-e150. doi.org/10.1093/milmed/usx059

454. Kang SS *et al*. Transcendental Meditation for veterans with post-traumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy* 2018 10(6):675-680. doi.org/10.1037/tra0000346

455. Mahone MC *et al*. fMRI during Transcendental Meditation practice. *Brain and Cognition* 2018 123:30-33. doi.org/10.1016/j.bandc.2018.02.011

456. Nidich S *et al*. Non-trauma-focused meditation versus exposure therapy in veterans with post-traumatic stress disorder: a randomised controlled trial. *The Lancet Psychiatry* 2018 5(12):975-986. doi.org/10.1016/S2215-0366(18)30384-5

457. Ooi SL *et al*. Transcendental meditation for lowering blood pressure: an overview of systematic reviews and meta-analyses. *Complementary Therapies in Medicine* 2017 34:26-34. doi.org/10.1016/j.ctim.2017.07.008

458. Perkins J, Aquino-Russell C. Graduate nurses experience the sacred during Transcendental Meditation. *International Journal for Human Caring* 2017 32(4):163-171

459. Rasmussen LB *et al*. Treatment of fibromyalgia at the Maharishi Ayurveda Health Centre in Norway II—a 24-month follow-up pilot study. *Clinical Rheumatology* 2012 31(5):821-827. doi:10.1007/s10067-011-1907-y

460. Rasmussen LB *et al*. Treatment of fibromyalgia at the Maharishi Ayurveda Health Centre in Norway. A six-month follow-up study. *Clinical and Experimental Rheumatology* 2009: 27(Suppl. 56):S46-S50

461. Schneider RH *et al*. Editorial commentary on AHA scientific statement on meditation and cardiovascular risk reduction. *Journal of the American Society of Hypertension* 2018 12(12):e57-e58. doi.org/10.1016/j.jash.2018.11.005

462. Travis F *et al*. Effect of meditation on psychological distress and brain functioning: a randomized controlled study. *Brain and Cognition* 2018 125:100-105. doi.org/10.1016/j.bandc.2018.03.011

463. Valosek L *et al*. Effect of meditation on emotional intelligence and perceived stress in the workplace: a randomized controlled study. *The Permanente Journal* 2018 22:17-172. doi.org/10.7812/TPP/17-172

464. Valosek L *et al*. Effect of meditation on social-emotional learning in middle school students. *Education* 2019 139(3):111-119. www.ingentaconnect.com/content/prin/ed/2019/00000139/00000003/art00001

465. Gelderloos P *et al*. Warming US-Soviet relations during the Cold War as measured by U.S. presidential statements: Impact of the group practice of the Transcendental Meditation-Sidhi program. *Journal of Maharishi Vedic Research Institute* 2019 9:93-134

466. Cavanaugh KL *et al*. Group practice of the Transcendental Meditation-Sidhi program and improved US-Soviet relations. *Journal of Maharishi Vedic Research Institute* 2018 8:125-164

467. Fergusson LC, Cavanaugh KL. Socio-political violence in Cambodia between 1990 and 2008: an explanatory mixed methods study of social coherence. *Studies in Asian Social Science* 2019 6(2):1-45. doi:10.5430/sass.v6n2p1

468. Fergusson L. Vedic Science-based education, poverty removal and social well-being: a case history of Cambodia from 1980 to 2015. *Journal of Indian Education* 2016 41(4):16-45

469. Dai T. Maharishi's formula for a prevention wing in the military—applied and found successful in Mozambique: case study, 1993-1994. In *Collected Papers, Volume 6* (pp. 4121-4122) – see reference 411.

470. Orme-Johnson DW, Fergusson L. Global impact of the Maharishi Effect from 1974 to 2017: theory and research. *Journal of Maharishi Vedic Research Institute* 2018 8:13-79

471. Maharishi Mahesh Yogi. *Maharishi's Absolute Theory of Defence: Sovereignty in Invincibility*. *Journal of Maharishi Vedic Research Institute* 2019 9:13-48

472. Travis F. Temporal and spatial characteristics of meditation EEG. *Psychological Trauma: Theory, Research, Practice, and Policy* 2020 12(2):111–115. doi.org/10.1037/tra0000488

473. Fergusson L *et al*. A preliminary mixed methods study of health-related quality-of-life at three regional Cambodian universities. *ASEAN Journal of Education* 2020 5(2):1-23

474. Fergusson L *et al*. Maharishi Vedic University in Cambodia: a study of three mature-age graduates. *ASEAN Journal of Education* 2019 5(1):9-23

475. Fergusson L *et al*. Transcendental Meditation and five factors relevant to higher education in Cambodia. *College Student Journal* 1994 28(1):103-107

476. Bokhari S *et al*. Effects of cardiac rehabilitation with and without meditation on myocardial blood flow using quantitative positron emission tomography: a pilot study. *Journal of Nuclear Cardiology* 2019. doi: 10.1007/s12350-019-01884-9

477. Schneider RH *et al*. Stress reduction in the prevention of left ventricular hypertrophy: a randomized controlled trial of Transcendental Meditation and health education in hypertensive African Americans. *Ethnicity & Disease* 2019 29(4):577-586

478. Klimes-Dougan B *et al*. Transcendental Meditation and hypothalamic-pituitary-adrenal axis functioning: a pilot, randomized controlled trial with young adults. *Stress* 2020 23(1):105-115. doi:10.1080/10253890.2019.1656714

479. Avvenuti G *et al*. Reductions in perceived stress following Transcendental Meditation practice are associated with increased brain regional connectivity at rest. *Brain and Cognition* 2020 139:105517. doi.org/10.1016/j.bandc.2020.105517

480. Goodman RS *et al.* Transforming political institutions through individual and collective consciousness: the Maharishi Effect and government. Prepared for delivery at the *Annual Meeting of the American Political Science Association* 1997

481. Spivack B, Saunders PA. *An Antidote to Violence: Evaluating the Evidence.* Winchester, UK: Changemakers Books, an imprint of John Hunt Publishing, 2020

482. Unger T *et al.* 2020 International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension* 2020 75(6):1334-1357 (Table 8, Lifestyle Modifications). doi.org/10.1161/HYPERTENSIONAHA.120.15026