

Summary of Scientific Research on Maharishi's Transcendental Meditation and TM-Sidhi Programme

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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. Over five million people have learned Transcendental Meditation (TM) around the world over the past 50 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 30 countries [1-378]. These studies have demonstrated a wide range of benefits for mind, body, behaviour, and society (see Table 1), and have appeared in many leading, peer-reviewed journals (see Table 2).

Tables 1 and 2

TABLE 1

Overview of Research Findings on the Transcendental Meditation Programme

- Reduced need for medical care and decreased health care costs [4-8]
- Reduction of major risk factors for cardiovascular disease (high blood pressure, raised cholesterol, smoking, and insulin resistance) and improved cardiovascular health [9-38, 40-57, 61, 301, 303, 305]
- Healthier ageing and increased longevity [11, 16-18, 58-65, 4, 8]
- Improvements in common chronic disorders, including hypertension, angina, heart failure, type 2 diabetes, asthma, post-traumatic stress disorder, insomnia, ADHD [9-18, 23-38, 40-47, 155-191, 274]
- A unique state of deep rest during Transcendental Meditation [67-122]
- Increased orderliness and integration of brain functioning [106-143, 67-70, 72, 74-75, 86]
- Reduced physical and mental stress [20-21, 26-27, 34-35, 38, 45, 71, 73, 91-94, 96, 124, 132, 134, 144-147, 149-151, 156-157, 162, 167, 180, 192, 196, 204, 228-229, 273-274, 301, 303-305, 330-331, 334-335, 348]
- Growth of positive psychological health and enhanced cognitive development [193-227, 11, 57, 133, 135-136, 143, 265, 267, 276, 304]
- Reduced anxiety, depression, hostility, and other forms of psychological distress [192, 41, 57, 156-157, 162, 167, 203-204, 208, 228-231, 233-234, 254-255, 257, 265, 273-274, 276-277, 281, 301, 303-305, 330-331, 334-335, 338-339, 345]
- Increased intelligence and creativity; improved memory, learning ability, and academic performance [254-256, 258-278]
- Improved perception, mind-body coordination, and athletic performance [254, 262-264, 282-300, 64, 134, 138-139, 141]
- Increased job satisfaction and performance; improved occupational health [52, 157, 272, 301-321]
- Improved relationships, including in marriage, families, at work, and in schools [156, 301-303, 322-326]
- Decreased smoking, alcohol consumption and drug abuse [51-54, 156, 234-253, 301, 303]
- Effective rehabilitation of offenders [327-348]
- Improved quality of life for society as a whole: reduced crime, violence, and accidents; increased economic prosperity; more effective leadership [349-378]
- Reduced civil and international conflict; decreased deaths and injuries from war and terrorism; increased progress towards peace [368-378]

TABLE 2

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

Medicine

American Journal of Cardiology
Archives of Internal Medicine
Stroke
Hypertension
American Journal of Hypertension
Current Hypertension Reviews
Respiration
Behavioral Medicine
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
Psychosomatic Medicine
Circulation
Lancet
Medical Hypotheses
Homeostasis
Journal of Behavioral Medicine
Ethnicity and Disease
Journal of the National Medical Association
Journal of Aging and Health
Socialstyrelsen (Swedish National Health Board publication)
Acta Medica Okayama
Health Promotion
Harefuah, Journal of the Israel Medical Association
Canadian Medical Association Journal
New Zealand Medical Journal
Australian Family Physician
New Zealand Family Physician
Journal of Psychosomatic Research
Est-Medicine
Journal of Human Stress
British Journal of Nursing
Ugeskrift for Læger
Journal of the American Association of Nephrology Nurses and Technicians
Journal of the American Society of Psychosomatic Dentistry and Medicine
Alternative Therapies in Clinical Practice
Journal of Alternative and Complementary Medicine
Complementary Medicine International
Alternative Therapies

Physiology and Neuroscience

Science
American Journal of Physiology
Scientific American
International Journal of Neuroscience
NeuroReport
Experimental Neurology
Journal of Applied Physiology
Neuroscience and Biobehavioral Reviews
Electroencephalography and Clinical Neurophysiology
Biological Psychology
Psychoneuroendocrinology
International Journal of Psychophysiology
Biofeedback
L'Encephale
Consciousness and Cognition
Cognitive Processes
Sleep
Dreaming
Journal of Neural Transmission
Signal Processing
Psychophysiology
Physiology and Behavior
Hormones and Behavior
Annals of the New York Academy of Sciences
Revue d'Electroencephalographie et de Neurophysiologie Clinique
Progress in Brain Research
Experientia
Biofeedback and Self-Regulation
Revista Internacional De Ciencias Del Deporte (International Journal of Sports Science)
Human Physiology (Fiziologiya Cheloveka)
Biulleten Eksperimental Biologii Meditsiny
Zeitschrift für Elektroenzephalographie und Elektromyographie EEG-EMG
Psychopathometrie

TABLE 2

Scientific and medical journals that have published original research or reviews on Transcendental Meditation (continued)

Psychology, Psychiatry, and Rehabilitation

Journal of Clinical Psychology
Journal of Psychology
British Journal of Psychology
American Psychologist
American Journal of Psychiatry
Journal of Personality and Social Psychology
Journal of Social Behavior and Personality
Alcoholism Treatment Quarterly
Hospital and Community Psychiatry
Perceptual and Motor Skills
Memory and Cognition
Psychological Reports
Journal of Adult Development
Journal of Counseling Psychology
Journal of Personality and Individual Differences
Journal of Humanistic Psychology
Journal of Personality Assessment
Journal of Indian Psychology
Zeitschrift für Klinische Psychologie
*Psychotherapie-Psychosomatik Medizinische
Psychologie*
Western Psychologist
Psychologia
Lakartidningen
Journal of Criminal Justice
Criminal Justice and Behavior
*International Journal of Comparative and Applied
Criminal Justice*
International Journal of the Addictions
*Bulletin of the Society of Psychologists in Addictive
Behaviors*

Education and Management

British Journal of Educational Psychology
Intelligence
Education
Educational Technology
Journal of Creative Behavior
Journal of Moral Education
Journal of Adult Development
Journal of Instructional Psychology
Current Issues in Education [On-line]
College Student Journal
Journal of Business and Psychology
Academy of Management Journal
Human Resource Management
Journal of Transnational Management Development
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

Journal of Conflict Resolution
Social Indicators Research
Psychology Crime and Law
Journal of Crime and Justice
Journal of Mind and Behavior
Social Science Perspectives Journal
Journal of Scientific Exploration
Proceedings of the American Statistical Association
Proceedings of the Midwest Management Society

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 supported by a subsequent eleven-year study of Blue Cross/Blue Shield data for individuals practising TM in conjunction with a comprehensive natural Vedic health programme. 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, with 80 percent fewer hospital admissions and 55% fewer out-patient 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 2836 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 are supported by a further study showing a 57% reduction in medical expenditure in subjects practising TM in conjunction with a comprehensive natural health programme (Maharishi's Vedic Approach to Health) [5].

A separate analysis examined changes in medical costs over 14 years in 320 Quebec citizens over 65 years, an age group for whom medical care needs and costs generally rise sharply. Once again, before learning TM, yearly changes in payments to doctors did not differ significantly between TM subjects and controls matched for age, sex, and initial medical expenses. After starting the technique, however, changes in payments were significantly reduced in the TM group compared to controls, with a five-year cumulative reduction of 64.2% [8]. This result is consistent with research indicating that TM counters deleterious effects of ageing and promotes longevity (see below) [11, 16-18, 58-65].

Reduction of Major Risk Factors for Disease

Transcendental Meditation simultaneously ameliorates many important risk factors for disease, including reductions in: major risk factors for coronary heart disease and stroke (high blood pressure, raised cholesterol, smoking, and insulin resistance); alcohol consumption and drug abuse; obesity; physical and mental stress; and adverse psychological traits 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 for references].

Reduction of High Blood Pressure and Decreased Mortality

In recent years, a multi-centre medical research team in America has attracted grants totalling over \$24 million, principally from the US National Institutes of Health, for research on Transcendental Meditation and prevention of cardiovascular disease in older African-Americans (a high-risk group for vascular disease). These and other randomized controlled trials have shown:

- TM produces reductions in systolic and diastolic blood pressure comparable to those commonly found with anti-hypertensive medication, but without adverse side-effects [9-12, 16-18, 23-28, 42].
- TM was more effective in reducing mild hypertension than either progressive muscular relaxation, a pseudo-meditation procedure (which attempted to imitate the TM technique), or a 'usual care' programme of advice on weight loss, salt restriction, exercise, and alcohol intake [9-12, 23].
- TM was effective in lowering systolic and diastolic blood pressure for men and women 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 [10].
- Follow-up studies confirm sustained blood pressure reductions with TM [12].
- Cost-effectiveness of TM for reducing high blood pressure compared favourably with drugs [13].
- TM reduced carotid artery atherosclerosis compared to control groups who either practised progressive muscular relaxation or received health education [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 [16-18].
- In pre-hypertensive adolescents, TM improved blood pressure at rest, and during both acute laboratory stress and normal daily activity [19-21].

TM was also found to reduce cardiovascular risk factors and levels of the stress hormone cortisol in a controlled study of post-menopausal women [22].

An Effective Non-Pharmacological Approach to High Blood Pressure

A systematic review and meta-analysis of 107 published studies on stress reduction and high blood pressure found that TM significantly reduced both systolic and diastolic blood pressure, while other methods of meditation and relaxation, biofeedback, and stress management did not produce significant effects [23].

A second meta-analysis by an independent team confirmed that TM leads to clinically important reductions in blood pressure; this conclusion was robust when only the

highest quality research was analyzed. The 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 [24]. These findings are supported by other reviews on TM and cardiovascular health [25-38].

Non-pharmacological methods have long been recognized as crucial to therapy for hypertension, especially in patients under 60 years. For example, the US Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure recommended that non-pharmacological, behavioural approaches ‘should be used both as definitive intervention and as an adjunct to pharmacologic therapy and should be considered for all anti-hypertensive therapy’ [39]. A review of research on behavioural therapy for hypertension concluded that Transcendental Meditation could provide an optimal non-pharmacological treatment and preventive programme for high blood pressure [40], because the technique:

- produces rapid, clinically significant blood pressure reductions;
- is distinctly more effective than other meditation and relaxation procedures;
- is continued by a high proportion of subjects (in contrast to lower continuation rates for relaxation techniques and the frequent problem of poor compliance with anti-hypertensive drugs);
- 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.

Improved Health in Cardiac Patients

Randomized controlled trials have also investigated effects of TM in subjects with established heart disease. In patients with chronic heart failure, TM improved functional capacity and quality of life, and reduced hospitalizations and depression [41]. In patients with stable coronary heart disease (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 [42].

Another controlled study found that Transcendental Meditation improved exercise tolerance in patients with angina pectoris (cardiac pain on exercise). All patients in this study had proven coronary artery disease, mostly of moderate or severe degree, and positive exercise-stress tests. Over an eight-month period, subjects who practised TM showed significant improvements in exercise tolerance and maximum workload achieved during a standard exercise test. In addition, there was a significant delay in the onset of electrocardiographic evidence of myocardial ischaemia (shortage of oxygen in the heart muscle) [43].

British research has shown positive effects of 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 [44].

Reduced Cholesterol

Research from Israel found that TM reduced both raised serum cholesterol and blood pressure, independent of changes in diet, medication, or weight [46-47]. Another controlled study found that TM reduced cholesterol levels in business managers [303].

Cholesterol and other fats are harmful to the arteries chiefly when oxidized by highly reactive chemicals known as free radicals [191]. Products of fat oxidation include *lipid peroxides*, which may play an important role in arterial disease. A study of elderly people who practised Transcendental Meditation found lower blood levels of lipid peroxides compared to non-meditating peers, indicating reduced free radical activity and decreased risk of cardiovascular injury [48]. This finding is supported by recent research showing reduced free radical activity (measured by ultra-weak photon emissions) in individuals who practised TM compared to both non-meditating controls and subjects practising other forms of meditation [49-50].

More Effective Weight Reduction in Obese Subjects

Obesity is a major and rapidly growing problem in modern society, with multiple health risks including increased cardiovascular disease, diabetes, musculoskeletal problems, and cancer. Current approaches to management have consistently proved inadequate for many people. A randomized controlled trial conducted in Germany examined weight changes and psychological health in two groups of markedly overweight subjects who were given the same calorie-controlled diet. Over a four-month period, subjects assigned to learn Transcendental Meditation lost more than twice as much weight as non-meditating controls (7.5 kg versus 3.1 kg). Evaluation of mental health showed reduction of anxiety and depression, increased emotional stability, and other positive effects in the TM group [57].

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). 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 Tables 1 and 3).

TABLE 3

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 [9-12, 16-21, 27-31, 47, 59-61, 301, 303, 305]
Blood pressure – diastolic [9-10, 12, 16-21, 27-31, 47, 301, 303, 305]
Atherosclerosis [14-15]
Heart failure [41]
Visual evoked potentials – P300 latency [65]
Reflex latency (monosynaptic reflex) [152]
Reflex recovery time (paired H-reflex) [153]
Muscular contraction time (fast and mixed muscles) [152]
Susceptibility to stress [20-22, 71, 124, 132, 134, 144-147, 149-150, 301]
Erythrocyte sedimentation rate [63]
Insomnia (time to fall asleep) [330-331, 162-163]
Sleep disturbance (awakenings per night) [330-331, 162-163]
Daytime sleep [163]

Decrease with ageing; Increase with TM

Cardiovascular efficiency [20-21, 41, 43, 299-300]
Vital capacity [299-300]
Cerebral blood flow [80, 83, 120]
EEG alpha power [67-70, 72-74, 106-114, 116]
Temperature homeostasis [66]
Neuromuscular co-ordination [299-300]
Periodontal health [171]
Physical health and well-being in later life [9-12, 22, 41]
Longevity [11, 16-18]

BIOCHEMISTRY

Increase with ageing; Decrease with TM

Serum cholesterol [46-47, 303]
Insulin resistance [42]

Decrease with ageing; Increase with TM

DHEA-S (dehydroepiandrosterone sulphate) [62]
Efficiency of endocrine control (pituitary-thyroid axis) [148]
Glucose tolerance [55-56]

TABLE 3 (continued)

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

PERCEPTION AND MIND-BODY CO-ORDINATION

Decrease with ageing; Increase with TM

Visual perception [11, 138, 264, 293]
Dichotic listening [291]
Field independence [254, 262-263, 284-286]
Perceptual flexibility [11, 138, 264, 292, 294]
Perceptual-motor performance [64, 283, 294-296]
Complex sensory-motor performance [295-296]

Increase with ageing; Decrease with TM

Auditory threshold [59-60, 1-2]
Behavioural rigidity [11, 294]
Reaction time – simple [64, 282, 299-300]
Reaction time – complex [283, 138]

PSYCHOLOGY

Decrease with ageing; Increase with TM

Fluid intelligence [254-255, 258, 263, 64]
Creativity [254, 265-266, 268]
Learning ability [11, 267, 269]
Memory – verbal [269]
Memory – visual [64]
Organization of memory [270]
Cognitive flexibility [11, 254, 264, 138-139]
Self-evaluation of health and well-being [11, 157, 167]
Mental health and well-being in later life [11, 41]

Increase with ageing; Decrease with TM

Depression [41, 156-157, 203-204, 257, 304]

REQUIREMENTS FOR HEALTH CARE

Increase with ageing; Decrease with TM

Patient days in hospital (medical and surgical) [4-5]
Outpatient visits (medical and surgical) [4-5]
Health care costs [6-8]
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 [58]. A British study subsequently found similar results in a younger population [59-60].

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 techniques [11].

Strikingly, 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 [11].

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 [18].

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 [17]. 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 [16].

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 64.2% 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 [62].

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 clinical marker of inflammation [63].

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 [191]. 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 [49-50]. This investigation supports an earlier study showing lower blood levels of lipid peroxides (another index of free radical activity) in elderly people who practised Transcendental Meditation compared to non-meditating peers [48].

Physiological Changes during TM: a Unique State of Restful Alertness

Extensive physiological research over 40 years has shown that Transcendental Meditation gives rise to a unique physiological state characterized by deep rest [67-90]; increased orderliness and integration of brain functioning [67-70, 72-75, 86, 106-123]; increased blood flow to the brain [80, 83, 120]; decreased peripheral vascular resistance [84]; features directly opposite to the physiological and biochemical effects of stress (including high and stable galvanic skin resistance [67-69, 71, 77, 87, 299], decreased plasma cortisol [91-92], reduced arterial blood lactate [67-69, 71, 78, 80, 82], and deep muscle relaxation [105, 113]); and other distinctive neuroendocrine changes [93-104].

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 [68, 72-75, 85-86, 106, 110-111, 115-116].

EEG (‘brain wave’) studies show that while the level of excitation in the nervous system is greatly reduced during TM, wakefulness increases [67-70, 72-75, 86, 106-125]. At the same time, the degree of integration between different areas of the brain is increased [106-118], with high EEG coherence¹ between front and back of the brain and between right and left cerebral hemispheres [72, 86, 106, 109-111, 114, 116, 124].

EEG coherence increases progressively with regular practice of Transcendental Meditation, and reaches a maximum during Yogic Flying, an aspect of the advanced TM-Sidhi programme [72-74, 106, 109-111, 114, 123-125].

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 [72, 74, 86, 110-111, 124, 126-129, 135, 142-143, 197, 289].

¹EEG coherence measures the correlation between brain waves from different areas of the cerebral cortex, providing an index of orderliness and integration in brain functioning [114].

Sophisticated neurophysiological and neuroimaging techniques are shedding further light on TM's integrative effects on the brain [108, 120, 134]. A magneto-encephalographic study identified the prefrontal cortex and anterior cingulate brain regions as the source of the widespread EEG alpha wave activity observed during TM [108]. Positron emission tomography also highlighted the role of the prefrontal cortex (the highest level of regulation in the brain), showing increased blood flow to this region [120], consistent with the findings of earlier cardiovascular research [80, 83].

Regular practice of TM is associated with sustained increases in brain integration, including during challenging cognitive tasks (see below under 'Comprehensive Benefits in Education') [132-143], and with reductions in physiological and biochemical correlates of stress [144-151], reduced sleepiness [132], and increased neurological efficiency [152-154]. Recent research on the brain's response to pain, using functional magnetic resonance imaging, indicates that regular practice of TM reduces distress associated with painful stimuli, without impairing sensory acuity [134].

Benefits for Common Health Problems

In Britain and abroad, TM has been widely recommended by doctors for its contribution to prevention of disease, management of common disorders, and promotion of positive health [www.DoctorsonTM.org].

Research and clinical experience have identified benefits of Transcendental Meditation, in the management of a range of common clinical problems, including major risk factors for disease, hypertension, coronary heart disease, and heart failure (discussed above), asthma, type 2 diabetes, stress-related disorders, migraine, anxiety, depression, post-traumatic stress disorder, ADHD, and substance misuse [9-38, 40-57, 155-191, 234-253, 274]. 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, 15, 185-191].

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 [193, 195-196, 200-205, 207, 209-210, 212-217, 220-227]
- Improved self-concept and increased self-esteem [211, 158, 203, 206-207, 209, 215, 218, 276, 304]
- Increased autonomy and independence [208, 265]
- Decreased anxiety, tension and depression [192, 156-157, 167, 203-204, 215, 231, 234, 265, 274, 276, 301, 304, 330-331, 334-335, 338-339]
- Reduced aggression and hostility [57, 330-331, 334-335]
- Decreased irritability and impulsiveness [208, 229, 274, 325, 330-331]
- Increased emotional stability and maturity [57, 162, 204, 231, 234, 255, 325, 330-331]
- Decreased behavioural rigidity [11, 294]
- Increased sociability, friendliness, tolerance, and good humour [57, 206, 208, 213, 215, 234]
- Less sensitivity to criticism and greater trust [203]
- Increased ability to be objective, fair-minded, and reasonable [325]
- Increased social maturity [213]
- Increased tolerance and appreciation of others [206, 208, 216, 265, 323]
- Enhanced capacity for warm interpersonal relationships [57, 203, 210, 215, 234, 325]
- Improved personal, family, and work relationships [156, 301-303, 322-326]
- Increased marital harmony and adjustment [322, 325-326]

A systematic review of 146 independent outcomes found that Transcendental Meditation was more than twice as effective in reducing anxiety 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 Transcendental Meditation 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 studies by researchers known to be neutral or sceptical towards TM, and when other potentially confounding factors were controlled [192].

In a second 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 exceptionally 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 [193].

A third meta-analysis 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 [194].

The comprehensive nature of Transcendental Meditation's benefits for mental health is illustrated in a randomized study of Vietnam War veterans suffering from post-traumatic stress disorder. Over a three-month period, patients practising TM showed clear-cut improvements in all aspects of the syndrome studied, with significant decreases in depression, anxiety, insomnia, and alcohol consumption; improvement in family problems; reduced severity of delayed stress syndrome; decreased emotional numbness; and reduced difficulty in obtaining employment. In contrast, the control group who received standard treatment with psychotherapy showed no significant change on any measure [156].

An exhaustive epidemiological survey conducted by the Swedish National Health Board found evidence that psychiatric hospital admissions were much less common among people practising Transcendental Meditation than in the general population [233].

Reduced Smoking, Alcohol Consumption, and Drug Abuse

Transcendental Meditation has consistently been found to reduce the use of tobacco, alcohol, and non-prescribed drugs in a wide variety of settings and populations [51-54, 156, 234-253, 301, 303]. A systematic review and meta-analysis of 198 studies (including 19 on TM) found that Transcendental Meditation 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 [51].

Over an 18-24 month period, abstinence ranged from 51% to 89% for people practising Transcendental Meditation, 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 [51]. Overall, research in this area indicates that the longer individuals practise Transcendental Meditation, the more likely it is that they will stop or markedly reduce smoking, alcohol consumption, or drug abuse [51, 54].

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, or society [144]. Direct comparisons confirm the unique effectiveness of TM:

- **Randomized controlled trials** have shown that, compared to various forms of relaxation and meditation, TM is more effective in reducing high blood pressure [9-12]; decreasing atherosclerosis [14]; decreasing cardiovascular and all-cause mortality in subjects with mild hypertension [16-18]; increasing cognitive flexibility, well-being, and longevity in the elderly [11, 18]; increasing general intelligence, practical intelligence, creativity and speed of cognitive processing [254]; improving perceptual awareness (increased field independence) [254, 285]; and decreasing anxiety [254]. In other randomized studies, TM was more effective than psychotherapy in decreasing multiple features of post-traumatic stress disorder [156], and superior to an educational corporate stress management programme in reducing anxiety and depression and improving self-concept [304].
- **Systematic reviews** examining large numbers of studies and employing the technique of **meta-analysis**, have shown that TM is markedly more effective than other methods of meditation and relaxation in decreasing anxiety [192], reducing high blood pressure [23], enhancing overall psychological health (self-actualization) [193], and improving psychological outcomes in general [194]. Meta-analyses have also shown that TM promotes deeper rest and decreases physiological indicators of stress more effectively than ordinary relaxation [71], 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 [51].

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 [254, 213, 255, 258, 263, 265, 266-268, 64]
- Improved memory, learning ability, and cognitive flexibility [11, 128-129, 254, 267, 269-270]
- Improved academic achievement in school, university, and postgraduate students [259-262]
- Enhanced cognitive and self development [195, 212, 214, 216, 220-227, 272, 275]
- Improved attention, perception, and mind-body co-ordination [254, 64, 134, 138-139, 258, 262-263, 274, 282-300]
- Increased orderliness and integration of brain functioning (see above) [106-143, 67-70, 72, 74-75, 86]
- Improvement on both verbal-analytical and visual-spatial tasks (indicating improved functioning of both left and right cerebral hemispheres) [64, 139, 254-255, 262-269, 290]
- Improved athletic performance [298-300]
- Reduced blood pressure in pre-hypertensive adolescents [19-21, 25]
- Increased field independence (indicating greater ability to maintain broad comprehension while focusing sharply) [254, 262-263, 284-286]
- Comprehensive benefits for mental health and well-being (see above) [11, 156-157, 162, 167, 192-234, 254-255, 257, 274-279, 301-305, 321-326]
- Greater moral maturity and higher moral reasoning [217, 224, 267, 127]
- Increased orientation towards positive values [216]
- Increased social maturity in college students [213]
- Decreased sleepiness in college students [132]
- Reduced alcohol consumption, drug abuse, and smoking (see above) [51-54, 234-253, 301, 303]
- Reduced behaviour problems in school—decreased absenteeism, rule infractions, and suspension days [273]
- **Benefits in special and remedial education:**
 - **Improvements in children with attention deficit hyperactivity disorder (ADHD): reduced stress and anxiety; improvements in ADHD symptoms and executive function [274]**
 - Increased intelligence and improved self-concept among children from low income families [275]

- Increased independence and self-supportiveness, improved self-regard, and decreased dropout rate from school in economically-deprived adolescents with learning problems [276]
- Decreased anxiety, examination anxiety, and school dislike in children with learning problems [277]
- Benefits for learning disabled subjects: improvements in social behaviour, cognitive functioning, intelligence, physical health; and normalization of neuroendocrine measures [278, 183]
- Improvement in autism: decreased echolalic behavior [279]
- Decreased stuttering [280]
- Improved social behaviour, increased self-regard, and decreased anxiety among juvenile offenders [338-339]

Three randomized controlled studies conducted in Taiwan found that TM produced greater improvements in speed of cognitive processing, cognitive flexibility, creativity, general intelligence, practical intelligence, and field independence than either a traditional Chinese meditation technique or napping [254]. 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 [254-255, 258, 263].

In a British study, master's degree engineering students who learned Transcendental Meditation showed improved performance on standard examinations after six months, compared with randomly assigned controls [259].

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, in contrast to control students [265].

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 [256-257]

In a four-month randomized trial, adolescent African American children who learned Transcendental Meditation showed reductions in absenteeism, school rule infractions, and suspension days compared to a control group who participated in health education [273].

In a ten-year longitudinal study, university students practising the Transcendental Meditation and TM-Sidhi programme increased significantly on a measure of self development (Loevinger's ego-development scale), in contrast to non-meditating control students at three other universities [195].

Another study of university students practising TM found that they rated important people in their lives (parents and spouse) significantly more positively than did control students [216].

Increased Brain Integration in College Students

By incorporating TM into the daily curriculum, Consciousness-Based Education progressively develops integration in brain functioning—the essential foundation for more effective learning, enhanced personal growth, and greater success in any field of life (see 'Physiological Changes during TM' above). A recent randomized controlled trial 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 [132]. 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 [132].

Consciousness-Based Education in Practice

TM has been practically applied in schools and universities in highly diverse social and economic environments in many parts of the world, including UK, USA, India, Thailand, Cambodia, Taiwan, Australia, South Africa, Uganda, Canada, Peru, Venezuela, Bolivia, Mexico, Brazil, Chile, Colombia, Ecuador, Trinidad and Tobago, Paraguay, and Guatemala. These projects have produced exceptional standards of academic achievement, student well-being, and school harmony [www.consciousnessbasededucation.org.uk].

The longest established educational institutions employing Maharishi's Consciousness-Based Education – Maharishi University of Management in Fairfield, Iowa, USA and Maharishi Schools in Fairfield and in Skelmersdale, Lancashire, UK – 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. These results are particularly notable since both schools have an open admissions policy and do not select pupils by ability or background.

At Maharishi School in Lancashire in 2007, 100% of the pupils who took their GCSE examinations gained passes at grade C or above, compared with the national average of 63%. Approximately 66% of the passes were at the highest grades of A or A*; this is over three times the national figure of 19.5%. These results maintain the high standards of previous years: in 2006, all pupils gained five or more passes at grades A to C, with 58% at A or A* [www.maharishischool.com].

Maharishi School in Fairfield, Iowa has ten times the national average of graduates who are National Merit Scholar Finalists and has seen 95% of graduates accepted at four-year colleges, with senior students consistently scoring in the nation's top 1% on standardized tests of educational development. Maharishi School students have won over 100 international, national, and state competitions for academic projects, sports, arts, and extracurricular activities. For example, in Destination ImagiNation, an international problem-solving competition, Maharishi School students have not only won the World Championship three times, but have had more top ten finishes than any other school in the world [www.maharishischooliowa.org, and www.mum.edu].

TM can also make a great contribution to calming the stress and violence that has become all too frequent in schools, especially in economically-deprived areas. Dr George Rutherford, a Washington D.C. educator and school principal for over four decades, served for 20 years as Principal of the Fletcher-Johnson Educational Centre in one of the city's most violent areas. There he introduced Transcendental Meditation to hundreds of students and teachers as part of a unique programme of 'quiet time'. 'We had amazing results,' Dr Rutherford has said. 'I used to have to be in the streets all the time to stop the fighting, but after we started the TM programme, I didn't have to go out there. You walk into the school and you feel it's tension-free: a stress-free school right in the heart of the inner city, where we had plenty of violence.' Other American schools situated in troubled areas are experiencing similarly positive results, including reduced student suspensions, improved teacher attendance, improved school environment, and fewer fights. Two recent studies have shown that Transcendental Meditation positively influences emotional development in early adolescent African-

American children in a school setting where its practice is supported by the administration [www.tmeducation.org].

Improved Occupational Health and Job Performance

Studies conducted in business and industry have shown that TM improves occupational health and performance [52, 157, 272, 301-321]. Findings include:

- Improved job performance [302-303]
- Increased job satisfaction [301-302]
- Improved relationships at work [301-303]
- Increased productivity [302]
- Increased employee effectiveness [301]
- Increased contribution of managers to the organization [303]
- Improved leadership [306]
- Enhanced management development [272, 307-321, 133]
- Improved physical and mental health and well-being [52, 157, 301, 303-305]
- Improved health-related behaviour in employees and managers [52, 301, 303]
- Reduced stress in employees and managers [157, 301, 303, 305]
- Reduced job tension, anxiety, depression, and insomnia [157, 301, 304]
- Increased energy and decreased fatigue [301, 303]
- Reduced difficulty in obtaining employment for people with post-traumatic stress disorder [156]

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 [52, 157]. Overall, employees practising Transcendental Meditation improved significantly on 10 out of 14 dimensions, whereas controls improved on only one [157].

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 Transcendental Meditation showed significantly 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 [301]. Practice of Transcendental Meditation also led to increased job satisfaction, improved employee effectiveness, and better work and personal relationships, confirming the findings of an earlier study [301-302].

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 statistical meta-analyses [301].

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) [303].

In a randomized study of employees at a high-security government agency, subjects who learned Transcendental Meditation showed 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 [304].

Consistent with these findings, a controlled prospective 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 [305].

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 [306].

Effective Rehabilitation of Offenders

Research spanning more than 35 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 [327-348].

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, Transcendental Meditation 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 [334-335].

In another maximum security prison study, inmates who learned Transcendental Meditation 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 [330-331].

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 [338-339].

Both previous and subsequent research strongly supports these findings [327-329, 332-333, 336-337, 340-348]. 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 [328]. 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 Transcendental Meditation [346].

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 period after release, found that TM markedly decreased recidivism rates, with up to 47% reduction compared to controls participating in other treatment programmes [327, 329, 336]. In keeping with these results, a large scale study of 11,000 prisoners and 900 prison officers in Senegal found that Transcendental Meditation reduced recidivism rates to only 8%, as well as markedly decreasing prison violence and health problems [332].

In a pioneering, community-based rehabilitation programme, six Missouri judges have sentenced over 100 probationers, whose offences range from drunken driving to manslaughter, to learn TM. The programme has had remarkable success, with extremely low rates of re-offending based on promotion of more balanced, successful, and law-abiding lives for participants [333].

Improved Quality of Life for Society as a Whole

Every individual continuously contributes to, and is influenced by, the quality of life in society as a whole. Based on this principle, Maharishi predicted in 1960 that if even a small fraction of the population were to practise Transcendental Meditation, 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 Transcendental Meditation. 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 [349].

This result has subsequently been confirmed and extended by larger and increasingly more rigorous investigations, which have demonstrated that the percentage of the population practising Transcendental Meditation 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 confirmed a direct causal relationship between numbers practising Transcendental Meditation 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 [350, 355].

This phenomenon, representing a transition to a more orderly 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 40 separate studies have now been conducted on this effect [350-378].

Scientific interest grew sharply when it was observed that the effect 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 proportion of any large social system: approximately 800 for the United Kingdom, 1750 for the United States, and only 8000 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 [350-378].

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 Offender Rehabilitation; and Journal of Social Behavior and Personality*. The results of these investigations, summarized in Table 4, reach exceptionally high levels of statistical significance: taken together, they establish the Maharishi Effect on a level of proof unprecedented in sociological research.

TABLE 4

A fascinating feature of these investigations is that diverse and apparently unrelated social parameters are found to improve simultaneously, consistent with the conclusion that this technology enlivens a source of orderliness and integration that is common to all aspects of life [359, 368-369, 373].

With the discovery of the Maharishi Effect, world peace and prosperity become, for the first time, achievable goals. Permanent maintenance of several groups of 8000 individuals collectively practising Transcendental Meditation and Yogic Flying – more than enough to sustain a continuous powerful influence of coherence and positivity for the entire world – would cost no more than a very small number of advanced military aircraft [374-376].

TABLE 4

**Research Findings on Groups Practising 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) [350-355, 358, 368-369]
- Decreased violent crime (Washington DC 1993) [352]
- Decreased violent fatalities (homicide, suicide, and motor vehicle accidents) (USA 1982-1985) [354]
- Decreased motor vehicle and/or aircraft accidents and fatalities (Netherlands 1979, 1981; USA 1979; Jerusalem, Israel 1983; Worldwide 1983-84) [358-359, 368-369, 373]
- Reduction of notifiable infectious diseases (USA and Australia 1983-84) [373]
- Increased economic prosperity and confidence:
 - decrease in an index of unemployment and inflation (USA 1979-1988; Canada 1979-1988) [361-364]
 - increases in stock market indices (USA 1979; UK 1982-83; Israel 1983; Worldwide 1983-84) [359, 365, 368-369, 373]
 - increased patent applications (indicating increased creativity) (USA, UK, South Africa and Australia 1983-84) [373]
- 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) [354, 356-357, 359-360, 366, 368-369]
- Reduced conflict and increased progress towards peace in major world trouble-spots:
 - decreased war deaths, war injuries, and intensity of conflict (Lebanon 1983-85) [368-369, 374]
 - decreased international conflict (Worldwide 1978 and 1983-84) [370, 373]
 - increased progress towards peaceful resolution of conflict (Lebanon 1983-1985) [374]
- Reduced casualties and injuries from international terrorism (Worldwide 1983-85) [370]
- More positive interactions between the superpowers (USA and Soviet Union 1979-86) and increased friendliness in statements of US Head of State (USA and Soviet Union 1985-1987) [371-372]
- Increased harmony in international affairs (Worldwide 1983-84) [373]

References:

1. Orme-Johnson DW, Farrow JT. *Scientific Research on Maharishi's Transcendental Meditation and TM-Sidhi programme: Collected Papers, Volume 1*. Rheinweiler, West Germany: MERU Press, 1977
2. Chalmers RA *et al*. *Scientific Research on Maharishi's 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 Maharishi's Transcendental Meditation and TM-Sidhi programme: Collected Papers, Volumes 5 and 6*. Fairfield, Iowa: Maharishi University of Management Press, 1995, in press
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. Can the Transcendental Meditation program reduce medical expenditures of older people? A longitudinal medical cost minimization study in Canada. *Journal of Social Behavior and Personality* 2005 17:415-442
9. Schneider RH *et al*. A randomized controlled trial of stress reduction for hypertension in older African Americans. *Hypertension* 1995 26:820-827
10. 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
11. 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
12. 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
13. 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
14. Castillo-Richmond A *et al*. Effects of stress reduction on carotid atherosclerosis in hypertensive African Americans. *Stroke* 2000 31(3):568-573
15. 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
16. 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
17. 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
18. 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
19. Barnes VA *et al*. Impact of stress reduction on ambulatory blood pressure in African American adolescents. *American Journal of Hypertension* 2004 17:366-369
20. 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

21. 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
22. 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
23. 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
24. Anderson JW *et al.* Blood pressure response to Transcendental Meditation: a meta-analysis. *American Journal of Hypertension* 2008 21:310-316
25. 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
26. 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
27. 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
28. 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
29. 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
30. 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
31. Barnes VA, Orme-Johnson DW. El impacto de la reduccion del estres en el hipertension esencial y las enfermedades cardiovasculares. *Revista Internacional De Ciencias Del Deporte* (International Journal of Sports Science) 2008 4(12):1-30
32. 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
33. 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
34. Barnes VA *et al.* Stress, stress reduction, and hypertension in African Americans. *Journal of the National Medical Association* 1997 89:464-476
35. Kondwani KA, Lollis CM. Is there a role for stress management in reducing hypertension in African Americans? *Ethnicity and Disease* 2001 11:788-792
36. King MS *et al.* Transcendental Meditation, hypertension and heart disease. *Australian Family Physician* 2002 31:164-168
37. 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
38. 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
39. Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure. 1988 report. *Archives of Internal Medicine* 1988 148:1023-1038
40. 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

41. 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
42. 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
43. 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
44. 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
45. Calderon R *et al.* Stress, stress reduction and hypercholesterolemia in African Americans and whites: a review. *Ethnicity and Disease* 1999 9:451-462
46. Cooper M, Aygen M. Effect of meditation on serum cholesterol and blood pressure. *Harefuah, Journal of the Israel Medical Association* 1978 95:1-2
47. Cooper M, Aygen M. Transcendental Meditation in the management of hypercholesterolemia. *Journal of Human Stress* 1979 5:24-27
48. Schneider RH *et al.* Lower lipid peroxide levels in practitioners of the Transcendental Meditation program. *Psychosomatic Medicine* 1998 60:38-41
49. Van Wijk EP *et al.* Differential effects of relaxation techniques on ultraweak photon emission. *Journal of Alternative and Complementary Medicine* 2008 14:241-250
50. 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
51. 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
52. Haratani T, Henmi T. Effects of Transcendental Meditation on health behavior of industrial workers. *Japanese Journal of Public Health* 1990 37:729
53. Royer A. The role of the Transcendental Meditation technique in promoting smoking cessation: a longitudinal study. *Alcoholism Treatment Quarterly* 1994 11:221-238
54. 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
55. 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
56. 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
57. Bauhofer U. Das programm der Transzendentalen Meditation in der Behandlung von Adipositas. In *Collected Papers, Volume 3* (pp.2196-2206) – see reference 2
58. Wallace RK *et al.* The effects of the Transcendental Meditation and TM-Sidhi program on the ageing process. *International Journal of Neuroscience* 1982 16:53-58
59. 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
60. 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
61. 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

62. 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
63. Smith D *et al.* Erythrocyte sedimentation rate and Transcendental Meditation. *Alternative Therapies in Clinical Practice* 1997 4:35-37
64. 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
65. Goddard PH. Reduced age-related declines in P300 latency in elderly practicing Transcendental Meditation. *Psychophysiology* 1989 26:S29
66. McDonagh JM, Egenes T. The Transcendental Meditation technique and temperature homeostasis. In *Collected Paper, Volume 1* (pp.261-262) – see reference 1
67. Wallace RK. Physiological effects of Transcendental Meditation. *Science* 1970 167:1751-1754
68. Wallace RK *et al.* A wakeful hypometabolic physiologic state. *American Journal of Physiology* 1971 221:795-799
69. Wallace RK *et al.* The physiology of meditation. *Scientific American* 1972 226:84-90
70. Gallois P. Modifications neurophysiologiques et respiratoires lors de la pratique des techniques de relaxation. *L'Encephale* 1984 10:139-144
71. Dillbeck MC, Orme-Johnson DW. Physiological differences between Transcendental Meditation and rest. *American Psychologist* 1987 42:879-881
72. Travis FT. Relationship between meditation practice and transcendent states of consciousness. *Biofeedback* 2009 (in press)
73. Jevning R *et al.* The physiology of meditation: a review. A wakeful hypometabolic integrated response. *Neuroscience and Biobehavioral Reviews* 1992 16:415-424
74. Travis FT, Pearson C. Pure consciousness: distinct phenomenological and physiological correlates of 'Consciousness Itself'. *International Journal of Neuroscience* 2000 100:77-89
75. 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
76. Wilson AF *et al.* Marked reduction of forearm carbon dioxide production during states of decreased metabolism. *Physiology and Behavior* 1987 41:347-352
77. 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
78. 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
79. Jevning R *et al.* Modulation of red cell metabolism by states of decreased activation: comparison between states. *Physiology and Behavior* 1985 35:679-682
80. Jevning R *et al.* Redistribution of blood flow in acute hypometabolic behavior. *American Journal of Physiology* 1978 235:R89-R92
81. Jevning R *et al.* Muscle and skin blood flow and metabolism during states of decreased activation. *Physiology and Behavior* 1982 29:343-348
82. 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
83. Jevning R *et al.* Effects on regional cerebral blood flow of Transcendental Meditation. *Physiology and Behavior* 1996 59:399-402
84. Barnes VA *et al.* Acute effects of Transcendental Meditation on hemodynamic functioning in middle-aged adults. *Psychosomatic Medicine* 1999 61:525-531
85. Travis FT, Wallace RK. Autonomic patterns during respiratory suspensions: possible markers of Transcendental Consciousness. *Psychophysiology* 1997 34:39-46

86. 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
87. Farrow JT, Hebert JR. Breath suspension during the Transcendental Meditation technique. *Psychosomatic Medicine* 1982 44:133-153
88. Garnier D *et al.* Pulmonary ventilation during the Transcendental Meditation technique: applications in preventive medicine. *Est-Medicine* 1984 4:867-870
89. Allison J. Respiratory changes during Transcendental Meditation. *Lancet* 1970 7651:833
90. 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
91. Jevning R *et al.* Adrenocortical activity during meditation. *Hormones and Behavior* 1978 10:54-60
92. Jevning R *et al.* The Transcendental Meditation technique, adrenocortical activity, and implications for stress. *Experientia* 1978 34:618-619
93. Infante JR *et al.* Catecholamine levels in practitioners of the Transcendental Meditation technique. *Physiology and Behavior* 2001 72:141-146
94. 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(3):311-315
95. Tooley GA *et al.* Acute increases in night-time plasma melatonin levels following a period of meditation. *Biological Psychology* 2000 53:69-78
96. Bujatti M, Riederer P. Serotonin, noradrenaline, dopamine metabolites in Transcendental Meditation. *Journal of Neural Transmission* 1976 39:257-267
97. Elias AN, Wilson AF. Serum hormonal concentrations following Transcendental Meditation: potential role of gamma aminobutyric acid. *Medical Hypotheses* 1995 44:287-291
98. Elias AN *et al.* Ketosis with enhanced GABAergic tone promotes physiological changes in Transcendental Meditation. *Medical Hypotheses* 2000 54:660-662
99. 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
100. Lang R *et al.* Sympathetic activity and Transcendental Meditation. *Journal of Neural Transmission* 1979 44:117-135
101. 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
102. Jevning R *et al.* Plasma prolactin and growth hormone during meditation. *Psychosomatic Medicine* 1978 40:329-333
103. Jevning R *et al.* Behavioural alteration of plasma phenylalanine concentration. *Physiology and Behavior* 1977 19:611-614
104. McCuaig LW. Salivary electrolytes, proteins and pH during Transcendental Meditation. *Experientia* 1974 30:988-989
105. Kemmerling T. Wirkung der Transzendentalen Meditation auf den Muskeltonus. *Psychopathometrie* 1978 4:437-438
106. 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 Processes* 2009 (in press)
107. 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
108. 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
109. 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

110. Travis FT. Autonomic and EEG patterns distinguish transcending from other experiences during Transcendental Meditation practice. *International Journal of Psychophysiology* 2001 42:1-9
111. Arenander A, Travis FT. *Brain patterns of Self-awareness*. In B Beitman, J Nair (eds), *Self-Awareness Deficits*. New York: WW Norton, 2004
112. 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
113. Banquet JP. Spectral analysis of the EEG in meditation. *Electroencephalography and Clinical Neurophysiology* 1973 35:143-151
114. 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
115. Travis FT *et al*. Cortical plasticity, contingent negative variation, and transcendent experiences during practice of the Transcendental Meditation technique. *Biological Psychology* 2001 55:41-55
116. 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
117. 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
118. Istratov EN *et al*. Dynamic features of the modified state of consciousness during Transcendental Meditation. *Biulleten Eksperimental Biologii Meditsiny* 1996 121:128-130
119. 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
120. Newberg AB *et al*. Cerebral glucose metabolic changes associated with a meditation based relaxation technique. *Society of Nuclear Medicine* 2006 47:314P
121. 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
122. McEvoy TM *et al*. Effects of meditation on brainstem auditory evoked potentials. *International Journal of Neuroscience* 1980 10:165-170
123. Orme-Johnson DW, Gelderloos P. Topographic brain mapping during Yogic Flying. *International Journal of Neuroscience* 1988 38:427-434
124. 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
125. 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
126. Orme-Johnson DW, Haynes CT. EEG phase coherence, pure consciousness, creativity, and TM-Sidhi experiences. *International Journal of Neuroscience* 1981 13:211-217
127. 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
128. 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
129. 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
130. Orme-Johnson DW *et al*. Intersubject EEG coherence: is consciousness a field? *International Journal of Neuroscience* 1982 16:203-209

131. 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
132. 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
133. Travis F *et al.* Higher development and leadership: toward brain measures of managerial capacity. *Journal of Business and Psychology* 2009 (in press)
134. Orme-Johnson DW *et al.* Neuroimaging of meditation's effect on brain reactivity to pain. *NeuroReport* 2006 17:1359-1363
135. 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
136. 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
137. Williams P, West M. EEG responses to photic stimulation in persons experienced at meditation. *Electroencephalography and Clinical Neurophysiology* 1975 39:519-522
138. Banquet JP, Lesèvre N. Event-related potentials in altered states of consciousness. *Progress in Brain Research* 1980 54:447-453
139. Bennett JE, Trinder J. Hemispheric laterality and cognitive style associated with Transcendental Meditation. *Psychophysiology* 1977 14:293-296
140. Travis FT. A second linked-reference issue: possible biasing of power and coherence spectra. *International Journal of Neuroscience* 1994 75:111-117
141. Travis FT, Tecce JJ. Effects of distracting stimuli on CNV amplitude and reaction time. *International Journal of Psychophysiology* 1998 31:45-50
142. 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 psychophysiological state. *Dreaming* 1994 4:91-104
143. 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
144. 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
145. 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
146. 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
147. 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
148. Werner OR *et al.* Long-term endocrinologic changes in subjects practising the Transcendental Meditation and TM-Sidhi program. *Psychosomatic Medicine* 1986 48:59-66
149. Orme-Johnson DW. Autonomic stability and Transcendental Meditation. *Psychosomatic Medicine* 1973 35:341-349
150. Mills PJ *et al.* Beta-adrenergic receptor sensitivity in subjects practicing Transcendental Meditation. *Journal of Psychosomatic Research* 1990 34:29-33
151. 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
152. Warshal D. Effects of the Transcendental Meditation technique on normal and Jendrassik reflex time. *Perceptual and Motor Skills* 1980 50:1103-1106

153. Wallace RK *et al.* Modification of the paired H-reflex through the Transcendental Meditation and TM-Sidhi program. *Experimental Neurology* 1983 79:77-86
154. Wallace RK *et al.* Academic achievement and the paired Hoffman reflex in students practicing meditation. *International Journal of Neuroscience* 1984 24:261-266
155. Wilson AF *et al.* Transcendental Meditation and asthma. *Respiration* 1975 32:74-80
156. Brooks JS, Scarano T. Transcendental Meditation in the treatment of post-Vietnam adjustment. *Journal of Counseling and Development* 1985 64:212-215
157. Haratani T, Henmi T. Effects of Transcendental Meditation on mental health of industrial workers. *Japanese Journal of Industrial Health* 1990 32:656
158. Farinelli L. Possibilità di applicazioni della tecnologia 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
159. 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
160. Jedrczak A *et al.* Transcendental Meditation and health: an overview of experimental research and clinical experience. *Health Promotion* 1988 2:369-376
161. Knight S. Use of Transcendental Meditation to relieve stress and promote health. *British Journal of Nursing* 1995 4:315-318
162. Ljunggren G. The influence of Transcendental Meditation on neuroticism, use of drugs and insomnia. *Lakartidningen* 1977 74:4212-4214
163. 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
164. Lovell-Smith HD. Transcendental Meditation and three cases of migraine. *New Zealand Medical Journal* 1985 98:443-445
165. 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
166. Kirtane L. Transcendental Meditation: a multipurpose tool in clinical practice. In *Collected Papers, Volume 3* (pp.1826-1830) – see reference 2
167. Overbeck K-D. Auswirkungen der Technik der Transzendentalen Meditation (TM) auf die psychische und psychosomatische Befindlichkeit. *Psychotherapie-Psychosomatik Medizinische Psychologie* 1982 32:188-192
168. Heidelberg R. Transzendente 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
169. Lovell-Smith HD. Transcendental Meditation—treating the patient as well as the disease. *New Zealand Family Physician* 1982 9:62-65
170. Scurfield L. Transcendental Meditation. *Australian Family Physician* 2001 30:735-736
171. 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
172. Toane EB. The Transcendental Meditation program. *Canadian Medical Association Journal* 1976 114:1095-1096
173. Rasmussen SG *et al.* Præsentation af en sundhedsmodel. *Ugeskrift for Læger* 1983 145:1900-1902
174. Gräf D, Pfisterer G. Der Nutzen der Technik der Transzendentalen Meditation für die ärztliche Praxis. *Erfahrungsheilkunde* 1978 27:594-596
175. Stutz E. Transzendente Meditation in der Behandlung Drogenabhängiger. *Das öffentliche Gesundheitswesen* 1977 39:759-766

176. Werner O. Das Programm der Transzendentalen Meditation in der Medizin. *Schweizerische Ärztezeitung* 1978 39:1722-1726
177. Blicher B *et al.* Méditation Transcendantale revue de la littérature scientifique. *Le Médecin du Québec* 1980 15(8):46-66
178. Stutz E. Transzendente Meditation in der Medizin. *Medizinische Klinik* 1977 72:905-908
179. Gräf D. Die Technik der Transzendentalen Meditation und ihre Wirkungen auf die Gesundheit. *Erfahrungsheilkunde* 1978 27:99-102
180. Kanellakos DP. Transcendental consciousness: expanded awareness as a means of preventing and eliminating the effects of stress. In CD Spielberger, IG Sarason (eds), *Stress and Anxiety, Volume 5* (pp.261-315). Washington DC: Hemisphere Publishing Corporation, 1978
181. Gräf D. Die Transzendente Meditation (TM) und ihre therapeutischen Möglichkeiten. *Zeitschrift für Allgemeinmedizin* 1978 54:701-709
182. Kroener D. Transzendente Meditation und ihre Indikationen für den niedergelassenen Arzt. *Biologische Medizin* 1980 9:122-127
183. Subrahmanyam S, Porkodi K. Neurohumoral correlates of Transcendental Meditation. *Journal of Biomedicine* 1980 1:73-88
184. Sharma HM, Alexander CN. Maharishi Ayur-Veda research review. Part 1: Transcendental Meditation. *Complementary Medicine International* 1996 3:21-28
185. Elder C *et al.* Randomized trial of a whole-system Ayurvedic protocol for type 2 diabetes. *Alternative Therapies* 2006 12:24-30
186. 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
187. 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
188. 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
189. 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
190. 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(3) S4:15-26
191. Sharma H, Clark C. *Contemporary Ayurveda: Medicine and Research in Maharishi Ayur-Veda*. Philadelphia: Churchill Livingstone, 1998
192. Eppley K *et al.* Differential effects of relaxation techniques on trait anxiety: a meta-analysis. *Journal of Clinical Psychology* 1989 45:957-974
193. 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
194. 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
195. 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
196. 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
197. 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*. New York: Sage Publishing, 2009 (in press)
198. Alexander CN. Transcendental Meditation. In RJ Corsini (ed.), *Encyclopedia of Psychology* (2nd ed., pp.5465-5466). New York: Wiley Interscience, 1994
 199. 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
 200. 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
 201. 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
 202. 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
 203. 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
 204. Ferguson PC, Gowan JC. Psychological findings on Transcendental Meditation. *Journal of Humanistic Psychology* 1976 16:51-60
 205. 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
 206. Hanley CP, Spates JL. Transcendental Meditation and social psychological attitudes. *Journal of Psychology* 1978 99:121-127
 207. Hjelle JA. Transcendental Meditation and psychological health. *Perceptual and Motor Skills* 1974 39:623-628
 208. 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
 209. Seeman W *et al.* Influence of Transcendental Meditation on a measure of self-actualization. *Journal of Counseling Psychology* 1972 19:184-187
 210. Nidich SI *et al.* Influence of Transcendental Meditation: a replication. *Journal of Counseling Psychology* 1973 20:565-566
 211. Turnbull M, Norris H. Effects of Transcendental Meditation on self-identity indices and personality. *British Journal of Psychology* 1982 73:57-69
 212. 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
 213. 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
 214. 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
 215. 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
 216. 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

217. Nidich S *et al.* Moral development and higher states of consciousness. *Journal of Adult Development* 2000 7:217-225
218. Nystul MS, Garde M. Comparison of self-concepts of Transcendental Meditators and nonmeditators. *Psychological Reports* 1977 41:303-306
219. Travis FT. The significance of Transcendental Consciousness for addressing the 'hard' problem of consciousness. *Journal of Social Behavior and Personality* 2005 17:123-135
220. Alexander CN, Langer EJ (eds). *Higher stages of human development: Perspectives on adult growth*. New York: Oxford University Press, 1990
221. 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
222. 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
223. 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
224. 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
225. 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
226. Dillbeck MC. Testing the Vedic Psychology of the Bhagavad-Gita. *Psychologia* 1983 26:232-240
227. 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
228. Dillbeck MC. The effect of the Transcendental Meditation technique on anxiety level. *Journal of Clinical Psychology* 1977 33:1076-1078
229. Candelent T, Candelent G. Teaching Transcendental Meditation in a psychiatric setting. *Hospital and Community Psychiatry* 1975 26:156-159
230. Davis L. Management of depression in general practice. *British Medical Journal* 1986 292:64
231. Kniffki C. Transzendente Meditation und Autogenes Training—ein Vergleich. In series *Geist und Psyche*. Munich: Kindler Verlag, 1979
232. 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
233. 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
234. Geisler M. Therapeutische Wirkungen der Transzendentalen Meditation auf Drogenkonsumenten. *Zeitschrift für Klinische Psychologie* 1978 7:235-255
235. Shafii M *et al.* Meditation and marijuana. *American Journal of Psychiatry* 1974 131:60-63
236. Shafii M *et al.* Meditation and the prevention of alcohol abuse. *American Journal of Psychiatry* 1975 132:942-945
237. Monahan R. Secondary prevention of drug dependency through the Transcendental Meditation program in metropolitan Philadelphia. *International Journal of the Addictions* 1977 12:729-754
238. 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

239. Aron A, Aron EN. The Transcendental Meditation program's effect on addictive behavior. *Addictive Behaviors* 1980 5:3-12
240. 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
241. O'Connell DF, Alexander CN (eds). *Self recovery: Treating addictions using Transcendental Meditation and Maharishi Ayur-Veda*. New York: Haworth Press, 1994
242. O'Connell DF. The use of Transcendental Meditation in relapse prevention counseling. *Alcoholism Treatment Quarterly* 1991 8:53-68
243. O'Connell DF. Possessing the Self: Maharishi Ayur-Veda and the process of recovery from addictive diseases. *Alcoholism Treatment Quarterly* 1994 11:459-495
244. 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
245. 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
246. 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
247. 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
248. Bleick CR. Case histories: using the Transcendental Meditation program with alcoholics and addicts. *Alcoholism Treatment Quarterly* 1994 11:243-269
249. Ellis GA, Corum P. Removing the motivator: a holistic solution to substance abuse. *Alcoholism Treatment Quarterly* 1994 11:271-296
250. Wallace RK. Decreased drug abuse with Transcendental Meditation: a study of 1,862 subjects. In CJ Zarafonitis (ed.), *Drug Abuse: Proceedings of the International Conference* (pp.369-376). Philadelphia: Lea and Febiger, 1972
251. 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
252. Marcus JB. Transcendental Meditation: a new method of reducing drug abuse. *Drug Forum* 1974 3:113-136
253. 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
254. 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
255. Tjoa A. Increased intelligence and reduced neuroticism through the Transcendental Meditation program. *Gedrag: Tijdschrift voor Psychologie* (Behaviour: Journal of Psychology) 1975 3:167-182
256. 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
257. Fergusson LC *et al*. Vedic science based education and mental and physical health: a preliminary longitudinal study in Cambodia. *Journal of Instructional Psychology* 1995 22:308-319
258. 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
259. Kember P. The Transcendental Meditation technique and postgraduate academic performance. *British Journal of Educational Psychology* 1985 55:164-166
260. Nidich S *et al*. School effectiveness: achievement gains at the Maharishi School of the Age of Enlightenment. *Education* 1986 107:49-54

261. Nidich SI, Nidich RJ. Increased academic achievement at Maharishi School of the Age of Enlightenment: a replication study. *Education* 1989 109:302-304
262. Fergusson LC. Field independence, Transcendental Meditation, and achievement in college art: a re-examination. *Perceptual and Motor Skills* 1993 77:1104-1106
263. 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
264. Dillbeck MC. Meditation and flexibility of visual perception and verbal problem solving. *Memory and Cognition* 1982 10:207-215
265. Schechter 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
266. Travis FT. Creative thinking and the Transcendental Meditation technique. *Journal of Creative Behavior* 1979 13:169-180
267. 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 Nakhariwiroth University. Also in *Collected Papers, Volume 3* (pp.1998-2011) – see reference 2
268. Jedrczak A *et al.* The TM-Sidhi program, pure consciousness, creativity and intelligence. *Journal of Creative Behavior* 1985 19:270-275
269. 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
270. 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
271. Dillbeck MC *et al.* The Transcendental Meditation program as an educational technology: research and applications. *Educational Technology* 1979 19:7-13
272. 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
273. Barnes VA *et al.* Impact of stress reduction on negative school behavior in adolescents. *Health and Quality of Life Outcomes* 2003 1:10
274. 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/>
275. 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
276. 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
277. 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
278. Eyerman J. Transcendental Meditation and mental retardation. *Journal of Clinical Psychiatry* 1981 42:35-36
279. 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
280. 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
281. 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
282. Appelle S, Oswald LE. Simple reaction time as a function of alertness and prior mental activity. *Perceptual and Motor Skills* 1974 38:1263-1268
283. Holt WR *et al.* Transcendental Meditation vs pseudo-meditation on visual choice reaction time. *Perceptual and Motor Skills* 1978 46:726
284. Jedrczak A. The Transcendental Meditation and TM-Sidhi program and field independence. *Perceptual and Motor Skills* 1984 59:999-1000
285. Pelletier KR. Influence of Transcendental Meditation upon autokinetic perception. *Perceptual and Motor Skills* 1974 39:1031-1034
286. 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
287. Rani NJ, Krishna Rao PV. Effects of meditation on attention processes. *Journal of Indian Psychology* 2000 18:52-60
288. Sridevi K, Krishna Rao PV. Temporal effects of meditation on cognitive style. *Journal of Indian Psychology* 2003 21:38-51
289. Travis FT. Cortical and cognitive development in 4th, 8th, and 12th grade students: the contribution of speed of processing and executive functioning to cognitive development. *Biological Psychology* 1998 48:37-56
290. Pagano RR, Frumkin LR. The effects of Transcendental Meditation on right hemispheric functioning. *Biofeedback and Self-Regulation* 1977 2:407-415
291. Daniels D. Comparison of the Transcendental Meditation technique to various relaxation procedures. In *Collected Papers, Volume 2* (pp.864-871) – see reference 2
292. 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
293. Martinetti RF. Influence of Transcendental Meditation on perceptual illusion. *Perceptual and Motor Skills* 1976 43:822
294. 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
295. Rimol AGP. The Transcendental Meditation technique and its effects on sensory-motor performance. In *Collected Papers: Volume 1* (pp.326-330) – see reference 1
296. Blasdel 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
297. Mills WW, Farrow JT. The Transcendental Meditation technique and acute experimental pain. *Psychosomatic Medicine* 1981 43:157-164
298. Travis FT *et al.* Invincible Athletics program: aerobic exercise and performance without strain. *International Journal of Neuroscience* 1996 85:301-308
299. 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
300. 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
301. 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

302. Frew DR. Transcendental Meditation and productivity. *Academy of Management Journal* 1974 17:362-368
303. 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
304. 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
305. Broome JRN *et al.* Worksite stress reduction through the Transcendental Meditation program. *Journal of Social Behavior and Personality* 2005 17:235-276
306. McCollum B. Leadership development and self development: an empirical study. *Career Development International* 1999 4:149-154
307. Heaton D *et al.* Constructs, methods, and measures for researching spirituality in organizations. *Journal of Organizational Change Management* 2004 17:62-82
308. Schmidt-Wilk J *et al.* Developing consciousness in organizations: the Transcendental Meditation program in business. *Journal of Business and Psychology* 1996 10:429-444
309. Schmidt-Wilk J. Consciousness-based management development: case studies of international top management teams. *Journal of Transnational Management Development* 2000 5:61-85
310. Schmidt-Wilk J. TQM and the Transcendental Meditation program in a Swedish top management team. *The TQM Magazine* 2003 15:219-229
311. 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
312. Harung HS. More effective decisions through synergy of objective and subjective approaches. *Management Decision* 1993 31(7):38-45
313. Gustavsson B, Harung HS. Organizational learning based on transforming collective consciousness. *The Learning Organization: an International Journal* 1994 1(1):33-40
314. Harung HS. Total management: integrating manager, managing, and managed. *Journal of Managerial Psychology* 1996 11(2):4-21
315. Harung HS. Enhancing learning and performance through a synergy of objective and subjective modes of change. *The Learning Organization: an International Journal* 1997 4:193-210
316. Harung HS. Improved time management through human development: achieving most with least expenditure of time. *Journal of Managerial Psychology* 1998 13:406-428
317. Harung HS *et al.* Evolution of organizations in the new millennium. *Leadership and Organization Development Journal* 1999 20:198-206
318. Heaton D, Harung HS. Vedic Management: enlightening human resources for holistic success. *Chinmaya Management Review* 1999 3:75-84
319. Heaton D, Harung HS. The conscious organization. *The Learning Organization: an International Journal* 1999 6:157-162
320. 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
321. Alexander CN, Heaton DP, Chandler HM. Promoting adult psychological development: implications for management education. *Human Resource Management* 1990 2:133-137
322. Aron EN, Aron A. Transcendental Meditation and marital adjustment. *Psychological Reports* 1982 51:887-890
323. Holeman R, Seiler G. Effects of sensitivity training and Transcendental Meditation on perception of others. *Perceptual and Motor Skills* 1979 49:270
324. 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

325. Marcus SV. The influence of the Transcendental Meditation program on the marital dyad. Doctoral dissertation, 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
326. Broome VJ. Relationship between participation in Transcendental Meditation and the functionality of marriage. Doctoral dissertation, University of Witwatersrand, Johannesburg, South Africa, 1989.
327. 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
328. 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
329. Bleick CR, Abrams AI. The Transcendental Meditation program and criminal recidivism in California. *Journal of Criminal Justice* 1987 15:211-230
330. 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
331. Abrams AI. Transcendental Meditation and rehabilitation at Folsom Prison: response to a critique. *Criminal Justice and Behavior* 1979 6:13-21
332. Anklesaria FK, King MS. The Transcendental Meditation program in the Senegalese penitentiary system. *Journal of Offender Rehabilitation* 2003 36:303-318
333. Anklesaria FK, King MS. The Enlightened Sentencing Project: a judicial innovation. *Journal of Offender Rehabilitation* 2003 36:35-46
334. 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
335. 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
336. 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
337. Alexander CN *et al* (eds). *Transcendental Meditation in criminal rehabilitation and crime prevention*. Binghamton, New York: Haworth Press, 2003
338. 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
339. 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
340. 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
341. 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
342. 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
343. 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

344. Magill DL. Cost savings from teaching the Transcendental Meditation program. *Journal of Offender Rehabilitation* 2003 36:319-332
345. 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
346. 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
347. 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
348. 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
349. 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
350. 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
351. 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
352. 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
353. 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
354. 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
355. Orme-Johnson DW. Preventing crime through the Maharishi Effect. *Journal of Offender Rehabilitation* 2003 36:257-281
356. 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
357. 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
358. 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
359. Davies JL, Alexander CN. The Maharishi Technology of the Unified Field and improved quality of life in the United States: a study of the First World Peace Assembly, Amherst, Massachusetts, 1979. In *Collected Papers, Volume 4* (pp.2549-2563) – see reference 2
360. 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
361. Cavanaugh KL *et al.* Consciousness and the quality of economic life: empirical research on the macroeconomic effects of the collective practice of Maharishi's Transcendental Meditation and TM-Sidhi program. *Proceedings of the Midwest Management Society* (pp.183-190). Chicago: Midwest Management Society, 1989
362. 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
363. 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
364. 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
365. 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
366. 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
367. 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
368. 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
369. 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
370. 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
371. 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
372. 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
373. 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.2653-2679) – see reference 2
374. 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
375. Orme-Johnson DW. The science of world peace. *International Journal of Healing and Caring* 2003 3:1-9
376. 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>
377. 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
378. Orme-Johnson DW, Oates RM. A field-theoretic view of consciousness: reply to critics. *Journal of Scientific Exploration* 2009 (in press)