

Transcendental Meditation: Overview of Research on Health

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Transcendental Meditation (TM), as taught by Maharishi Mahesh Yogi, is a simple, effortless technique practised for 15-20 minutes twice daily. TM is taught by qualified teachers who have completed an extensive training programme. It requires no belief, nor any change in life-style or diet, and can be easily learned by anyone regardless of age, education, or culture. More than five million people have learned the technique worldwide. Since 1970, more than 600 research studies on TM have been conducted at over 250 universities and research institutions in 30 countries. Many have appeared in peer-reviewed journals.

Improved cardiovascular health: reduction of high blood pressure, reduced cardiovascular events, and decreased mortality

In recent years, a multicentre American team has attracted grants totalling over \$25 million, principally from the US National Institutes of Health, for research on TM and cardiovascular health in older African-Americans (a high-risk group for vascular disease). These and other randomized controlled trials (RCTs) have shown:

- In a nine-year RCT of patients with coronary heart disease, TM led to a 47 per cent reduction in the rate of major clinical events (all-cause mortality plus non-fatal myocardial infarction and stroke) compared to controls who received education on risk factor reduction, including diet modification and exercise.¹
- TM was more effective in reducing mild hypertension than progressive muscular relaxation or a 'usual care' programme.²
- TM reduced blood pressure effectively in both sexes and across a range of risk subgroups;³ cost-effectiveness compared favourably with drugs.⁴
- Follow-up studies confirmed sustained blood pressure reductions with TM.⁵
- TM reduced carotid artery atherosclerosis compared to controls who received health education.⁶
- Pooled data from two randomized studies on hypertensive older people showed that TM was associated with a 23% reduction in all-cause mortality and a 30% decrease in cardiovascular deaths.^{7,8}
- In patients with stable coronary heart disease, 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 hypertensive disease. TM also increased stability of the cardiac autonomic nervous system.⁹
- TM improved functional capacity and quality of life in patients with chronic heart failure. TM subjects also showed reduced depression and had fewer hospitalizations.¹⁰
- In university students, TM reduced blood pressure, and also decreased total psychological distress, anxiety, depression, and anger/hostility; and improved coping.¹¹

- In pre-hypertensive adolescents, TM improved blood pressure at rest, during acute laboratory stress, and during normal daily activity.¹²

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.¹³ A second meta-analysis by an independent team confirmed that TM leads to clinically important reductions in blood pressure.¹⁴ 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. These findings corroborate earlier reviews documenting benefits of TM in prevention and treatment of hypertension and cardiovascular disease.¹⁵⁻¹⁸

Controlled research on TM has also found: improved exercise tolerance in angina patients with documented coronary lesions; reduction of elevated cholesterol (independent of dietary changes); improvements in clinical and ECG variables in patients with cardiac syndrome X (anginal pain, positive exercise ECG, and normal angiogram); lower cortisol levels and reduced cardiovascular risk factors in post-menopausal women.¹⁹⁻²²

Improved quality of life and well-being in women with breast cancer

A recent randomized controlled trial examined effects of TM on quality of life and well-being in women with breast cancer (stage II to IV; average age 63.8 years). Using well-validated measures over an 18-month period, subjects practicing TM showed improvements in overall quality of life, emotional well-being, social well-being, and mental health compared to control patients.²³

Improved health and well-being for elderly people

A meticulously-controlled randomized study from Harvard found that elderly people who learned TM showed greater improvement on measures of mental health, cognitive flexibility, blood pressure, and well-being, and lower mortality than three comparison groups from the same residential institutions (who learned either a relaxation technique, 'mindfulness' training, or received no treatment).²⁴

Improved psychological health and reduced substance abuse

Many studies have documented benefits from TM for mental health and reduced substance abuse.^{10-11, 23-34, 71-85} In meta-analyses, TM was more than twice as effective as other meditation and relaxation procedures in reducing anxiety and improving overall psychological health.^{25, 26} Results remained robust after controlling for strength of design and exclusion of studies by experimenters with a known interest in TM.²⁵

Another series of meta-analyses found that TM was significantly more effective in reducing smoking, alcohol consumption, and illicit drug use than conventional programmes, whether or not these were combined with relaxation techniques.²⁷

A randomized controlled trial found that TM was more effective than psychotherapy in decreasing multiple features of post-traumatic stress disorder in war veterans, with reductions in depression, anxiety, insomnia, severity of delayed stress syndrome, emotional numbness, alcohol consumption, family problems, and difficulty in obtaining employment.²⁸ In another randomized study, TM was superior to an educational corporate stress management programme in reducing anxiety and depression, and improving self-concept, among government employees.²⁹

Decreased health care needs and costs

Research on health care utilization indicates that TM could play an important role in primary prevention and reduction of health costs. A 14-year retrospective study of 2836 people enrolled in the Quebec provincial health insurance scheme found that, after beginning TM, subjects showed a progressive decline in payments to physicians compared to controls. The average annual difference was 13 percent, leading to a cumulative cost reduction of 55 percent after six years.^{35, 36}

A separate 14-year analysis examined changes in medical expenditure in 320 Quebec citizens over 65 years, an age group in which health care needs and costs generally rise sharply. After subjects learned TM, changes in payments decreased compared to matched controls, with a cumulative reduction of 64.2 percent over five years.³⁷

Earlier research using data from Blue Cross/Blue Shield, a major US health insurer, found that both hospital admissions and outpatient consultations were over 50% fewer for subjects practising TM compared to norms and controls. In the over-40 age group, the reduction was over 70 percent. Hospital admissions were markedly reduced in all 17 disease categories studied.^{38, 39}

Deep rest and increased integration of brain functioning

The physiological basis of TM's effects has been extensively investigated, revealing a unique state of restful alertness during the technique, characterized by increased integration in brain functioning and by metabolic, electrophysiological and biochemical markers of deep rest. Regular practice is associated with sustained increases in brain integration and reductions in psychophysiological correlates of stress and ageing.^{40-60, 24}

Improvements in education, occupational health, and rehabilitation

Educational research has shown that TM develops intelligence and creativity; increases brain integration in college students; promotes cognitive and self development; increases academic achievement in school, university, and postgraduate students;

improves perception and mind-body co-ordination; decreases negative school behaviour in adolescents; and reduces symptoms of ADHD.^{40, 61-72}

TM has also been found to improve occupational health and performance,^{29, 73-77} and to promote effective rehabilitation of offenders.⁷⁸⁻⁸⁵

Improved collective health for society

More than 50 controlled studies (including prospective projects) have found that collective practice of TM (and its advanced techniques, particularly Yogic Flying) by a small fraction of the total population can improve the collective health of society as a whole, as measured by reductions in crime, accidents, unemployment, and both civil and international conflict, and improvements in positive trends throughout the community, nation, and world.⁸⁶⁻¹⁰⁰

References:

1. Schneider RH *et al.* Effects of stress reduction on clinical events in African Americans with coronary heart disease: a randomized controlled trial. Paper presented at the American Heart Association meeting Orlando, Florida, 16 November 2009
2. Schneider RH *et al.* A randomized controlled trial of stress reduction for hypertension in older African Americans. *Hypertension* 1995 26:820-827
3. 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
4. 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
5. 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
6. Castillo-Richmond A *et al.* Effects of stress reduction on carotid atherosclerosis in hypertensive African Americans. *Stroke* 2000 31:568-573
7. Schneider RH *et al.* Long-term effect of stress reduction on mortality in persons >55 years of age with systemic hypertension. *American Journal of Cardiology* 2005 95:1060-1064
8. 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
9. 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
10. 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
11. Nidich S *et al.* A randomized controlled trial on effects of the Transcendental Meditation program on blood pressure, psychological distress, and coping in young adults. *American Journal of Hypertension* 2009 22:1326-1331
12. Barnes VA *et al.* Impact of stress reduction on ambulatory blood pressure in African American adolescents. *American Journal of Hypertension* 2004 17:366-368
13. 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
14. Anderson JW *et al.* Blood pressure response to Transcendental Meditation: a meta-analysis. *American Journal of Hypertension* 2008 21:310-316
15. 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

16. 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
17. 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
18. Walton KG *et al.* Psychosocial stress and cardiovascular disease. Part 3: clinical and policy implications of research on the Transcendental Meditation program. *Behavioral Medicine* 2005 30:173-183
19. Zamarra JW *et al.* Usefulness of the Transcendental Meditation program in the treatment of patients with coronary artery disease. *American Journal of Cardiology* 1996 77:867-869
20. Cooper M, Aygen M. Transcendental Meditation in the management of hypercholesterolemia. *Journal of Human Stress* 1979 5:24-27
21. 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
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. Nidich SI *et al.* A randomized controlled trial of the effects of Transcendental Meditation on quality of life in older breast cancer patients. *Integrative Cancer Therapies* 2009 8:228-234
24. 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
25. Eppley K *et al.* Differential effects of relaxation techniques on trait anxiety: a meta-analysis. *Journal of Clinical Psychology* 1989 45:957-974
26. 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
27. 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
28. Brooks JS, Scarano T. Transcendental Meditation in the treatment of post-Vietnam adjustment. *Journal of Counseling and Development* 1985 64:212-215
29. 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
30. Tanner MA *et al.* The effects of the Transcendental Meditation program on mindfulness. *Journal of Clinical Psychology* 2009 65:574-589
31. 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
32. Royer A. The role of the Transcendental Meditation technique in promoting smoking cessation: a longitudinal study. *Alcoholism Treatment Quarterly* 1994 11:221-238
33. Shafii M *et al.* Meditation and marijuana. *American Journal of Psychiatry* 1974 131:60-63
34. Shafii M *et al.* Meditation and the prevention of alcohol abuse. *American Journal of Psychiatry* 1975 132:942-945
35. Herron R, Hillis S. The impact of the Transcendental Meditation program on government payments to physicians in Quebec: an update. *American Journal of Health Promotion* 2000 14:284-291
36. 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
37. Herron RE, Cavanaugh KL. Can the Transcendental Meditation program reduce medical expenditures of older people? A longitudinal cost-reduction study in Canada. *Journal of Social Behavior and Personality* 2005 17:415-442
38. Orme-Johnson DW. Medical care utilization and the Transcendental Meditation program. *Psychosomatic Medicine* 1987 49:493-507
39. Orme-Johnson DW, Herron R. An innovative approach to reducing medical care utilization and expenditures. *American Journal of Managed Care* 1997 3:135-144

40. Travis FT *et al.* Effects of Transcendental Meditation practice on brain functioning and stress reactivity in college students. *International Journal of Psychophysiology* 2009 71:170-176
41. Travis FT *et al.* A self-referential default brain state: patterns of coherence, power, and eLORETA sources during eyes-closed rest and the Transcendental Meditation practice. *Cognitive Processing* 2010 11:21-30
42. Travis F, Shear J. Focused attention, open monitoring and automatic self-transcending: categories to organize meditations from Vedic, Buddhist and Chinese traditions. *Consciousness and Cognition* 2010 (in press)
43. 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
44. Orme-Johnson DW *et al.* Neuroimaging of meditation's effect on brain reactivity to pain. *NeuroReport* 2006 17:1359-1363
45. Travis FT, 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 116:1519-1538
46. 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
47. Travis FT *et al.* Psychological and physiological characteristics of a proposed object-referral/self-referral continuum of self-awareness. *Consciousness and Cognition* 2004 13:401-420
48. Arenander A, Travis FT. Brain patterns of Self-awareness. In B Beitman, J Nair (eds), *Self-Awareness Deficits*. New York: WW Norton, 2004
49. Travis FT. Relationship between meditation practice and transcendent states of consciousness. *Biofeedback* 2009 (in press)
50. Dillbeck MC, Orme-Johnson DW. Physiological differences between Transcendental Meditation and rest. *American Psychologist* 1987 42:879-881
51. Jevning R *et al.* The physiology of meditation: a review. A wakeful hypometabolic integrated response. *Neuroscience and Biobehavioral Reviews* 1992 16:415-424
52. Wallace RK *et al.* A wakeful hypometabolic physiologic state. *American Journal of Physiology* 1971 221:795-799
53. 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
54. 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
55. Gallois P. Modifications neurophysiologiques et respiratoires lors de la pratique des techniques de relaxation. *L'Encephale* 1984 10:139-144
56. 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
57. Infante JR *et al.* Daytime hormonal rhythms in practitioners of the Transcendental Meditation-Sidhi program. *Biomedical Research* 2010 21:161-166
58. 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
59. 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
60. Wallace RK *et al.* The effects of the Transcendental Meditation and TM-Sidhi program on the aging process. *International Journal of Neuroscience* 1982 16:53-58
61. 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
62. 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

63. 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
64. Nidich SI *et al.* Moral development and higher states of consciousness. *Journal of Adult Development* 2000 7:217-225
65. 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
66. Nidich S *et al.* School effectiveness: achievement gains at the Maharishi School of the Age of Enlightenment. *Education* 1986 107:49-54
67. Nidich SI, Nidich RJ. Increased academic achievement at Maharishi School of the Age of Enlightenment: a replication study. *Education* 1989 109:302-304
68. Kember P. The Transcendental Meditation technique and postgraduate academic performance. *British Journal of Educational Psychology* 1985 55:164-166
69. Fergusson LC *et al.* Field independence, transcendental meditation, and achievement in college art: a re-examination. *Perceptual and Motor Skills* 1993 77:1104-1106
70. 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
71. Barnes VA *et al.* Impact of stress reduction on negative school behavior in adolescents. *Health and Quality of Life Outcomes* 2003 1:10
72. 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/>
73. Haratani T, Hemmi T. Effects of Transcendental Meditation on mental health of industrial workers. *Japanese Journal of Industrial Health* 1990 32:656
74. Haratani T, Hemmi T. Effects of Transcendental Meditation on health behavior of industrial workers. *Japanese Journal of Public Health* 1990 37:729
75. 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
76. Schmidt-Wilk J *et al.* Developing consciousness in organizations: the Transcendental Meditation program in business. *Journal of Business & Psychology* 1996 10:429-444
77. Harung H *et al.* Higher development, brain integration, and excellence in leadership. *Management Decision* 2009 47:872-894
78. 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
79. Bleick CR, Abrams AI. The Transcendental Meditation program and criminal recidivism in California. *Journal of Criminal Justice* 1987 15:211-230
80. 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
81. 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
82. 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
83. 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
84. Anklesaria FK, King MS. The Transcendental Meditation program in the Senegalese penitentiary system. *Journal of Offender Rehabilitation* 2003 36:303-318
85. 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
86. 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

87. Dillbeck M *et al.* Effects of Transcendental Meditation and the TM-Sidhi program on quality of life indicators: consciousness as a field. *The Journal of Mind and Behaviour* 1987 8:67-104
88. Dillbeck M *et al.* Test of a field model of consciousness and social change: Transcendental Meditation and TM-Sidhi program and decreased urban crime. *The Journal of Mind and Behavior* 1988 9:457-486
89. Hagelin JS *et al.* Results of the National Demonstration Project to reduce violent crime and improve governmental effectiveness in Washington D.C. *Social Indicators Research* 1999 47:153-201
90. 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 U.S. *Social Indicators Research* 1990 22:399-418
91. 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
92. 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
93. 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
94. 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
95. 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
96. 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
97. 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
98. 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
99. 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
100. Orme-Johnson DW, Oates RM. A field-theoretic view of consciousness: reply to critics. *Journal of Scientific Exploration* 2009 23:139-166