Transcendental Meditation: Health Research Overview

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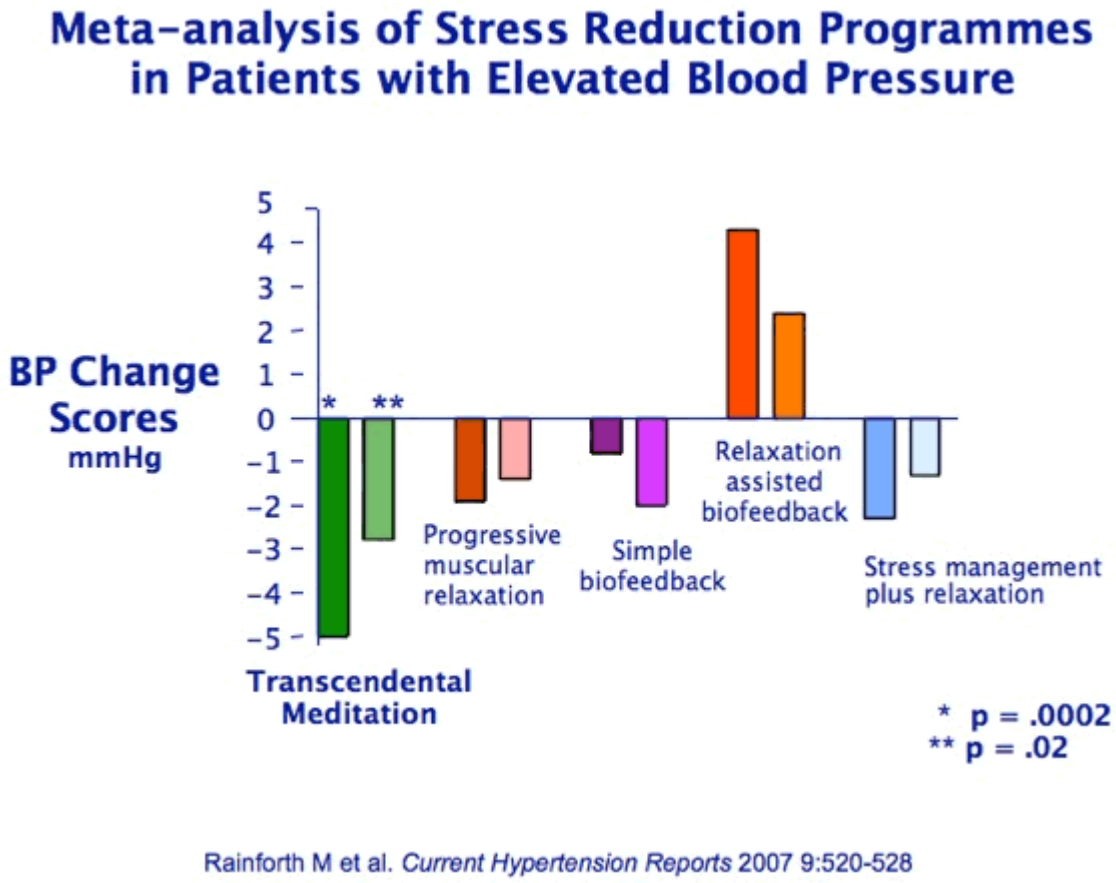
Transcendental Meditation (TM), as taught by Maharishi Mahesh Yogi, is a simple, effortless technique practised for 15-20 minutes twice daily. TM is taught by qualified teachers who have completed an extensive training programme. It requires no belief, nor any change in life-style or diet, and can be easily learned by anyone regardless of age, education, or culture.

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. A second meta-analysis by an independent team confirmed that TM leads to clinically important reductions in blood pressure.

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.



Rainforth M et al. *Current Hypertension Reports* 2007 9:520-528

Improved Cardiovascular Health

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 48% reduction in the rate of major clinical events (all-cause mortality plus non-fatal myocardial infarction and stroke) compared to controls who received education on risk factor reduction, 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 (coronary heart disease), 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]
•TM decreased left ventricular mass in pre-hypertensive adolescents compared to a control group receiving health education, indicating reduction of an early sign of left ventricular hypertrophy (the strongest predictor of cardiovascular mortality apart from age).[13]

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.[14] A second meta-analysis by an independent team confirmed that TM leads to clinically important reductions in blood pressure.[15] 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 are corroborated by other reviews addressing the role of TM in prevention and treatment of hypertension and cardiovascular disease.[16-17]

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.[18-21]

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 practising TM showed improvements in overall

quality of life, emotional well-being, social well-being, and mental health compared to control patients.[22]

Improved Health and Well-being for Elderly People

A meticulously-controlled randomized study from Harvard University 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).[23]

Improved Psychological Health and Reduced Substance Abuse

Many studies have documented benefits from TM for mental health and reduced substance abuse.[1, 10-11, 22-31, 45-47] In meta-analyses, TM was more than twice as effective as other meditation and relaxation procedures in reducing anxiety and improving overall psychological health.[24, 25] Results remained robust after controlling for strength of design and exclusion of studies by experimenters with a known interest in TM.[24]

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.[26]

A randomized controlled trial found that TM was more effective than psychotherapy in decreasing multiple features of post-traumatic stress disorder (PTSD) 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.[27] These findings are supported by a recent study of five US veterans of the Iraq and Afghanistan wars with PTSD. After eight weeks' practice of TM, subjects showed a 50% reduction in PTSD symptoms, including decreased stress and depression, and marked improvements in relationships and overall quality of life.[28]

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%, leading to a cumulative cost reduction of 55% after six years.[32]

These findings are supported by further analyses of two important subgroups whose costs contribute strongly to overall health care expenditure: for the highest-cost 10% of subjects, the TM group's payments decreased by 11% over one year, with a cumulative reduction of 28% after five years; and for subjects over 65 years, the TM group showed a five-year cumulative cost reduction of 64%.[33, 34]

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%. Hospital admissions were markedly reduced in all 17 disease categories studied.[35]

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.[36-42, 23]

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 improves brain integration, cognitive functioning, behaviour and symptoms in children with ADHD. [43-47] TM has also been found to improve occupational health and performance,[29] and to promote effective rehabilitation of offenders.[48]

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.[49-50]

Further Information on Transcendental Meditation

Contact details at the websites www.t-m.org.uk and DoctorsonTM.org
www.meditation.at, www.ayurveda.at, www.ayurveda.at/aerzte

References

1.Schneider RH et al. Stress reduction in the secondary prevention of cardiovascular disease: randomized, controlled trial of Transcendental Meditation and health education in blacks. Circulation: Cardiovascular Quality and Outcomes 5:750-758. 2012.

Schneider RH et al. Stress reduction in the secondary prevention of cardiovascular disease: randomized, controlled trial of Transcendental Meditation and health education in blacks. Circulation: Cardiovascular Quality and Outcomes 5:750-758. 2012.

2.Schneider RH et al. A randomized controlled trial of stress reduction for hypertension in older African Americans. Hypertension 26:820-827. 1995.

3.Alexander CN et al. Trial of stress reduction for hypertension in older African Americans: II. Sex and risk subgroup analysis. Hypertension 28:228-237. 1996.

4.Herron R et al. Cost-effective hypertension management: comparison of drug therapies with an alternative program. American Journal of Managed Care 2:427-437. 1996.

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 18:88-98. 2005.

6.Castillo-Richmond A et al. Effects of stress reduction on carotid atherosclerosis in hypertensive African Americans. Stroke 31:568-573. 2000.

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 95:1060-1064. 2005.

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 17:201-216. 2005.

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 166:1218-1224. 2006.

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 17:72-77. 2007.

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 22:1326-1331. 2009.

12. Barnes VA et al. Impact of stress reduction on ambulatory blood pressure in African American adolescents. American Journal of Hypertension 17:366-368. 2004.

13. Barnes VA et al. Impact of Transcendental Meditation on left ventricular mass in African American adolescents. Evidence-Based Complementary and Alternative Medicine, in press.

14. Rainforth MV et al. Stress reduction programs in patients with elevated blood pressure: a systematic review and meta-analysis. Current Hypertension Reports 9:520-528. 2007.

15. Anderson JW et al. Blood pressure response to Transcendental Meditation: a meta-analysis. American Journal of Hypertension 21:310-316. 2008.

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

17. Walton KG et al. Review of controlled research on the Transcendental Meditation program and cardiovascular disease – risk factors, morbidity and mortality. Cardiology in Review 12:262-266. 2004.

18. Zamarra JW et al. Usefulness of the Transcendental Meditation program in the treatment of patients with coronary artery disease. American Journal of Cardiology 77:867-869. 1996.

19. Cooper M, Aygen M. Transcendental Meditation in the management of hypercholesterolemia. Journal of Human Stress 5:24-27. 1979.

20. 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 85:653-655. 2000.

21. 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 1032:211-215. 2004.

22. 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 8:228-234. 2009.

23. Alexander CN et al. Transcendental Meditation, mindfulness, and longevity: an experimental study with the elderly. Journal of Personality and Social Psychology 57:950-964. 1989.

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

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

26. Alexander CN et al. Treating and preventing alcohol, nicotine, and drug abuse through Transcendental Meditation: a review and statistical meta-analysis. Alcoholism Treatment Quarterly 11:13-87. 1994.

27. Brooks JS, Scarano T. Transcendental Meditation in the treatment of post-Vietnam adjustment. Journal of Counseling and Development 64:212-215. 1985.

28. Rosenthal JZ et al. Effects of Transcendental Meditation in veterans of Operation Enduring Freedom and Operation Iraqi Freedom with posttraumatic stress disorder: a pilot study. Military Medicine 176(6):626–630. 2011.

29. Sheppard DH et al. The effects of a stress management program in a high security government agency. Anxiety, Stress and Coping 10:341-350. 1997.

30. 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 11:187-220. 1994.

31. Shafii M et al. Meditation and the prevention of alcohol abuse. American Journal of Psychiatry 132:942-945. 1975.

32. 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 14:284-291. 2000.

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

34. 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 17:415-442. 2005.

35. Orme-Johnson DW. Medical care utilization and the Transcendental Meditation program. Psychosomatic Medicine 49:493-507. 1987.

36. 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 11:21-30. 2010.

37. Hebert JR et al. Enhanced EEG alpha time-domain phase synchrony during Transcendental Meditation: implications for cortical integration theory. Signal Processing 85:2213-2232. 2005.

38. Jevning R et al. The physiology of meditation: a review. A wakeful hypometabolic integrated response. Neuroscience and Biobehavioral Reviews 16:415-424. 1992.

39. Wallace RK et al. A wakeful hypometabolic physiologic state. American Journal of Physiology 221:795-799. 1971.

40. Wolkove N et al. Effect of Transcendental Meditation on breathing and respiratory control. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 56:607-612. 1984.

41. Glaser JL et al. Elevated serum dehydroepiandrosterone sulfate levels in practitioners of the Transcendental Meditation (TM) and TM-Sidhi programs. Journal of Behavioral Medicine 15:327-341. 1992.

42. Wallace RK et al. The effects of the Transcendental Meditation and TM-Sidhi program on the aging process. International Journal of Neuroscience 16:53-58. 1982.

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

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

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

46. Travis FT et al. Effects of Transcendental Meditation practice on brain functioning and stress reactivity in college students. International Journal of Psychophysiology 71:170-176. 2009.

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

48. 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 35:181-204. 2003.

49. 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 2:165-174. 1996.

50. 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 47:153-201. 1999.