

# Transcendental Meditation: Overview of Research on Health

*Dr Roger Chalmers, 16 September 2017*

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 six 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 33 countries. Many have been published 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 study of patients with coronary heart disease, TM led to a 48% reduction in the rate of major clinical events (all-cause mortality plus non-fatal myocardial infarction and stroke) compared to controls who received education on risk factor reduction. Regularity of TM was significantly associated with longer survival; subjects who practised the technique regularly showed a 66% risk reduction for major clinical events.<sup>1</sup>
- TM was more effective in reducing mild hypertension than progressive muscular relaxation or health education;<sup>2,3</sup> after one year, subjects practising TM demonstrated reduced use of antihypertensive medication relative to the other groups.<sup>4</sup>
- TM reduced carotid artery atherosclerosis compared to controls who received health education.<sup>5, 109</sup>
- 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.<sup>6, 7</sup>
- 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.<sup>8</sup>
- TM improved functional capacity and quality of life in patients with chronic heart failure. TM subjects also showed reduced depression and had fewer hospitalizations.<sup>9</sup>
- In university students, TM reduced blood pressure, and also decreased total psycho-logical distress, anxiety, depression, and anger/hostility; and improved coping.<sup>10</sup>
- In pre-hypertensive adolescents, TM decreased blood pressure at rest and during acute laboratory stress;<sup>11</sup> and decreased ambulatory blood pressure during normal daily activity.<sup>12</sup>
- TM decreased left ventricular mass in pre-hypertensive adolescents compared to controls receiving health education, indicating reduction of an early sign of left ventricular hypertrophy (the strongest predictor of cardiovascular mortality apart from age).<sup>13</sup>

A systematic review and meta-analysis of RCTs from 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.<sup>14</sup> Further meta-analyses of RCTs by independent teams have confirmed that TM leads to clinically important reductions in blood pressure.<sup>15, 16, 111</sup> 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.<sup>15</sup> These findings are corroborated by other reviews addressing the role of TM in prevention and treatment of hypertension and cardiovascular disease.<sup>17-22</sup>

Other research on TM has 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.<sup>23-26</sup> An analysis of cost-effectiveness based on US cost data indicated that TM could compare favourably with pharmacological treatment for hypertension.<sup>27</sup>

### **American Heart Association scientific statement**

A scientific statement from the American Heart Association (AHA) in 2013 concluded that Transcendental Meditation lowers blood pressure, and recommends that TM may be considered in clinical practice for prevention and treatment of hypertension. However, the AHA report found that there is not enough scientific evidence to recommend other meditation or relaxation techniques.<sup>21, 22</sup>

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

A 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.<sup>28</sup> TM has also been found to improve functional quality of life and well-being for people with other chronic disorders.<sup>9, 29, 30</sup>

### **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).<sup>31</sup>

### **Improved psychological health and reduced substance abuse**

Many studies have documented benefits from TM for mental health and reduced substance abuse.<sup>1, 9, 10, 28, 29, 31-47, 85-96, 112-115</sup> In meta-analyses, TM was more effective than other meditation and relaxation procedures in reducing anxiety and improving overall psychological health.<sup>32, 33</sup> Results remained robust after controlling for strength of design and exclusion of studies by experimenters with a known interest in TM.<sup>32</sup>

These findings are supported by a more recent meta-analysis of randomized controlled trials which found that TM was effective in reducing trait anxiety, with greater effects seen in subjects with high anxiety levels before starting the technique. TM had a stronger effect in decreasing anxiety than was observed with mindfulness in a previous meta-analysis.<sup>34</sup>

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.<sup>35</sup>

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.<sup>36</sup>

These results are corroborated by more recent studies. Civilian refugees of the Congo war with severe PTSD showed marked, rapid, and sustained reductions in symptom scores after commencing TM.<sup>39, 40</sup> American veterans of the Iraq and Afghanistan wars showed a 50% reduction in post-traumatic stress symptoms after eight weeks' practice of TM including reduced stress and depression, and improved relationships and quality of life.<sup>37, 38</sup> American active duty military service members with PTSD or anxiety who learned TM showed reduced medication usage and an overall decrease in the severity of psychological symptoms.<sup>41</sup>

A study from Japan found a reduction in mental and physical stress symptoms after instruction in TM among 171 residents of two cities directly affected by the 2011 earthquake and tsunami disaster, compared to control subjects.<sup>110</sup>

### **Decreased health care needs and 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.<sup>48, 49</sup>

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 70%.<sup>50, 51</sup>

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.<sup>52, 53</sup>

### **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.<sup>54-74, 31, 116-118</sup>

### **Improvements in education, occupational health, and rehabilitation**

Educational research (including randomized controlled trials) 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.<sup>54, 63, 78-86</sup> Secondary schoolchildren practising TM had higher rates of high school graduation and lower school dropout than controls.<sup>87</sup>

TM has also been found to reduce stress, depression, and burnout among school teachers and support staff;<sup>42</sup> to improve occupational health and performance for employees and managers;<sup>43, 88-92</sup> and to promote effective rehabilitation of offenders.<sup>93-96, 112-114</sup>

### Improved collective health for society

More than 50 controlled studies (including prospective projects) have found that collective practice of TM (and its advanced techniques, including 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.<sup>97-108, 119-123</sup>

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