

# Transcendental meditation, hypertension and heart disease

**BACKGROUND** Accumulating evidence that stress contributes to the pathogenesis and expression of coronary heart disease has led to the increasing use of stress reduction techniques in its prevention and treatment. The most widely used and tested technique is transcendental meditation.

**OBJECT** To describe transcendental meditation and review research on its use in the treatment and prevention of coronary heart disease.

**DISCUSSION** Transcendental meditation shows promise as a preventive and treatment method for coronary heart disease. Transcendental meditation is associated with decreased hypertension and atherosclerosis, improvements in patients with heart disease, decreased hospitalisation rates and improvements in other risk factors including decreased smoking and cholesterol. These findings cannot be generalised to all meditation and stress reduction techniques as each technique differs in its effects. Further research is needed to delineate the mechanisms involved and to verify preliminary findings concerning atherosclerosis and heart disease and the findings of short term hypertension studies.

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**G**rowing evidence of the adverse impact of psychosocial stress on health has led to increasing use of stress reduction techniques in patient care. The US National Institutes of Health funds research on the stress reduction and self development technique of transcendental meditation (TM) by patients with cardiovascular disease.<sup>1-3</sup>

What is TM?

Transcendental meditation is the most evaluated and widely practised of the diverse meditation techniques used worldwide. It is a simple, mental technique practised for 20 minutes twice a day sitting easily with the eyes closed. It requires no particular lifestyle or belief

and can be practised in conjunction with conventional medical treatment. It is taught by specially trained instructors.\* Because the technique is easy and pleasant to do, most people continue the practice at home.

Maharishi Mahesh Yogi, a scholar of the ancient Vedic tradition of India, introduced TM to the West over 40 years ago. It forms part of a time tested, holistic,

prevention oriented natural system of health care called 'Maharishi Vedic Medicine.'<sup>4,5</sup> Unlike other meditation techniques, it does not involve concentration, mind control, visualisation or contemplation.

During TM, the mind effortlessly experiences more subtle states of a thought — a mantra or sound. This process causes a reduction in mental and physiological activity resulting in a deeply rested physiology but a highly alert state of mind.

This state, called 'transcendental consciousness', has been described as a 'wakeful hypometabolic integrated response' differing from resting, waking, sleeping and dreaming.<sup>6,7</sup> This state has been valued in diverse cultures for its

\* Transcendental meditation can only be learnt from an authorised teacher. A list of authorised centres of instruction in Australia is at <http://www.tmprogram.com.au>. Transcendental meditation is taught under the auspices of Maharishi's Global Administration Through Natural Law Ltd, the sole authorised use of the trade mark Transcendental Meditation.

**Table 1. Diversity of findings in relation to TM**

Physiological:	Decreased hypertension <sup>25,26</sup> and cholesterol <sup>35</sup> increased dehydro-epinandrosterone sulfate <sup>36</sup> lower baseline levels of respiration, spontaneous skin responses, heart rate and plasma lactate <sup>10</sup> increased EEG coherence during and outside the practise <sup>37,38</sup> decreased insomnia <sup>39</sup> a reversal of the effects of stress on neuroendocrine functioning <sup>40-42</sup> increased serotonin turnover <sup>40,43</sup> decreased sympathetic activation <sup>44</sup> decreased lipid peroxide levels <sup>45</sup> increased longevity in the elderly <sup>46,47</sup>
Psychological:	Decreased anxiety, <sup>11-14</sup> post traumatic stress disorder and depression <sup>13</sup> increased self actualisation <sup>14</sup> and intelligence <sup>48</sup> improved self concept <sup>49</sup> improved cognitive functioning in the elderly <sup>46</sup>
Behavioural:	Decreased use of tobacco, alcohol and illicit drugs <sup>15</sup> decreased employee stress and improved employee health effectiveness personal and work relationships. <sup>50</sup>

healing and developmental effects.<sup>8</sup> The deep rest of TM reduces disorder (stress) and promotes order in diverse aspects of human functioning (*Table 1*).

### TM versus relaxation

In the 1970s an understanding developed that there was a 'relaxation response' whereby one attained a restful state by means of any number of relaxation and meditation techniques.<sup>9</sup> However, research suggests each technique has differing effects on body and mind.<sup>10</sup> Studies have found TM to be several times more effective in reducing anxiety<sup>11-14</sup> and substance abuse<sup>15</sup> and in promoting self actualisation<sup>16</sup> than other techniques. Consequently, each approach should be considered on its merits.

### Hypertension and cardiovascular disease

Psychological factors are increasingly being recognised as important contributors to the onset and course of coronary heart disease.<sup>17</sup> Accumulating evidence confirms that life event stress, anxiety, mood disturbance and personality disorders are risk factors for

both hypertension and myocardial ischaemia.<sup>18-21</sup> A recent Dutch study also showed that depressed people had a 3-4 times greater risk of fatal coronary events.<sup>22</sup>

Psychophysiological characteristics of the state attained during TM, including feelings of inner peace and happiness, decreased heart and respiration rates, skin resistance, cortisol and plasma lactate and improved neurophysiology,<sup>6</sup> are the opposite to those caused by stress. The experience appears to activate self repair mechanisms reversing the effect of stress. Hence, it is not surprising that TM may have a preventive and healing potential in heart disease.

Orme-Johnson's analysis of insurance carrier data (2000 TM practitioners, norms of 600 000 others, five year period) found the TM group had significantly lower hospitalisation rates over all age categories and over a range of diseases including cardiovascular disease (87.3%) than norms.<sup>23</sup> The question of self selection and therefore causality arises in both studies, but as TM requires no commitment to a behav-

oural ideal and as many of those learning TM have health problems and benefit from the practice, a predisposition to health or a healthy lifestyle is unlikely to be the cause.

### Blood pressure

Wallace, et al found TM practitioners had lower systolic blood pressure than population norms in 35-44, 45-54 and 55-64 age deciles.<sup>24</sup> A randomised controlled study on hypertensive African American patients of an inner city community health centre found TM was twice as effective in reducing systolic and diastolic blood pressure as progressive muscle relaxation (PMR) when compared to a lifestyle education control group.<sup>25,26</sup>

A second study compared the effect of both interventions on psychosocial stress, obesity, alcohol consumption, physical inactivity and sodium sensitivity — all risk factors for hypertension — in hypertensive male and female African Americans.<sup>2</sup> Patients in TM subgroups experienced a drop in both diastolic and systolic blood pressure. The result was significantly greater in magnitude and application than for PMR, which reduced blood pressure for only some subgroups. As this study extended over only three months and as the effectiveness of treatments generally declines over time, a long term intervention study is needed.

Barnes, et al measured total peripheral resistance and systolic blood pressure in TM subjects and a control group immediately before and during eyes open (both groups), 20 minutes TM group and eyes closed rest (control group).<sup>27</sup> They found that TM promotes a decrease in vasoconstrictive tone which may account for a decrease in blood pressure.

### Angina

A pilot study compared TM and a waitlist control group of 21 (18 after attrition) patients with coronary artery disease and chronic stable angina pectoris on bicycle

ergometer.<sup>28</sup> Testing was to the endpoint of moderately severe angina at the experiment's commencement and then on average 7.6 months later. As compared to controls, the TM group demonstrated significantly greater exercise tolerance, higher maximal work load, delayed onset of ST-segment depression and a decrease in double product at each exercise interval. Cunningham, et al found that TM significantly improved exercise tolerance, angina episodes, and quality of life in nine women with cardiac syndrome X — a cluster of risk factors including central obesity, glucose intolerance, hyperlipidaemia and high blood pressure.<sup>29</sup>

### Coronary atherosclerosis

A randomised controlled study of 60 African Americans over 6–9 months assigned to a TM group and a health education group, measured change in coronary atherosclerosis using a measure of carotid intima-media thickness by B-mode ultrasound.<sup>30</sup> Carotid intima-media thickness is linked to increased risk of stroke and cardiovascular disease and to cardiovascular risk factors. The TM group showed a significant decrease of -0.098 mm compared with an increase of 0.054 mm in controls. This was the first time a stress reduction program was found to reduce atherosclerosis. Further research is needed to confirm these preliminary results.

### TM and smoking cessation

Ten out of 12 studies of varying strength of research design including retrospective, cross sectional and longitudinal studies found decreased smoking in TM practitioners. For example, Royer surveyed smoking adults attending a TM introductory lecture and then 20–24 months later.<sup>31</sup> Those who learnt became the experimental group (110 after attrition from 226) and the remainder became the control group (214/850). Fifty-one percent of regular meditators quit as compared to controls (21%). Motivation to quit did not appear to be a causal factor as both groups were comparable in terms of demographic characteristics, smoking

habits and motivation. Studies finding no change were of comparatively short duration (three and nine months) and one had a low number of users at pretest.

A meta-analysis found TM to be significantly more effective in reducing smoking than preventive education, pharmacological treatment, counselling programs, self help materials and unconventional treatments.<sup>15</sup>

### Conclusion

There are no Australian studies concerning TM and cardiovascular disease. However, overseas findings suggest TM is of value in the treatment and prevention of hypertension and coronary artery disease. Further research is needed to delineate the mechanisms involved.

Positive TM health findings extend across age, cultural and socioeconomic groups.<sup>2,11–15,25,30,32</sup> While deep rest comes with the first meditation, sustained health benefits, eg. decreased smoking and incidence of disease, require long term practice.

Although the cost of instruction (\$1200) may appear high, the wide ranging benefits of TM and the intensive instruction and lifetime follow up provided by instructors suggests it represents value for money.

Governments should consider subsidising TM instruction and encouraging Australian health insurers to adopt the practice of US and European insurers and offer premium reductions for TM practitioners. Given 1999–2000 national health care spending alone was \$2817 per person,<sup>33</sup> providing a financial incentive to practise TM makes economic sense.<sup>34</sup>

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### SUMMARY OF IMPORTANT POINTS

- Meditation and relaxation techniques differ in effect.
- Transcendental meditation is the most effective technique in reducing anxiety and promoting self actualisation.
- Transcendental meditation is associated with reduced smoking, cholesterol and atherosclerosis.
- Pilot studies show improvements in hypertension and angina with TM.
- Hospitalisation rates are 87.3% lower for cardiovascular disease in TM practitioners.

### REPRINT REQUESTS

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