Research Findings on the *Transcendental Meditation* Program Relevant to Health

Introduction

During the past 30 years, more than 600 scientific research studies validating the benefits of the Transcendental Meditation⬧ technique have been conducted in over 30 countries at 210 independent research institutions and universities, including Harvard, Stanford, and UCLA Medical School. This fact sheet provides an overview of physiological effects, a summary of recent research, and references confirming benefits for individual and public health resulting from the practice of the TM⬧ technique.

Overview: Physiological Effects of the *TM* Technique

The original research on the physiological correlates of the TM technique was published in *Science*, the *American Journal of Physiology*, and *Scientific American* in 1970–1972. This research found that the TM technique produces a physiological state of restful alertness, distinct from ordinary waking, dreaming, and deep sleep. During practice of the TM technique, the physiology becomes deeply rested, as indicated by significant reductions in respiration, minute ventilation, tidal volume, and blood lactate, and significant increases in basal skin resistance (an index of relaxation). At the same time, the physiology is alert rather than asleep, as indicated by an increased abundance of alpha waves in the EEG. These initial physiological findings led researchers to investigate the effects of TM practice on health.

Recently Published Research Funded By the National Institutes of Health

Extended Longevity (*American Journal of Cardiology*, May 2005)
This study was a first-of-its-kind long-term, randomized trial. It evaluated the death rates of 202 men and women, average age 71, who had mildly elevated blood pressure. Subjects in the study participated in the Transcendental Meditation program; behavioral techniques, such mindfulness or progressive muscle relaxation; or health education. The study tracked subjects for up to 18 years. The study found that the Transcendental Meditation technique reduced death rates by 23%.

Reduced BP and Reduced Use of Hypertensive Medication (*American Journal of Hypertension*, January 2005)
This long-term, clinical trial evaluated 150 men and women, average age 49, with stage I hypertension (average blood pressure 142/95 mm Hg). Blood pressure in the Transcendental Meditation group reduced by nearly 6 mm diastolic pressure and 3 mm systolic pressure. In contrast, blood pressure in the progressive muscle relaxation group and conventional health education classes reduced by 3 mm diastolic pressure and no change in systolic pressure. Use of hypertensive medication was also found to significantly decrease in the TM group in comparison to controls.

Reduced BP in At-risk Teens (*American Journal of Hypertension*, April, 2004**)**
This $1.5M, four year, randomized, controlled study found that adolescents at risk for heart disease experienced decreased blood pressure as a result of the daily practice of Transcendental Meditation.

Reduced Atherosclerosis (***American Journal of Cardiology,*** April 2002)
This study found that older Americans with multiple risk factors for cardiovascular disease substantially reduced atherosclerosis through a multi-modality treatment program derived from a traditional system of natural medicine that included the daily practice of the Transcendental Meditation technique. In the study 57 seniors were randomly assigned into 3 treatment groups. After one year, carotid intima-media thickness (IMT) decreased significantly more in the subjects who were randomly assigned to the TM group.

Reduced Thickening of Coronary Arteries (***Stroke,*** March 2000)

A study found that the daily practice of the TM technique reduced the thickening of coronary arteries in hypertensive adults, thereby decreasing the risk of heart attack and stroke. After 6 to 9 months, carotid intima-media thickness decreased in the TM group as compared to matched control subjects. This reduction was similar to that achieved by lipid-lowering drugs and extensive lifestyle changes.

Reduced Constriction of Blood Vessels (***Psychosomatic Medicine,*** July 1999 and Jan 1999)
A study of middle-aged adults reported that the TM technique reduced blood pressure by reducing constriction of the blood vessels (vasoconstriction), thereby decreasing the risk of heart disease. A separately published study on adolescents with high normal blood pressure found that randomly assigned subjects who practiced the TM technique exhibited greater decreases in resting blood pressure, vascular resistance, and stress reactivity from pre-to post-treatment, compared to controls.

Reduced Myocardial Eschemia (***American Journal of Cardiology***, May 1996)
Study found that the TM program significantly reduced myocardial eschemia in coronary artery disease patients after eight months of practice.

Reduced Blood Pressure: Comparisons with Other Procedures (***Hypertension***—the American Heart Association's journal—November 1995 and August 1996)
Clinical studies of older African Americans found that the TM program was: 1) as effective as anti-hypertensive drugs in reducing blood pressure, 2) twice as effective as progressive muscle relaxation in lowering hypertension, and, 3) significantly effective in reducing blood pressure for both men and women in all five major risk categories including obesity, high alcohol use, low exercise levels, psychological stress and high salt intake.

Other Published Research Related to Health

Part I: Effects During the Practice of the *TM* Technique

Physiological Indicators of Deep Rest
References:
1. *American Psychologist* 42 (1987): 879–881.
2. *Science* 167 (1970): 1751–1754.
3. *American Journal of Physiology* 221 (1971): 795–799.

Increased EEG Coherence
References:
1. *Proceedings of the San Diego Biomedical Symposium* 15 (1976).
2. *Psychosomatic Medicine* 46 (1984): 267–276.

Increased Blood Flow to the Brain
References:
1. *American Journal of Physiology* 235(1)(1978): R89–R92.
2. *Psychophysiology* 13 (1976): 168.
3. *The Physiologist* 21 (1978): 60.

Increased Muscle Relaxation
References:
1. *Electroencephalography and Clinical Neurophysiology* 35 (1973): 143–151.
2. *Psychopathométrié* 4 (1978): 437–438.

Decreased Stress Hormone (Plasma Cortisol)
References:
1. *Hormones and Behavior* 10(1)(1978): 54–60.
2. *Journal of Biomedicine* 1 (1980): 73–88.
3. *Clinical and Experimental Pharmacology and Physiology* 7 (1980): 75–76.

Part II: Effects in Daily Life after the Practice of the *TM* Technique

Decreased Hospitalization and Doctor Visits

References:
1. *Psychosomatic Medicine* 49 (1987): 493–507.
2. *American Journal of Health Promotion*, (1996).

Decreased Blood Pressure in Hypertensive Subjects

References:
1. *Hypertension* 26 (1995): 820-827.
2. *Journal of Personality and Social Psychology* 57 (1989): 950–964.
3. *Psychosomatic Medicine* 37 (1975): 86 / 45 (1983): 41–46
4. *Harefuah* [the Journal of the Israel Medical Association] 95(1)(1978): 1–2.
5. *Circulation* 45 and 46 (1972): 516.

Decreased Serum Cholesterol Levels

References:
1. *Journal of Human Stress* 5(4)(1979): 24–27.
2. *Journal of Biomedicine* 1 (1980): 73–88.
3. *Harefuah* [the Journal of the Israel Medical Association] 95 (1978): 1–2.

Decreased Severity of Symptoms of Bronchial Asthma

References:
1. *Respiration* 32 (1975): 74–80.
2. *Respiratory Therapy: The Journal of Inhalation Technology* 3 (1973): 79–80.
3. *Clinical Research* 49 (1973): 278.

Decreased Insomnia

References:
1. *The New Zealand Family Physician* 9 (1982): 62–65.
2. *Journal of Counseling and Development* 64 (1986): 212–215.
3. *Japanese Journal of Public Health* 37 (1990): 729.

Healthier Response to Stress

References:
1. *Psychosomatic Medicine* 35 (1973): 341–349.
2. *Journal of Counseling and Development* 64 (1986): 212–215.
3. *Psychosomatic Medicine* 49 (1987): 212–213.
4. *Journal of Psychosomatic Research* 33 (1989): 29–33.

Faster Recovery From Stress

References:
1. *Psychosomatic Medicine* 35 (1973): 341–349.
2. *International Journal of Neuroscience* 46 (1989): 77–86.

Faster Reflex Responses

Reference: *Perceptual and Motor Skills* 50 (1980): 1103–1106.

Increased Stability of the Autonomic Nervous System

References:
1. *Psychosomatic Medicine* 35 (1973): 341–349.
2. *Psychosomatic Medicine* 44 (1982): 133–153.

Lower Baseline Levels of Heart Rate, Respiration Rate, Plasma Lactate, and Spontaneous Skin Resistance Responses

References:
1. *American Psychologist* 42 (1987): 879–881.
2. *L'Encéphale* [The Brain] 10 (1984): 139–144.

Reversal of the Aging Process
References:
1. *International Journal of Neuroscience* 16 (1982): 53–58.
2. *Journal of Personality and Social Psychology* 57 (1989): 950–964.
3. *Journal of Behavioral Medicine* (1986): 327–334.
4. *Journal of Clinical Psychology* 42 (1986): 161–164.

Improved Physiological Stability During Task Performance
Reference: *Anxiety, Stress, and Coping: An International Journal.* 6 (1993): 245–262.

Increased Efficiency of Information Transfer in the Brain
References:
1. *Motivation, Motor and Sensory Processes of the Brain, Progress in Brain Research* 54 (1980): 447–453.
2. *International Journal of Neuroscience* 10 (1980): 165–170.
3. *Psychophysiology* 26 (1989): 529.
4. *Zeitschrift für Elektroenzephalographie und Elektromyographie* EEG-EMG 7 (1976): 99–103.

Part III: Effects on Individual and Public Health of Practice of the *TM* Technique

Improvements in Post-Traumatic Adjustment Problems
Reference: *Journal of Counseling and Development* 64 (1986): 212–215.

Decreased Drug Abuse
References:
1. *American Journal of Psychiatry* 131 (1974): 60–63.
2. *Alcohol Treatment Quarterly* 11 (1994): 13–87.
3. *International Journal of the Addictions* 12 (1977): 729–754. / 26 (1991): 293–325.
4. *Bulletin of the Society of Psychologists in Addictive Behaviors* 2 (1983): 28–33.
5. *Journal of Counseling and Development* 64 (1986): 212–215.
6. *Zeitschrift für Klinische Psychologie* [*Journal for Clinical Psychology*] 7 (1978): 235–255.

Decreased Alcohol Use
References:
1. *International Journal of the Addictions* 12 (1977): 729–754. / 26 (1991): 293–325.
2. *Bulletin of the Society of Psychologists in Addictive Behaviors* 2 (1983): 28–33.
3. *Alcoholism Treatment Quarterly* 11 (1994): 13-87.

Decreased Smoking
References:
1. *American Journal of Psychiatry* 132 (1975): 942–945.
2. *International Journal of the Addictions* 12 (1977): 729–754. / 26 (1991): 293–325.
3. *Bulletin of the Society of Psychologists in Addictive Behaviors* 2 (1983): 28–33.
4. *Journal of Counseling and Development* 64 (1986): 212–215.
5. *Alcoholism Treatment Quarterly* 11 (1994): 13-87.

Increased Tolerance
Reference: *The Journal of Psychology* 99 (1978): 121–127.

Decreased Hostility
References: *Criminal Justice and Behavior* 5 (1978): 3–20. / 6 (1979): 13–21.