

Selected Transcendental Meditation Research Summaries

The following 60 research summaries include studies on cardiovascular and metabolic outcomes; mental health and substance abuse; students, teachers, and healthcare providers; women's health; and mechanistic research. A larger list of research citations of approximately 200 published research studies is currently being compiled.

SECTION A: CARDIOVASCULAR AND METABOLIC OUTCOMES

Decreased Risk of Heart Attack, Stroke and All-Cause Mortality

(Circulation: Cardiovascular Quality and Outcomes, 2012; RCT)

Two hundred and one African American men and women with coronary heart disease were randomly assigned to Transcendental Meditation (TM) or health education (HE) and followed up over an average of 5.4 years. Compared to the HE, the TM group showed a 48% decrease in heart attack, stroke or all-cause mortality (primary endpoint). A 24% decrease in the secondary composite endpoint of cardiovascular mortality, revascularizations, and cardiovascular hospitalizations was also found in TM participants compared to HE controls. Degree of regularity of practice of the TM program was positively associated with survival. Other findings included a reduction of 4.9 mm Hg in systolic blood pressure and a significant decrease in anger expression in the TM group compared to HE.

- **Research Field Site:** Medical College of Wisconsin
 - **National Institutes of Health - National Heart, Lung, and Blood Institute Grant RO1HL48107**
 - **Reference:** 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*, 2012 Nov;5(6):750-758. doi: 10.1161/CIRCOUTCOMES.112.967406.
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Improved Myocardial Flow Reserve

(Journal of Nuclear Cardiology, 2021; RCT)

Fifty-six African American coronary heart disease (CHD) patients were assigned to standard cardiac rehabilitation (CR), CR+TM (Transcendental Meditation), TM alone, or usual care. Testing was done at baseline and after 12 weeks. The primary outcome was myocardial flow reserve (MFR) assessed by ¹³N-ammonia positron emission tomography (PET). For the 37 patients who completed posttesting, there were significant MFR improvements in the CR + TM group (+20.7%; ES = 0.64) and the TM group alone (+12.8%; ES = 0.36). By comparison, the CR-alone and usual care groups showed modest changes (+ 5.8%; ES = 0.17 and - 10.3%; ES = - 0.31), respectively. For the combined TM group, MFR increased (+ 14%, ES = 0.56) compared to the combined non-TM group (- 2.0%, ES = - 0.08). These pilot data suggest that adding the TM technique to standard cardiac rehabilitation or using TM alone may improve the myocardial flow reserve in African American CHD patients.

- **Research Field Site:** Columbia University Medical Center
- **National Heart Lung and Blood Institute Grant HL 100386.**
- **Reference:** Bokhari S, et al. Effects of cardiac rehabilitation with and without meditation on myocardial blood flow using quantitative positron emission tomography: A pilot study. *Journal of Nuclear Cardiology*, 2021 Aug;28(4):1596-1607. doi: 10.1007/s12350-019-01884-9.

Decreased Blood Pressure in Hypertensive Black Patients**(Hypertension, 1995; RCT)**

One hundred twenty-seven hypertensive African Americans were randomly assigned to either Transcendental Meditation (TM), Progressive Muscle Relaxation (PMR), or education control (EC) groups and completed three-month post-testing. Results showed reductions of 10.7 mm Hg in systolic blood pressure (SBP) and 6.4 mm Hg in diastolic blood pressure (DBP) in the TM group; these reductions in BP were significantly greater than changes found in the other treatment groups. The BP reductions in the TM group compare favorably to the effects found with antihypertensive medication.

- **Research Field Site:** West Oakland Health Center, CA
 - **Private foundation funding**
 - **Reference:** Schneider R. Staggers F, et al. A randomized controlled trial of stress reduction for hypertension in older African Americans. *Hypertension*, 1995;26(5):820-827.
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Improved Functional Capacity and Decreased Depression**in African American Heart Failure Patient****(Ethnicity and Disease, 2007; RCT)**

Twenty-three African American patients hospitalized with congestive heart failure were randomly assigned to Transcendental Meditation (TM) or health education (HE) control groups. For the primary outcome of functional capacity, the TM group showed significant improvement on the six-minute walk test from baseline to six months compared to HE. The TM group also showed improvements in mental health, depression, and disease-specific quality of life. The TM group had fewer re-hospitalizations during the six months of follow-up.

- **Research Field Site:** Department of Medicine, University of Pennsylvania
 - **National Center for Complementary and Alternative Medicine Grant P50-AT00082-05**
 - **Reference:** Jayadevappa R, Johnson J, et al. Effectiveness of the Transcendental Meditation program for African Americans with congestive heart failure: A pilot randomized control study. *Ethnicity and Disease*, 2007;17(1):72-77. PMID: 17274213.
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Reduced Metabolic Syndrome**(Archives of Internal Medicine, 2006; RCT)**

One hundred and three coronary heart disease patients were randomly assigned to Transcendental Meditation (TM) or health education (HE) control group. Over a four-month intervention period, the TM group showed a significant improvement in blood pressure and insulin resistance components of the metabolic syndrome as well as cardiac autonomic nervous system tone compared to HE. These results suggest that TM may modulate the physiological response to stress and improve coronary heart disease risk factors.

- **Research Field Site:** Cedars-Sinai Medical Center
- **National Center for Complementary and Alternative Medicine and other National Institutes of Health Grants R01 AT00226, 1-P50-AA0082-02, 1-R15-HL660242- 01, R01-HL51519-08c**
- **References:** Paul-Labrador, M, Bairey-Merz, CN, et al. Controlled trial of Transcendental Meditation

on components of the metabolic syndrome in subjects with coronary heart disease. *Archives of Internal Medicine*, 2006 Jun 12;166(11):1218-24. doi: 10.1001/archinte.166.11.1218.

Lower Left Ventricular Hypertrophy (LVMI)

(Ethnicity and Disease, 2019; RCT)

This randomized controlled trial evaluated the effects of stress reduction with the TM technique as compared to health education (HE) on preventing left ventricular hypertrophy (LVH). Eighty-five African American adults with hypertension were evaluated by M-mode echocardiography at baseline and after 6 months for left ventricular mass index (LVMI), as well as for blood pressure, psychosocial stress and behavioral factors. Results at posttest indicated that (a) the TM group had significantly lower LVMI compared with the HE group (-7.55gm/m², 95% CI -14.78 to -.34 gm/m², P=.040); (b) both interventions showed significant within group reductions in BP, (SBP/ DBP changes for TM: -5/-3 mm Hg, and for HE: -7/-6 mm Hg, P=.028 to <.001) although between group changes were not significant; and (c) both groups showed significant reductions in anger (P=.002 to .001).

- **Research Field Site:** Charles R. Drew University of Medicine and Science, Los Angeles, CA

- **Supported in Part by National Heart Lung and Blood Institute Grant #R01 HL5159**

- **Reference:** Schneider RH, et al. Stress Reduction in the Prevention of Left Ventricular Hypertrophy: A randomized controlled trial of Transcendental Meditation and health education in hypertensive African Americans. *Ethnicity and Disease*, 2019 Oct 17;29(4):577-586. doi: 10.18865/ed.29.4.57.

Decreased Systolic Blood Pressure in Blacks Exhibiting Elevated Baseline Blood Pressure

(American Journal of Preventive Cardiology, 2021; RCT)

This randomized controlled trial evaluated the effect of stress reduction with the TM technique as compared to health education (HE) in a total of 304 Black adults with high normal blood pressure (BP) and normal BP using international classifications. BP was recorded at 3, 6, 9, 12, 24, 30 and 36 months after baseline. After an average of 19.9 ± 11.1 months follow-up, TM participants in the high-normal BP group showed significantly lower posttest SBP (-3.33 mm Hg, p = 0.045) and no difference in DBP (-0.785 mm Hg, p = 0.367) compared to HE participants; in the normal BP group, the SBP and DBP were not different between the TM and HE participants. The hazard ratio for hypertensive events was 0.52 (p = 0.15) in the high normal BP group (7 TM vs 13 HE) with no difference in the normal BP group. Authors concluded that these results may be relevant to reducing health disparities in CVD and related co-morbidities.

- **Research Field Site:** Medical College of Wisconsin

- **National Heart Lung and Blood Institute Grant #R01HL060703**

- **Reference:** Schneider RH, Grim, C, et al. Randomized controlled trial of stress reduction with meditation and health education in black men and women with high normal and normal blood pressure. *American Journal of Preventive Cardiology*, 2021, 1;8:100279. doi: 10.1016/j.ajpc.2021.100279.

Decreased HbA1c and Insulin Resistance in Black Women at High Risk of Cardiovascular Disease (Journal of Women's Health, 2025; RCT)

A total of 201 Black American women (average age 64.6) with documented CVD or with high CVD risk scores were randomly allocated to either Transcendental Meditation (TM) or health education

(HE). After one year, the TM group compared to HE showed reductions in hemoglobin A1c (HbA1c) ($p < 0.01$) and insulin resistance (homeostatic model assessment [HOMA] IR) ($p = 0.03$ thickness (cIMT), with no significant difference between groups. In a post hoc exploratory analysis, both TM and HE demonstrated reductions in cIMT compared with historical controls ($p = 0.006$). These results suggest that TM and HE were associated with prevention of progression of cIMT, while the TM group showed improvements in cardiometabolic disease endpoints of HbA1c, IR, and HDL cholesterol and weight loss in overweight/obese participants.

- **Research Field Site:** Morehouse School of Medicine and Howard University Hospital
 - **National Institutes of Health National Center for Complementary and Integrative Health (NIH-NCCIH), P50-AT00082.**
 - **Reference:** Gaylord-King C, et al. A multicenter randomized controlled trial of meditation and health education in the prevention of cardiometabolic disease in black women. *Journal of Women's Health*. 2025, 34(10):1247-1256. doi: 10.1177/15409996251364663.
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Reduced Carotid Atherosclerosis in Hypertensive Patients (Stroke, 2000; RCT)

Sixty hypertensive subjects were randomly assigned to Transcendental Meditation (TM) or health education (HE) control groups and completed post-testing after 6 to 9 months. The TM group showed a significant decrease of 0.098 mm in intima-media-thickness (IMT), as measured by B- mode ultrasound, compared with an increase of 0.054 mm in the control group. This reduction was similar to that achieved by lipid-lowering drugs and extensive lifestyle changes.

- **Research Field Site:** Charles R. Drew University of Medicine and Science, CA
 - **National Heart, Lung, and Blood Institute Grants HL-51519, HL-51519-S2**
 - **Reference:** Castillo-Richmond A, et al. Effects of stress reduction on carotid atherosclerosis in hypertensive African Americans. *Stroke*, 2000;31:568-573.
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Lower Mortality in Hypertensive Older Adults (American Journal of Cardiology, 2005; data pooled from 2 RCTs)

Patient data were pooled from two published randomized controlled trials on high blood pressure that compared TM to other behavioral interventions (mindfulness, progressive muscle relaxation, mental relaxation procedures, health education) and usual care. A total of 202 older adults with pre-hypertension or hypertension were followed up for vital status and cause of death over an average of 7.6 years. Compared with combined controls, the TM group showed a 23% decrease in all-cause mortality, the study's primary outcome. Secondary analyses showed a 30% decrease in the rate of cardiovascular mortality and a 51% decrease in the rate of mortality due to cancer in the TM group compared with combined controls.

- **Research Field Sites:** The two published studies were originally conducted at the West Oakland Health Center, CA and Harvard University, MA.
- **Supported in Part by National Center for Complementary and Alternative Medicine Grant 1P50AT00082**

- **Reference:** Schneider RH, Alexander CN, et al. Long-term effects of stress reduction on mortality in persons > 55 years of age with systemic hypertension. *American Journal of Cardiology*, 2005 May 1;95(9):1060-1064. doi: 10.1016/j.amjcard.2004.12.058.
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Reduced Blood Pressure over One-Year

(*American Journal of Hypertension*, 2005, RCT)

This randomized controlled trial compared the effects of two stress reduction techniques and a health education control program on hypertension during a period of 1 year in African American men and women (N = 150, mean age 49 ± 10 years, mean blood pressure (BP) = 142/95 mm Hg) at an urban community health center. Interventions included 20 min twice a day of Transcendental Meditation (TM) or progressive muscle relaxation (PMR), or participation in conventional health education (HE) classes. The TM group showed decreases in systolic BP/diastolic BP of -3.1/-5.7 mm Hg compared to -0.5/-2.9 mm Hg for PMR or HE, (P = .12 to .17 for systolic BP, P = .01 for diastolic BP). In addition, the TM group demonstrated reduced use of antihypertensive medication relative to increases for PMR (P = .001) and HE (P = .09) groups. Group analysis by gender showed that women practicing TM had decreased BP (-7.3/-6.9 mm Hg) significantly more than women practicing PMR (0.7/-2.7 mm Hg) or HE (-.07/-3.0 mm Hg) (P .01 to .03). The change in men practicing TM (0.2 /-4.7 mm Hg) was greater than men practicing HE (-0.9/-2.0 mm Hg) for diastolic BP only (P = .09,) and not different from PMR men (-2.0/-3.1).

- **Research Field Site:** West Oakland Health Center, CA

- **Private foundation funding**

- **Reference:** Schneider RH, Alexander CN, Staggers et al. A randomized controlled trial of stress reduction in African Americans treated for hypertension for over one year. *American Journal of Hypertension*. 2005 Jan 1;18(1):88-9.
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Reduced Ambulatory Blood Pressure in Black Adolescent

(*Am J of Hypertension*, 2004; RCT)

African American adolescents (aged 16.2 +/- 1.3 years) with high normal systolic BP were randomly assigned to either 4-month TM (n = 50) or health education control (n = 50) groups. Ambulatory 24-h BP measures were recorded at pretest, 2- and 4-month post-tests, and 4-month follow-up. Greater decreases in daytime systolic BP (P < .04) and diastolic BP (P < .06) in the TM group compared with the control group across the visits demonstrate a beneficial impact of the TM program in youth at risk for the development of hypertension.

- **Reference:** Barnes V, Treiber F, Johnson MH. Impact of Transcendental Meditation on ambulatory blood pressure in African American adolescents. *Am J of Hypertension*, 2004; 17(4):366-369.
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Improved Cardiovascular Functioning at Rest and in Reaction to Stressors in Adolescents at Risk for Hypertension

(*J Psychosomatic Research*, 2001; RCT)

Thirty-five adolescents with resting blood pressure between the 85th and 95th percentile for their age and gender were randomly assigned to either Transcendental Meditation (TM) or health

education (HE) control groups, with a two-month intervention period. The TM group exhibited a significant decrease in resting systolic blood pressure (SBP) compared to controls. Greater decreases in blood pressure, heart rate, and cardiac output reactivity to stressors were further observed.

- **Research Field Site:** Georgia Health Sciences University
 - **Supported in Part by National Institutes of Health Grant HL62976**
 - **Reference:** Barnes, Treiber, F, Davis, H. Impact of Transcendental Meditation on cardiovascular function at rest and during acute stress in adolescents with high normal blood pressure, *J Psychosomatic Research*. 2001, 51:597-605.
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Meta-Analysis of Blood Pressure Data

(American Journal of Hypertension, 2008)

Nine randomized, controlled trials met eligibility criteria. The random-effects meta-analysis model for systolic and diastolic blood pressure, respectively, indicated that Transcendental Meditation, compared to control, was associated with the following changes: -4.7 mm Hg (95% confidence interval (CI), -7.4 to -1.9 mm Hg) and -3.2 mm Hg (95% CI, -5.4 to -1.3 mm Hg). Subgroup analyses of hypertensive groups and high-quality studies showed similar reductions. The authors concluded that "the regular practice of Transcendental Meditation may have the potential to reduce systolic and diastolic blood pressure by -4.7 and 3.2 mm Hg, respectively. These are clinically meaningful changes."

- **Reference:** Anderson JW, et al. Blood pressure response to Transcendental Meditation: a meta-analysis. *American Journal of Hypertension*. 2008, 21(3):310-6. doi: 10.1038/ajh.2007.65.
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Meta-Analysis of Blood Pressure Data

(J Hum Hypertens, 2015)

Twelve studies with 996 participants indicated an approximate reduction of systolic and diastolic BP of -4.26 mm Hg (95% CI=-6.06, -2.23) and -2.33 mm Hg (95% CI=-3.70, -0.97), respectively, in TM groups compared with control groups. Results from subgroup analysis suggested that TM had a greater effect on systolic BP among older participants, those with higher initial BP levels, and women, respectively.

- **Reference** Bai, Z., Chang, J., Chen, C. et al. Investigating the effect of transcendental meditation on blood pressure: a systematic review and meta-analysis. *J Hum Hypertens*. 2015; 29, 653-662. <https://doi.org/10.1038/jhh.2015.6>.
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2025 AHA/ACC Joint Guidelines for the Prevention, Detection, Evaluation and Management of High Blood Pressure

"In adults with or without hypertension, stress reduction through Transcendental Meditation may be reasonable to prevent or treat elevated BP and hypertension, as an adjunct to lifestyle or medication interventions." (Recommendation Level 2B). Stress-reduction strategies have been assessed for their effect on BP lowering. There is consistent moderate- to high-level evidence from short-term clinical trials that transcendental meditation can lower BP in patients without and with hypertension, with mean reductions of approximately 5/2 mm Hg in SBP/DBP.

Among other stress-reducing and mindfulness-based interventions, data are less robust, and

evidence is of lower quality because of smaller, short-term trials with heterogeneous interventions and results. There is moderate-grade evidence that breathing control (device) interventions lower SBP/DBP by approximately 5/3 mm Hg in people with and without hypertension. There is also low- to moderate-grade evidence that yoga of diverse types lowers BP.

- **Reference:** Jones DW, et al. 2025_AHA/ACC Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2025, 152 (11).

SECTION B: MENTAL HEALTH (PTSD, ANXIETY, DEPRESSION) AND SUBSTANCE ABUSE

Reduced PTSD and Depression Symptoms (*The Lancet Psychiatry*, 2018; RCT)

This randomized controlled study of 203 veterans with PTSD, conducted at the San Diego VA, compared the non-trauma-focused practice of Transcendental Meditation (TM) with the “gold standard” trauma-focused prolonged exposure (PE) therapy in a non-inferiority clinical trial, and compared both treatments to a PTSD health education (HE) control. For PTSD symptom severity total scores, using the Clinician- Administered PTSD Scale (CAPS-IV), both TM and PE were significantly superior to HE, with TM being non-inferior to PE over a three-month period. Similar results were found for depression using the Patient Health Questionnaire (PHQ-9). In terms of percentages of veterans exhibiting clinically significant change on the CAPS (equal to or greater than a 10-point reduction), 61% received TM, 42% received PE, and 32% received HE. Findings indicate TM to be effective in decreasing PTSD symptom severity and serving as an alternative for those who prefer not to receive or who do not respond to exposure-based treatments for PTSD.

- **Research Field Site:** San Diego VA Medical Center
- **Funding:** Department of Defense Grants W81XWH-12-1-0576, W81XWH-12-1-0577
- **Reference:** Nidich S, Mills P, et al. Non trauma focused meditation versus exposure therapy in veterans with post-traumatic stress disorder: a randomized controlled trial. *The Lancet Psychiatry*, 2018; 5(2):975-986.

Decreased PTSD Symptom Severity, Depression, and Insomnia (*Journal of Traumatic Stress*, 2022; RCT)

Forty veterans diagnosed with PTSD were assigned to TM or Treatment as Usual (TAU) control group. Participants were measured at baseline and after three months. A significant decrease in PTSD symptom severity, using the Clinician-Administered PTSD Scale (CAPS-5), was found for the TM group compared to TAU at three-months (between group effect size Cohen's $d=0.86$). Fifty percent in the TM group no longer met criteria for PTSD diagnosis at posttest, compared to 10% of controls ($p=.007$). Significant reductions were also found for depression, anxiety, and sleep problems for the TM group compared to TAU (Cohen's d effect sizes ranged from .82 to 1.0).

- **Research Field Site:** Northwell Health, LI, NY
- **Private foundation funding**
- **Reference:** Bellehsen M, Stoycheva V, et al. Transcendental Meditation as a treatment for PTSD in veterans. *Journal of Traumatic Stress*, 2022; 35(1), 22-31.doi.org/10.1002/jts.22665.

Improved PTSD Symptoms, EEG, Depression, and Quality of Life**(Psychological Trauma: Theory, Research, Practice, and Policy. 2018; Single Group pretest-posttest)**

Twenty-nine veterans were recruited and instructed in the Transcendental Meditation program. From baseline to posttreatment, participants reported reductions in PTSD symptoms, experiential avoidance, and depressive and somatic symptoms, as well as increases on measures of mindfulness and quality of life. These improvements were either maintained or continued to improve through the 2-month follow-up. Compared to baseline, EEG spectral power during meditation states increased in low-frequency bands (1-7 Hz) at posttreatment and follow-up and suggesting TM-specific changes in brain state associated with the intervention.

- **Private funding**

- **Reference:** Kang SS, et.al. Transcendental meditation for veterans with post-traumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, 2018 Nov;10(6):675- 680. doi:10.1037/tra0000346. Epub 2018 Jul 19.
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Reduced Anxiety and PTSD Symptoms and Decreased Usage of Medication**(Military Medicine, 2016; Controlled, non-randomized)**

This study included 74 active-duty military with documented PTSD or anxiety disorder not otherwise specified (ADNOS), 37 who were instructed in TM and 37 who were not. At 1 month, 83.7% of the TM group stabilized, decreased, or ceased medications and 10.8% increased medication dosage; compared with 59.4% of controls who showed stabilization, decrease, or cessation of medications, and 40.5% who increased medications ($p < 0.03$). A similar pattern was observed after 2 months ($p < 0.27$), 3 months ($p < 0.002$), and 6 months ($p < 0.34$). Notably, there was a 20.5% reduction in psychological symptoms severity in the TM group compared to controls after 6 months.

- **Research Field Site:** Fort Gordon, GA

- **Private foundation funding**

- **Reference:** Barnes VA, et al. Transcendental Meditation and psychotropic medication use among active-duty military service members with anxiety and PTSD. *Military Medicine*, 2016 Jan;181(1):56-63. doi: 10.7205/MILMED-D-14-00333.
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Decreased PTSD Symptoms in Female Inmates**(The Permanente Journal, 2017; RCT)**

Twenty-two female inmates at the Coffee Creek Correctional Facility in Wilsonville, OR, with at least 4 months of their prison term remaining, were randomly assigned to either TM or a wait-list control group. Significant reductions were found over several months on total trauma symptom severity, intrusive thoughts, and hyperarousal, using the well-validated PTSD Symptoms Checklist (PCL-C). Effect sizes ranged from 0.65 to 0.99 for all variables.

- **Research Field Site:** Oregon State Prison System Private foundation funding

- **Reference:** Nidich S, et al. Reduced trauma symptoms and perceived stress in female prison inmates through the Transcendental Meditation program: A randomized controlled trial. *The Permanente Journal*, 2017, 21, 16-0008.

Decreased PTSD Symptoms, Anxiety, and Perceived Stress in Male Inmates**(The Permanente Journal, 2016; RCT)**

Trauma events are four times more prevalent in prison inmates than in the public and are associated with increased recidivism and other mental and physical health issues. One hundred eighty-one male prison inmates with a moderate- to high-risk criminal profile were randomly assigned to either the TM program or to a treatment-as-usual control group. The TM group compared to controls showed significant reductions in total trauma symptoms, anxiety, depression, dissociation, and sleep disturbance subscales, and perceived stress.

- **Research Field Site:** Oregon State Prison System
 - **Private foundation funding**
 - **Reference:** Nidich S, O'Connor T, Rutledge T, et al. Reduced trauma symptoms and perceived stress in male prison inmates through the Transcendental Meditation program: A randomized controlled trial. *The Permanente Journal*, 2016; 20(4):43-47.
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Decreased PTSD in Congolese Refugees**(Journal of Traumatic Stress, 2013; Controlled non-randomized)**

This study evaluated the effects of Transcendental Meditation (TM) compared to matched controls with a total of 42 Congolese refugees on the Post-traumatic Stress Disorder Checklist-Civilian (PCL-C). All participants completed the PCL-C measure of PTS symptoms at baseline, and 30-day and 135-day posttests. The PCL-C scores in the control group trended upward. In contrast, the PCL-C scores in the TM group went from a total average score of 65 at baseline to below 30 after 30 days of TM practice and remained low at 135 days. Effect size was large ($d > 1.0$). Compliance with TM practice was good; all refugees who learned TM completed the study and were able to practice TM successfully.

- **Research Field Site:** Kampala, Uganda
 - **Private foundation funding**
 - **Reference:** Rees B, Travis F, Shapiro D, Chant R. Reduction in posttraumatic stress symptoms in Congolese refugees practicing transcendental meditation. *Journal of Traumatic Stress*. 2013; 26(2):295-8.
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Decreased Substance Abuse**(Journal of Substance Abuse Treatment, 2018; Controlled, non-randomized)**

Sixty adults with primary alcohol use disorder (AUD) following inpatient treatment were sequentially assigned to either TM or treatment-as-usual group. Those practicing TM twice-daily as recommended were less likely than the rest of the sample to return to any drinking (25% vs. 59%) or heavy drinking post-discharge (0% vs. 47%). Greater regularity of TM practice was inversely correlated with psychological distress, craving, and alcohol use at follow-up.

- **Research Field Site:** Avery Road Clinic, Rockville, MD; Maryland Treatment Centers
- **Private Foundation Funding**
- **Reference:** Gryczynski J, et al. Integration of Transcendental Meditation® (TM) into alcohol use disorder (AUD) treatment. *Journal of Substance Abuse Treatment*, 2018; 87:23-30. doi: 10.1016/j.jsat.2018.01.009

**Meta-Analysis of Anxiety and Other Negative Affect
(Psychological Bulletin, 2012)**

Overall, 163 studies were found that allowed for calculation of effect sizes due to meditation practice. In general, the results for all meditation programs combined found strongest (medium to large effect sizes) for changes in emotionality and relationship issues, less strong (about medium) for measures of attention, and weakest (small to medium) for more cognitive-related measures. However, specific findings varied across different approaches to meditation (transcendental meditation, mindfulness meditation, and other meditation techniques). Comparatively strong effects for Transcendental Meditation compared to a) mindfulness meditation, and b) all other meditation procedures were found in reducing negative emotions, trait anxiety, and neuroticism and being helpful in learning and memory and in self-realization. These findings are consistent with prior meta-analyses that found superior effects of TM in trait anxiety and measures of self-actualization. For mindfulness meditation, such comparatively strong effects were identified in reducing negative personality traits, reducing stress, and improving attention and mindfulness. TM yielded noticeably larger effects than mindfulness meditation for the categories of negative emotions, neuroticism, trait anxiety, learning and memory, and self-realization.

- **Reference:** Sedlmeier P, et al. The psychological effects of meditation: A meta-analysis. *Psychological Bulletin*. 2012;138(6):1139-71.
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**Meta-Analysis of PTSD Research
(Medicina, 2025)**

Major databases, research anthologies, and bibliographies were searched for studies that used TM for treating PTSD, all military and civilian populations, and all age groups. The searches located 15 controlled studies on TM that met inclusion criteria (longitudinal and reporting sufficient statistics to calculate effect sizes), with a total of 1248 subjects, mean age 40.5 years (range 20.6 to 54.4 years), and 46.9% males. Using the random effects model, the pooled effect across all studies of TM compared to all other treatments was Hedges' $g = -1.01$, 95% CI = -1.29 to -0.74 , $p < 0.001$. Recommend phase-III trials comparing TM directly with VA-approved first-line treatments for PTSD.

- **Reference:** Orme-Johnson DW, Barnes VA, Rees B, Tobin J. Systematic review and meta-analysis of transcendental meditation for post-traumatic stress disorder. *Medicina*. 2025; 3;61(4):659.
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SECTION C. STUDENTS

**Decreased Blood Pressure, Mood Disturbance, and Improved Coping Ability in College Students
(American Journal of Hypertension, 2009; RCT)**

Two hundred and ninety-eight college students were randomly assigned to either the Transcendental Meditation (TM) program or wait-list control, with a three-month intervention period. Changes in SBP/DBP for the hypertension risk subgroup were $-5.0/-2.8$ mm Hg for the TM group compared to $+1.3/+1.2$ mm Hg for controls ($p = 0.014$, $p = 0.028$, respectively). Significant improvements were found in total psychological distress, anxiety, depression, anger/hostility, and coping (P values < 0.05). Changes in psychological distress and coping correlated with changes in SBP (p values < 0.05) and DBP (p values < 0.08).

- **Research Field Site:** American University
 - **Supported in Part by National Center for Complementary and Alternative Medicine Grant #1P50AT00082.**
 - **Reference:** Nidich, S, Haaga, D, 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: 1326-31.
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Improved Emotional Intelligence and Perceived Stress in Medical School Students (Frontiers in Education, 2025, Controlled non-randomized)

Emotional intelligence (EI) is essential for resilience and adaptability in high-pressure environments such as medical education. This study included 176 medical school students (mean age=22.6 years) at D. Y. Patil College of Ayurveda in India, assigned to TM or usual care control group. Assessments were conducted at baseline, 3 months, and 6 months. Significant results were found for TM compared to controls on Global Emotional Intelligence (EI) ($p < 0.001$), perceived stress ($p < 0.001$), fatigue ($p < 0.001$), and insomnia severity ($p < 0.001$). Secondary analyses also revealed significant results for all four Global EI subdomains: Wellbeing, Emotionality, Self-Control, and Sociability (all $p < 0.001$).

- **Research Field Site:** Patil College, Pune, India
 - **Reference:** Paredes C, Nidich S, Yeola G, et al. The effects of Transcendental Meditation on emotional intelligence, stress, fatigue, and sleep quality among Ayurvedic medical students in India. *Frontiers in Education*. 2025, 10:1583413. doi: 10.3389/feduc.2025.1583413
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Improved Burnout and Resilience in Medical School Students (BMC Medical Education, 2025; Single group pretest-posttest)

Thirty-nine students at Georgetown University School of Medicine were assessed at baseline, 1 month and 3 months after instruction in TM. Significant improvements, with medium to large effect sizes, were demonstrated at 3-month post-testing in the following measures: burnout, anxiety, depression, insomnia, resilience, and mental well-being. Overall adherence to home TM practice was high, with 85% of subjects meditating at least once daily on average. A dose-response effect was observed, with strength of effect significantly correlated with frequency of home TM practice (twice daily vs. less than twice daily).

- **Research Field Site:** Georgetown University School of Medicine, Washington, DC
 - **Private foundation funding**
 - **Reference:** Jammes C, Heiman I, and Amri H. A Pilot Intervention to Reduce Burnout and Enhance Resilience through Transcendental Meditation among Georgetown University Medical Students. *BMC Medical Education*, 2025; 25:478. <https://doi.org/10.1186/s12909-025-07004-1>.
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Improved HPA Axis Functioning in Young Adults (Stress, 2020; RCT)

In this pilot study, 34 young adults were randomly assigned to TM training followed by 8 weeks of meditation practice or a wait-list control condition. 27 participants completed the HPA outcome assessments (41% male). To assess HPA axis functioning, salivary samples to measure cortisol awakening response (CAR) were collected in the morning, both at baseline and at week 4.

Participants who were randomly assigned to TM had lower awakening salivary cortisol levels and a greater drop in CAR from baseline to week-4 than the control group, suggesting reduced stress levels.

- **Private foundation funding**

- **Reference:** Klimes-Dougan B. et al. Transcendental Meditation and hypothalamic-pituitary- adrenal axis functioning: a pilot, randomized controlled trial with young adults. *Stress*, 2020; 23(1):105-115.

Decreased Anxiety, Depression, and Perceived Stress in College Students

(Journal of College Student Psychotherapy. 2011, Single group pretest-posttest)

The effects of Transcendental Meditation (TM) on perceived stress, anxiety, and depression symptoms were investigated with 43 undergraduate students (mean age=19.5 years) over a two-semester period. At the end of the intervention period, the recruited TM students showed significant declines on all psychological distress variables: perceived stress ($p<.001$), trait anxiety ($p<.007$), and depression symptoms ($p<.001$). Anxiety and perceived stress were statistically significant when considering only first semester students. Mixed results were observed in perfectionistic thinking.

- **Research Field Site:** Trinity College

- **References:** Burns, J.L., Lee, R.M., Brown, L. The effect of meditation on self-reported measures of stress, anxiety, depression, and perfectionism in a college population. *Journal of College Student Psychotherapy*. 2011, 25(2):132-44.

Decreased PTSD and Depression in College Students

(Psychological Reports, 2020; Controlled non-randomized)

A study was conducted on South African college students (mean age=20.9 years). using TM to reduce posttraumatic stress disorder (PTSD). Thirty-four students diagnosed with PTSD learned the TM technique and were compared to 34 PTSD diagnosed control students at another university. Evaluation was done at baseline, 15 days, 60 days and 105 days with the Posttraumatic Stress Disorder Checklist (PCL-C) and the Beck Depression Inventory (BDI). Results showed significant differences between the two groups over all the posttest periods for PTSD symptoms ($p<.0001$) and for depression symptoms ($p<.0001$). Results were associated with regularity of practice.

- **Research Field Site:** South African University

- **Reference:** Bandy C.L., Dillbeck, M.C., Sezibera, V., Taljaard, L. et al. Reduction of PTSD in South African university students using Transcendental Meditation practice. *Psychological Reports*. 2020, 123(3):725-40.

EEG Markers Comparing Transcendental Meditation to Eye-Closed Rest in College Students

(Cognitive Processing 2010; RCT)

This 10-week random assignment study compared theta2, alpha1, alpha2, beta1, beta2 and gamma EEG coherence, power, and eLORETA cortical sources during eyes-closed rest and Transcendental Meditation (TM) practice in 38 male and female college students, average age 23.7 years. Significant brainwave differences were seen between groups. Compared to eyes-closed rest, TM practice led to higher alpha1 frontal log-power, and lower beta1 and gamma frontal and parietal log-power; higher frontal and parietal alpha1 inter-hemispheric coherence and higher frontal and frontal-central beta2

intra-hemispheric coherence. eLORETA analysis identified sources of alpha1 activity in midline cortical regions that overlapped with the DMN. Greater activation in areas that overlap the DMN during TM practice suggests that meditation practice may lead to a foundational or 'ground' state of cerebral functioning that may underlie eyes-closed rest and more focused cognitive processes.

- **Reference:** Travis FT, Haaga DH, Hagelin JS, Tanner M, Arenander A, Nidich S, Gaylord-King C, Grosswald S, Rainforth M, Schneider RH. 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(1):21-30.
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Decreased Anxiety and Depression, and Improved Self-Esteem in High School Students (Professional Counseling Journal, 2020; RCT)

Fifty-two high school students in grades 9-12 (ages 14-18) from a high academic-performing West Coast public high school were randomly assigned to either Transcendental Meditation or silent-reading control group. Both conditions were practiced twice a day in school. Significant reductions in perceived stress ($p=.040$), anxiety ($p=.028$), anger $p=.047$), depression symptoms ($p=.024$), and fatigue ($p=.075$), and increased self-esteem ($p=.054$) were found in the TM group compared to controls over a four-month period.

- **Research Field Site:** West Coast high school
 - **Private foundation funding**
 - **Reference:** Bleasdale, J, Peterson, M, Nidich, S. Effect of meditation on social-emotional wellbeing in a high performing in high-performing high school. *Professional Counseling Journal*, 2020. doi. org/10.1177/2156759X20940639.
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Decreased Emotional Stress, Improved Sleep Quality and Academic Achievement in High School Students (Education, 2021; RCT)

Ninety-eight ninth-grade students (mean age=14.0 years) were randomly assigned either to learn the Transcendent Meditation (TM) program or to engage in sustained silent reading twice a day during school time at a West Coast public high school. Results for the meditation group compared to silent reading controls indicated significant reductions in overall emotional stress symptoms ($p=.030$), and anger ($p=.020$), and improvements in quality of sleep ($p=.013$) and English Language Arts (ELA) academic achievement ($p=.079$). Considering those students who were below ELA proficiency at baseline, 69% of the meditation students improved at least one performance level at posttest compared to 33% of the control students ($p=.033$).

- **Research Field Site:** West Coast high school
- **Private foundation funding**
- **Reference:** Valosek L, Nidich S, Grant J, Peterson M, Nidich R. Effect of Meditation on Psychological Stress and Academic Achievement in High School Students: A Randomized Controlled Study. *Education*. 2021; 141(4).

**Lower Rates of Absenteeism, Suspensions, and Rule Infractions in Adolescents
(Health and Quality of Life Outcomes; 2003; RCT)**

Forty-five African American adolescents (ages 15-18 years) were randomly assigned to either Transcendental Meditation (n = 25) or health education control (n = 20) groups. The meditation group engaged in 15-min TM sessions at home and at school each day for 4 months. The control group was presented 15-min sessions of health education at school each day for 4 months. Primary outcome measures were changes in absenteeism, school rule infractions and suspension days during the four-month pretest period prior to randomization compared to the four-month intervention period. Comparing the pretest and intervention periods, the meditation group exhibited a mean decrease of 6.4 absentee periods compared to an increase of 4.8 in the control group ($p < .05$). The meditation group exhibited a mean decrease of 0.1 infractions over the four months compared to an increase of 0.3 in the control group ($p < .03$). There was a mean reduction of 0.3 suspension days due to behavior-related problems in the meditation group compared to an increase of 1.2 in the control group ($p < .04$).

- **Research Field Site:** Medical College of Georgia

- **Reference:** Barnes VA, Bauza LB, Treiber FA. Impact of stress reduction on negative school behavior in adolescents. *Health and Quality of Life Outcomes*; 2003, 1(1):10.

**Decreased Anxiety and Improved Resilience in High School Students
Contemporary School Psychology, 2015; Controlled non-randomized)**

One hundred and forty-one ninth-grade students participating in a Quiet Time program with Transcendental Meditation (TM) were compared to a group of ninth-grade students (n = 53) attending a school that did not participate in Quiet Time. Results indicated that students who participated in Quiet Time scored significantly lower on anxiety ($p < 0.05$) and higher on resilience ($p < 0.05$) at follow-up than the comparison group students. Within the treatment group, students with higher regularity of TM practice had higher resilience scores and higher instruction time. After participating in TM students also reported improvement in sleep, happiness, and self-confidence.

- **Research Field Site:** West Coast high school

- **Private foundation funding**

- **Reference:** Wendt, S., Hipps, J., Nidich, S. et al. Practicing Transcendental Meditation in high schools. *Contemporary School Psychology*. 2015, 19(4), 312-319.

**Decreased Anxiety and Emotional Distress in Secondary School Students
(Journal of Instructional Psychology. 2011, Controlled non-randomized)**

A total of 106 secondary school students (from diverse racial and ethnic minority groups (mean age=16.6 years), from four public secondary schools, who completed both baseline and 4-month post-testing, were included. Sixty-eight students practiced the TM technique and 38 served as non-meditating control students from the same schools. Students were predominantly African American, Hispanic, or American Indian. Results indicated reductions in TM students compared to controls in emotional distress ($p = .01$) and anxiety ($p < .001$). Across ethnic groups there were no significant ethnic interaction effects found on any of the outcome variables.

- **Research Field Sites:** Four public secondary schools

- **Private foundation funding**

- **Reference:** Elder C, Nidich S, Colbert R, Hagelin, J. et al. Reduced psychological distress in racial and ethnic minority students practicing the Transcendental Meditation program. *Journal of Instructional Psychology*. 2011, 38(2).

Improved Cognitive Ability and Reduced Anxiety in High School Students (Intelligence, 2001, RCT)

Three randomized controlled studies with a total of 362 high school students at three different schools in Taiwan (mean age=16.5 years) compared TM to controls on cognitive abilities and anxiety. The same variables were used in all studies: Test for Creative Thinking-Drawing Production (TCT-DP); Constructive Thinking Inventory (CTI); Group Embedded Figures Test (GEFT); State and Trait Anxiety (STAI); Inspection Time (IT); and Culture Fair [Intelligence Test](#) (CFIT). Univariate analysis showed that 12 months of TM practice produced significant effects on all variables compared to controls (p values ranged from .035 to <.0001). Napping for equivalent periods of time as TM practice had no effect. Contemplation meditation improved inspection time and embedded figures, but not the other variables. The TM technique was superior to contemplation meditation on five variables.

- **Research Field Sites:** Taiwan high schools
- **Reference:** So, K.T., Orme-Johnson, D.W. Three randomized experiments on the longitudinal effects of the Transcendental Meditation technique on cognition. *Intelligence*. 2001, 9(5):419-40.

SECTION D: TEACHERS AND ADMINISTRATORS

Improved Burnout, Resilience, Perceived Stress, and Depression Symptom (Frontiers in Education, 2021; RCT)

Seventy-eight schoolteachers and administrators were randomly assigned to the Transcendental Meditation program (n = 39) or to a wait-list control group (n = 39). They were administered the Maslach Burnout Inventory, Resilience Scale, Perceived Stress Scale, and the National Institutes of Health Patient-Reported Outcomes Measurement Information System fatigue and depression scales at baseline and at four-month posttest. Intention-to-treat analysis showed significant improvement in the TM group compared to controls on emotional exhaustion, the main scale of the Maslach Burnout Inventory (p = 0.019), resilience (p = 0.014), perceived stress (p < 0.001), fatigue (p = 0.001), and depression (p = 0.091). Eighty-seven percent were compliant with their meditation home practice.

- **Research Field Site:** West Coast public schools
- **Private foundation funding**
- **Reference:** Valosek L, Wendt S, et al. Meditation in reducing teacher burnout and improving resilience: a randomized controlled study. *Frontiers in Education*, 2021; 6:29.

Improved Brain Function and Reduced Mood Disturbance (Brain and Cognition, 2018; RCT)

96 central office administrators and staff at the San Francisco Unified School District were randomized assigned to either TM or to a wait-list control group to evaluate change in psychological distress factors

and EEG brain functioning. At four-month posttest it was found that TM participants significantly decreased on the Profile of Mood States (POMS) scales for total mood disturbance, anxiety, anger, depression, fatigue, and confusion, and significantly increased in the POMS vigor subscale (p values $<.05$). TM participants compared to controls in the EEG subgroup ($n=79$) exhibited significant increase on the Brain Integration Scale (EEG broadband frontal coherence, contingent negative variation (CNV), and alpha relative power). Compliance with meditation practice was high (93%).

- **Research Field Site:** West Coast public schools

- **Private foundation funding**

- **Reference:** Travis F, et al. Effect of meditation on psychological distress and brain functioning: A randomized controlled study. *Brain and Cognition*, 2018; 125:100-105.

Decreased Perceived Stress, Depression Symptoms, and Burnout (The Permanente Journal, 2014; RCT).

This study evaluated the effects of the Transcendental Meditation program on psychological distress and burnout among staff at a residential therapeutic school for students with severe behavioral problems over four months. A total of 40 secondary schoolteachers and support staff at a private school for children with behavioral problems, were randomly assigned to either Transcendental Meditation or a wait-list control group. Results indicated a significant reduction of all main outcome measures: perceived stress ($F [1,32] = 13.42$; $p = < 0.001$); depression ($F [1,32] = 6.92$; $p = 0.013$); and overall teacher burnout ($F [1,32] = 6.18$; $p = 0.018$). Effect sizes ranged from 0.40 to 0.94.

- **Field Site:** Vermont private boarding school

- **Private funding**

- **Reference:** Elder C, Moriarty F et al. Effect of transcendental meditation on employee stress, depression, and burnout: a randomized controlled study. *The Permanente Journal*. 2014;18(1):19.

SECTION E: HEALTHCARE WORKFORCE: BURNOUT, ANXIETY, DEPRESSION, SLEEP, QUALITY OF LIFE, RESILIENCE

Reduced Anxiety Symptoms, Sleep Problems, Burnout in Healthcare Workers (JAMA Network Open, 2022; RCT)

Eighty healthcare workers from a southeast medical center were randomly assigned to either Transcendental Meditation (TM) or a usual care control group (with access to wellness resources). The TM group had significant reductions in emotional exhaustion on the Maslach Burnout Inventory (MBI) ($P = .006$); sleep difficulties, with the Insomnia Severity Index ($P = .05$); and anxiety, using the Generalized Anxiety Disorder-7 ($P = .01$) over 3 months. Marginally significant differences between groups were found for depression symptoms, with the Patient Health Questionnaire-7 ($P < .06$) and MBI Depersonalization ($P < .08$). Thirty-eight participants (92.7%) in the TM group were compliant in their home practice (defined as meditating at least once a day).

- **Research Field Site:** Duke Medical Center and Mind Path, NC

- **Private Foundation Funding**

- **Reference:** Joshi SP, et al. Efficacy of Transcendental Meditation to Reduce Stress Among Health

Care Workers: A Randomized Clinical Trial. *JAMA Network Open*. 2022, 5(9): e 2231917. doi:10.1001/jamanetworkopen.2022.31917.

Improved Mental Well-Being and Reduced Psychological Distress in Nurses

(JONA: The Journal of Nursing Administration, 2023; RCT)

A randomized controlled trial with 104 clinical nurses over a 3-month period at 3 Magnet hospitals in west central Florida showed significant improvements, with medium to large effect sizes, in TM subjects compared to controls in the following mental well-being measures: anxiety, burnout, PTSD symptoms, and flourishing. Compliance with home TM practice was high, with over 90% of TM subjects reporting meditating at least once daily on average.

- **Research Field Sites:** Sarasota Memorial Hospital, Tampa General Hospital, University of South Florida
- **Private Foundation Funding**
- **Reference:** Bonamer J, Kutash M, et al. Clinical nurse well-being improved through Transcendental Meditation: a multimethod randomized controlled trial. *JONA: The Journal of Nursing Administration*, 2023; 10:1097.

Decreased Burnout and Depression Symptoms

(Journal of Continuing Education in the Health Professions (JCEHP), 2023, RCT)

Forty academic physicians at a Midwest medical school and affiliated VA hospital were randomly assigned to Transcendental Meditation or usual care control group with a 4-month intervention period. Assessment was conducted at baseline, 1 month, and 4 months. Significant improvements were found for the TM group compared to controls at 4 months in total burnout ($p = .020$), including the Maslach Burnout Inventory dimensions of emotional exhaustion ($p = .042$) and personal accomplishment ($p = .018$), and depression symptom ($p = .016$). Qualitative interviews supported these outcomes.

- **Research Site:** University of Loyola Stritch Medical School, Chicago, IL
- **Private foundation funding**
- **Reference:** Loiselle, M, Brown, C, et al. Effect of Transcendental Meditation on physician burnout, depression, and insomnia: A randomized controlled study. *Journal of Continuing Education in the Health Professions (JCEHP)*. 2023, doi.org/10.1097/CEH.0000000000000472

Improved Depression, Anxiety, Emotional Exhaustion, Insomnia and Mental Well-Being

(PLOS ONE, 2023; Controlled, non-randomized)

A controlled parallel population study of 130 healthcare workers at three Miami hospitals at the height of the Covid pandemic found significant improvements in the TM group relative to non-meditating controls in depression, anxiety, emotional exhaustion (a key component of burnout), insomnia, and mental well-being beginning as early as 2 weeks after starting TM and continuing throughout the 3-month study.

- **Research Field Sites:** Baptist, Mercy, and Encompass Hospitals, Miami, FL
- **Private Foundation Funding**
- **Reference:** Nestor MS, Lawson A, Fischer D. Improving the mental health and well-being of healthcare providers using the transcendental meditation technique during the COVID-19

pandemic: A parallel population study. *PLOS ONE*. 2023, 18(3): e0265046. <https://doi.org/10.1371/journal.pone.0265046>

Decreased Burnout, Sleep Difficulties, and Anxiety and Depression Symptoms

(*J Am Coll Emerg Physicians Open*, 2021; Feasibility and accessibility study)

Thirty-one emergency clinicians (physicians, nurses, and physician-assistants) from 2 urban hospitals were recruited to participate in TM instruction and follow-up for 3 months in this single-arm study. 90.6% (n = 29/32) attended at least 6/8 TM training sessions and 80.6% reported meditating at least once a day on average. TM participants demonstrated significant reductions in burnout ($p < .05$; effect sizes, Cohen's $d = 0.43-0.45$) and in symptoms of depression, anxiety, stress, and sleep disturbance (p values $< .001$; Cohen's $d = 0.70-0.87$). 90.6% (n = 29/32) attended 6/8 TM training sessions and 80.6% self-reported meditating at least once a day on average.

- **Research Field Site:** Brigham and Women's Hospital, Boston, MA
- **Private Foundation Funding**
- **Reference:** Azizoddin DR, Kvaternik N, Beck M, et al. Heal the Healers: A pilot study evaluating the feasibility, acceptability, and exploratory efficacy of a Transcendental Meditation intervention for emergency clinicians during the coronavirus disease 2019 pandemic. *J Am Coll Emerg Physicians Open*. 2021, 2(6): e12619.

Reduced Burnout, Depression and Anxiety Symptoms and Increased Mental Well-Being

(*Journal of Issues in Nursing*, 2023; Single group pretest-posttest)

This single-arm study evaluated the feasibility and effectiveness of the Transcendental Meditation (TM) intervention in a sample of 32 healthcare clinicians who provided care to COVID-19 patients. At one- month and three-month posttest, statistically significant improvements were observed for the burnout scales of emotional exhaustion and personal accomplishment, depression and anxiety symptoms, and overall mental well-being, with large effect sizes on most scales. TM practice was found to be feasible in this population, with high levels of compliance in attendance at training sessions and TM home practice.

- **Research Field Site:** University of Michigan Health, Ann Arbor, MI
- **Private Foundation Funding**
- **Reference:** Calarco M, Stratton K. The impact of Transcendental Meditation in reducing burnout and enhancing well-being in frontline healthcare clinicians during the COVID-19 pandemic. *Online Journal of Issues in Nursing*, 2023;28(3). doi:10.3912/OJIN.Vol28No03PPT55

SECTION F: WOMEN'S RESEARCH

Improved Quality of Life in Breast Cancer Patients

(*Integrative Cancer Therapies*, 2009; RCT)

One hundred thirty breast cancer patients were randomly assigned to either the Transcendental Meditation (TM) or education control (EC) group. Measures were administered every six months over an average 18-month intervention period. Significant improvements were found in the

Transcendental Meditation group compared with controls in overall quality of life, especially emotional wellbeing, social wellbeing, and mental health.

- **Research Field Site:** St Joseph's Hospital, Chicago
 - **Supported in Part by National Center for Complementary and Alternative Medicine Grant 1K01AT004415-01**
 - **Reference:** Nidich S, Field J, 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(3):228-234.
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Decreased Psychological Distress in Women Survivors of Domestic Violence

(Journal of Family Violence, 2023; RCT)

Domestic violence is a major public health issue impacting one in three women worldwide. This 16-week randomized controlled study compared TM (n=21) to group support (n=21) on quality of life, perceived stress, and mood in female survivors of domestic violence. Women were recruited from metropolitan Adelaide, who survived any type of domestic violence in their lifetime. TM was shown to be significantly more effective than group support at improving Australian Quality of Life (AQoL-8D) utility scores ($p = .011$), and Depression Anxiety and Stress Scale (DASS)-21 severity scores for depression ($p = .029$), anxiety ($p = .017$) and stress ($p = .021$).

- **Research Field Site:** Adelaide, Australia
 - **Private Foundation Funding**
 - **Reference:** Leach M, Lorenzon H. Transcendental Meditation for women affected by domestic violence: A pilot randomized, controlled trial. *Journal of Family Violence*, 2023:1-10.
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Improved Self-Efficacy and Quality of Life in Impoverished Mothers

(Health Care for Women International, 2018; Controlled non-randomized)

This study focused on primarily single mothers, living in poverty from the village of Nsambya in Kampala, Uganda. It was a randomized controlled study comparing the Transcendental Meditation (TM) program (n=42) to a wait-list control group (n=39) on self-efficacy, perceived stress, and mental and physical quality of life over three months. Significant improvements were shown in self-efficacy ($p < .001$), the primary outcome, perceived stress ($p < .01$), and mental and physical well-being ($p < .01$) over three months. Compliance with TM home practice was $> 88\%$. Further questionnaires administered to participants at 8 months and at 36 months suggested that the women experienced improved health, improved relationships with others, and increased employment rates.

- **Research Field Site:** Kampala, Uganda
- **Private foundation funding**
- **Reference:** Leslee Goldstein L, Nidich S, et al. The effect of Transcendental Meditation on self-efficacy, perceived stress, and quality of life in mothers in Uganda. *Health Care for Women International*, 2018;39(7):734-754.

Improved Self-Esteem and Self-Efficacy in Female Youth**(Health Care for Women International, 2024; Single group pretest-posttest)**

This longitudinal study with 130 female youth in a very poor area of Kampala, Uganda (n=130), explored the impact of the Transcendental Meditation (TM) technique on self-esteem, self-efficacy, and other trait measures over five months. Significant improvements in self-esteem ($p<.001$), self-efficacy ($p<.001$), gratitude ($p<.001$), and fatigue ($p=.05$) were found. A decrease in excessive alcohol use was also observed ($p=.02$). At eight months, a short answer questionnaire showed improved physical health, decreased stress and anxiety levels, and improved relationships in the family and community. The findings have important implications for enhancing well-being and empowerment of these vulnerable female youth.

- **Research field site:** Kampala, Uganda

- **Private Foundation Funding**

- **Reference:** Goldstein L, et al. The effect of Transcendental Meditation on self-esteem, self-efficacy, and gratitude, for increasing empowerment of female youth in Uganda. *Health Care for Women International*, 2024 July 9. doi.org/10.1080/07399332.2024.2358789

SECTION G: OTHER TRANSCENDENTAL MEDITATION RESEARCH

Lower Recidivism of Former Inmates: 15-Year Follow-up**(Journal of Offender Rehabilitation, 2003; Controlled 15-Year Follow-Up Study)**

Rainforth M, Alexander CN, Cavanaugh KL. 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 Maximum security prison inmates in California, USA, who learned the Transcendental Meditation program while incarcerated showed significantly less recidivism, as defined by new arrest leading to felony conviction, in contrast to control groups from the same prison and controlling for many demographic and background variables. TM parolees had lower re-conviction rates (46.7%) compared to controls (66.7%), a highly significant ($p<.001$) 43.5% reduction.

- **Reference:** Rainforth M, Alexander CN, Cavanaugh KL. 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

Cognitive Functioning and Survival Rate in the Elderly**(Journal of Personality and Social Psychology, 1989; RCT)**

Can direct change in state of consciousness through specific mental techniques extend human life and reverse age-related declines? To address this question, 73 residents of 8 homes for the elderly (mean age = 81 years) were randomly assigned among no treatment and 3 treatments highly similar in external structure and expectations: the Transcendental Meditation (TM) program, mindfulness training (MF) in active distinction making, or a relaxation (low mindfulness) program. A planned

comparison indicated that the “restful alert” TM group improved most, followed by MF, in contrast to relaxation and no-treatment groups, on paired associate learning; 2 measures of cognitive flexibility; mental health; systolic blood pressure; and ratings of behavioral flexibility, aging, and treatment efficacy. The MF group improved most, followed by TM, on perceived control and word fluency. After 3 years, survival rate was 100% for TM and 87.5% for MF in contrast to lower rates for other groups.

- **Reference:** Alexander CN, Langer EJ, et al. Transcendental meditation, mindfulness, and longevity: an experimental study with the elderly. *Journal of Personality and Social Psychology*. 1989 Dec;57(6):950.

Higher Levels of Long-Term Memory, Speed of Processing, Fluid Reasoning in the Elderly (*Journal of Social Behavior & Personality*, 2005; Controlled, non-randomized)

Research has found that there is a marked decline in cognitive functioning in the elderly. This study examined whether practice of the Transcendental Meditation technique can have a beneficial effect on the intellectual development of elderly adults. Participants were 18 older adults who were long-term participants in the Transcendental Meditation program and 23 non-meditating controls, between the ages of 60 and 74. Findings indicate that those practicing Transcendental Meditation exhibited significantly higher levels of fluid reasoning, verbal intelligence, long-term memory, and speed of processing than controls. Further analyses showed significant correlations with lipid peroxide level for both reasoning ability and memory, suggesting a possible link between cognitive functioning and free radical activity in the elderly.

- **Reference:** Nidich SI, Schneider RH et al. Effect of the Transcendental Meditation program on intellectual development in community-dwelling older adults. *Journal of Social Behavior and Personality*. 2005;17(1):217.

SECTION H: MECHANISTIC RESEARCH

Brain Regional Connectivity and Perceived Stress (*Brain and Cognition*, 2020; controlled, non-randomized)

Using a longitudinal design, the authors combined psychometric questionnaires, structural and resting-state functional magnetic resonance imaging (RS-fMRI) to investigate the potential brain modifications underlying the psychological effects of TM. The sample included 19 naïve subjects instructed to complete two daily 20-minute TM sessions, and 15 volunteers in the control group. At 3 months meditators, but not controls, showed a decrease in perceived stress and anxiety, which correlated with the improved functional connectivity among posterior cingulate cortex (PCC), precuneus and left superior parietal lobule. Additionally, TM practice was associated with increased connectivity between PCC and right insula, likely reflecting changes in interoceptive awareness. These findings suggest that the beneficial effects of TM found in prior research may be mediated by functional brain changes.

- **Private funding**
- **Reference:** Avvenuti G, et al. Reductions in perceived stress following Transcendental Meditation practice are associated with increased brain regional connectivity at rest. *Brain and Cognition*, 2020;139:105517.

Brain Imaging: Blood Flow Patterns with fMRI**(Brain and Cognition, 2018; observational)**

Blood flow patterns with fMRI were investigated in 16 long-term practitioners of TM. During TM practice, blood flow patterns were significantly higher (more active) in executive and attention areas (anterior cingulate and dorsolateral prefrontal cortices) and significantly lower in arousal areas (pons and cerebellum). This pattern of heightened blood flow in attentional areas and decreased blood flow in arousal areas had not been reported for other practices.

- **Private funding**

- **Reference:** Malone M, et al. fMRI during Transcendental Meditation practice. *Brain and Cognition*, 2018;123:30-33.

Brain Reactivity to Stressful Stimulus**(NeuroReport, 2006; controlled non-randomized)**

Long-term practitioners of the Transcendental Meditation technique showed lower reactivity to thermally induced pain, as measured by functional magnetic resonance imaging (fMRI), compared to healthy matched controls. After the controls learned the technique and practiced it for 5 months, their response decreased by 40–50% in the total brain, thalamus, and prefrontal cortex, and to lesser extent in the anterior cingulate cortex. The results suggest that the Transcendental Meditation technique reduces the affective/motivational dimension of the brain's response to painful stressors.

- **Research Field Site:** University of California at Irvine

- **Funding:** National Center for Complementary and Alternative Medicine Grant P50-AT00082-05

- **Reference:** Orme-Johnson D, Schneider R, Son YD, Nidich S, Cho ZH. Neuroimaging of meditation's effect on brain reactivity to pain. *NeuroReport*, 2006;17:1359-1363.

Neural Markers of Experience of Pure Awareness During Transcendental Meditation Practice**(Journal of Cognitive Neuroscience. 2026; Controlled non-randomized)**

Pure awareness (PA) has been proposed as a form of minimal phenomenal experience, but its neurophenomenological signatures remain poorly characterized. Transcendental meditation (TM) offers a particularly tractable empirical model of PA because its procedure is standardized, its induction is effortless, and it reliably elicits reports of awareness with minimal content. We combined electroencephalography with temporal experience tracing in 33 experienced TM practitioners and their matched controls (performing mental counting). TM practitioners reported significantly greater intensity and temporal variability of PA, independent of years of meditation practice. We then used multivariate classification of theoretically motivated electroencephalography markers spanning temporal entropy, aperiodic activity, complexity, and linear and nonlinear functional connectivity. When TM was contrasted with counting, temporal entropy and aperiodic dynamics were better predictors of PA experiences compared to phase-coherence functional connectivity variables. When TM was contrasted with its own baseline, low-frequency functional connectivity dominated. By combining a large, rigorously matched sample with temporally resolved phenomenological reports and a systematic screening of theoretically motivated neural markers, researchers were able to distill

the distinctive neural architecture of PA. The research substantially expands the neurophysiological characterization of TM, which can inform future studies on well-being and clinical populations.

- **Research Field Site:** University of Cambridge, UK
 - **Private foundation funding**
 - **Reference:** Chandia-Jorquera A, van Mil SD, Estarellas M, Dauphin M, Pascovich C, Canales-Johnson A. Distilling the neurophenomenological signatures of pure awareness during transcendental meditation. *Journal of Cognitive Neuroscience*. 2026, 27:1-8.
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Cardiovascular Health: Telomerase Gene Expression (PLOS ONE, 2015, Subgroup from parent RCT)

Forty-eight African American men and women with stage I hypertension (average age=59 years), participating in a larger randomized controlled trial, volunteered to take part this pilot study. These subjects participated in either stress reduction with Transcendental Meditation AND basic health education (TMHE), or an extensive health education program (EHE) for 16 weeks. The primary outcome was telomerase gene expression (hTERT and hTR). Both groups showed increases in the two measures of telomerase gene expression, hTR mRNA levels (TMHE: $p < 0.001$; EHE: $p < 0.001$) and hTERT mRNA levels (SR: $p = 0.055$; EHE: $p < 0.002$); however, between-group changes did not reach statistical significance. Reductions in blood pressure (BP) were observed in both groups. The association between increased telomerase gene expression and reduced BP observed in this high risk population suggest that telomerase gene expression may either be a mechanism by which stress reduction and lifestyle modification reduce BP.

- **Research Field Site:** Howard University, DC
- **National Institutes of Health-National Heart Lung and Blood Institute Grant #HL083944; Howard University College of Medicine General Clinical Research Center #MO1, RR10284**
- **Reference:** Duraimani, S., Schneider, RS, Randall, O., Nidich, S. et al., Effects of Lifestyle Modification on Telomerase Gene Expression in Hypertensive Patients: A Pilot Trial of Stress Reduction and Health Education Programs in African Americans, 2015, *Plus One*, doi.org/10.1371/journal.pone.0142689.

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