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Physician, Heal Thyself

Stitch School of Medicine students give new meaning to the adage

By Carla L. Brown, EdD, and Gregory Gruener, MD

Students at the Stritch School of Medicine learn about the science and methodology behind the transcendental meditation technique in the first TM elective course offered at a major medical school in the United States.

T ALL STARTED when a student at Loyola University Chicago Stritch School of Medicine described herself as too busy to even realize how anxious she was. Not only was anxiety affecting her mentally, but her hair was thinning and her heart racing. As her third year began she was terrified about becoming a doctor, guessing that she could not sustain her anxious lifestyle indefinitely. Her future career looked dismal. The passion she had once experienced for medicine and healing seemed to be trickling away.

But when she enrolled in a new elective at Stritch entitled Physician Wellness through Transcendental Meditation (TM), the first such course offered through a major medical school in the United States, she experienced a turnaround. The elective included training in the TM technique and a lecture series by leading researchers. As a result of her twice daily TM practice, she says that she is now more engaged. “I get more out of each day, and I actually enjoy what I am doing,” she says. “In the beginning of the year I was stressed and anxious about seeing patients, presenting patients, and interacting with residents and doctors.”

Being a realist, she adds, “These things naturally get easier with practice and time, but I think there is also a new relaxed state and excitement about the way in which I engage, because of my experiences with self-care and TM. The stress of our career will always be present, so it is important that as physicians we learn to eliminate it, rather than just manage it. These experiences have made me very excited for my future career as a physician.”

Understanding TM

College students report the “highest stress and lowest mental health levels in 25 years” with serious consequences for physical health, including hypertension, diabetes, sleep disorders and mental health problems, according to psychologist William Stixrud. He notes that depression is “the second leading cause of debility worldwide for 15-44 year olds.” Qualities most compromised by these conditions are exactly the qualities most needed in medicine, including higher order judgment, flexibility, adaptability, and creativity.

Linda Brubaker, MD, dean of the Stritch School of Medicine, asserts, “Physicians who practice self-care, especially stress reduction, are likely to perform better as professionals and inspire their patients to adopt healthy behaviors.” With co-author Gregory Gruener, MD, Dr. Brubaker has led the Stritch School of Medicine in proactively addressing these concerns with introduction of the evidence-based TM technique and the elective course.

So what is TM exactly? TM is a simple, effortless mental technique practiced 15-20 minutes twice a day, in which the mind and body gain a unique state of restful alertness, allowing it to rid itself of the effects of accumulated stress and strain. TM is particularly effective in a setting like Stritch because of its stress-busting capability, the fact that it is easy to practice and incorporate into a busy schedule, and that it is taught in a standardized, systematic, and reliable manner.

In 1970 and 1972 Robert Keith Wallace, PhD, published descriptions of transcending in *Science* and

Scientific American, establishing that TM leads to a unique hypo-metabolic state distinct from ordinary waking, sleeping, or dreaming states of consciousness. Since then over 380 peer-reviewed scientific studies have been published on the benefits of TM, with the results showing up in journals such as the *Archives of Internal Medicine*, *American Journal of Hypertension*, *American Journal of Cardiology* and the *Journal of Clinical Psychology*.

Anyone, not just students at Stritch, who is interested in starting the TM technique, first explores the outcomes of these studies in an introductory presentation. Next, the student learns the technique from a certified instructor over four consecutive days (about 1-1.5 hours per day). The first meeting is in private with the instructor. Subsequent meetings provide students verification of their technique and all the logistical knowledge and appreciation of its mechanics necessary to meditate easily 20 minutes twice a day. Continued support is provided—first in more depth over several months—and then whenever the student desires over his or her lifetime. Much of this additional support is free of charge.

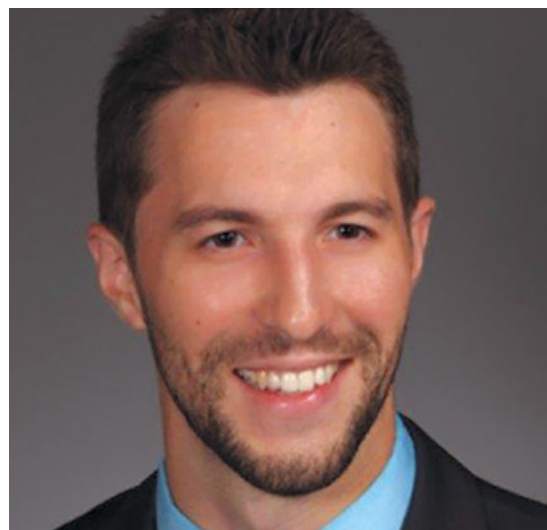
The TM technique does not require years of practice, but provides immediate benefit, as described by the third-year student whose story opened this article. Each student learns how to get out of his or her own way to effortlessly access more refined and silent levels of inner awareness that have always been available within, resulting in changes in physiological and psychological functioning. In essence, the mind knows how to transcend (or settle within to more silent, expanded levels of awareness) and the body, given very deep rest, knows how to rid itself of deeply rooted stresses in order to restore proper functioning. Stritch graduate Maura Tresch, MD, outlines research results concerning the physiological signature of TM and its effects on stress and anxiety, plus an NIH-funded research program looking at cardiovascular outcomes in this issue on p. 26.

TM practice isn't a religion or a philosophy or a way of thinking. It requires no change in lifestyle or culture, and its effectiveness does not depend on one's conviction about its efficacy. It does, however, require expert instruction by a certified teacher of the TM technique.

Benefits of the Technique

Strengthening the central nervous system through a twice-daily experience of restful alertness in TM practice dramatically improves health, but also has developmental consequences important to physicians, graduate level instruction, workplace wellness, and reduction of burnout in the medical profession. During TM practice, brain functioning becomes more integrated—individual modules are connected into larger, functioning networks. “Development of brain integration and EEG coherence through TM have been correlated with improved attention, intelligence, creativity and learning, and improved memory in all age groups, including the elderly,” according to psychologist David Orme-Johnson, PhD, a leading meditation researcher, who has served as a key presenter for the National Institutes of Health Office of Alternative Medicine, the National Center for Complementary and Alternative Medicine, and the Agency for Health Research and Quality.

TM practice reduced effects of high stress in a study of American University students, with study results “indicating greater breadth of planning, thinking, and perception of the environment,” as well as “greater emotional balance and wakefulness.” Frederick Travis, PhD, a neurophysiologist and Maharishi University of Management (MUM) professor, and a team of researchers measured brain integration, sleepiness, and autonomic stability for 50 American University students in a 10-week randomized controlled trial. Brain integration refers to EEG frontal coherence, reflecting structural and functional connectivity between brain areas, positively correlated with emotional stability, moral reasoning, and inner directedness, and negatively correlated



Stritch graduates Joshua Scheck, MD, and Tim Lane, MD, (left to right) both say they were amazed by the sense of balance they achieved with consistent practice of the transcendental meditation technique.

with anxiety. “These statistically significant results among college students suggest that the practice of the TM technique could be of substantial value for anyone facing an intense and challenging learning/working environment,” concluded Travis.

David Kirp, the James D. Marver Professor of Public Policy at the University of California at Berkeley, in an opinion piece for the *San Francisco Chronicle* described the Transcendental Meditation Quiet Time program in San Francisco schools as a game-changer, noting that social-emotional factors were significantly impacted for teachers as well as students as a result of TM implementation. Startling results over the last 10 years have resulted in a high level of buy-in among school personnel—both for the faculty and staff and for more schools. Schools in violent neighborhoods with a history of being out of control experienced a 45% reduction in suspensions in the first year and an 86% reduction in subsequent years. Daily attendance grew to 98% and grade point averages among low performing students improved by 25%, with middle schoolers recording the highest happiness levels in San Francisco.

About the Stritch Course

The Stritch TM elective, launched in 2014-2015, is the first course offered at a major medical school that provides instruction in the TM technique in tandem with an elective covering extensive research on the technique from a number of different disciplines including neurology, pathophysiology, psychiatry and cardiology. This interactive class reviewed the neurophysiology of TM, including a live demonstration of uniquely coherent brain wave (EEG) patterns that occur during the practice and eventually carry over into daily activity. The curriculum allowed students to start TM practice at a convenient time in their rotations, and to either attend five lectures over two semesters, or view lectures via a website. Meditation rooms were set aside daily for students.

Guest lecturers who have conducted decades of ground-breaking research on the signature of

TM in physiology and its effects on mental and physical health led class meetings. These lecturers included Dr. Travis, Debra Levitsky, PhD, who covered the neurochemistry of stress, physiologic and psychological homeostasis, physician and nurse burnout, and substance abuse. Norman Rosenthal, MD, a clinical professor of psychiatry at Georgetown University School of Medicine and author of *New York Times* bestseller, *Transcendence*; Robert Schneider, MD, who guided \$30 million of National Institutes of Health-funded research looking at TM effects on cardiovascular health; and MUM vice president and author Craig Pearson, PhD, who placed TM developmental results within the scope of history, philosophy, and tradition, referring to figures like Albert Einstein and sports legend Billie Jean King.

Responses from students in the first Stritch TM course were tremendously positive. Students found that TM helped them remain grounded, feel more positive, procrastinate less, and feel less stressed by school and relationships. Here’s what three students reveal about the course.

Tim Lane, a Stritch graduate who is now an emergency medicine resident at the University of Illinois, described a time in his fourth year at Stritch when he had worked the previous day and then picked up a shift for a workmate who had a scheduling conflict. He explained, “I was exhausted, and that night we were bombarded with trauma patients because weather conditions made travel treacherous. I was fried due to lack of sleep and running on coffee fumes well into the night.”

When he went looking for another cup of coffee, he says, “I found myself alone in the break room with the enticing aroma of brewed coffee swirling around. Instead of filling another cup, I decided to sit and close my eyes.” For Dr. Lane the practice of the TM technique that night “had the most profound impact on my state of mind. I felt relaxed, rejuvenated, and refocused, all in just a short 20 minutes. Not only did my mind, but also my body felt lighter, sharper, and more able to cope with the

Linda Brubaker, MD, dean of the Stritch School of Medicine, (left) and Gregory Gruener, MD, vice dean of education, (right) together led Stritch in proactively addressing the stress medical students incur with the introduction of the evidence-based TM technique and the elective course.





Stritch student Danielle Terrell (left) sees TM as a tool she will use to help people adopt healthy lifestyles. Robert Keith Wallace, PhD, (right) published descriptions of TM in the early '70s that showed a unique hypo-metabolic state distinct from ordinary waking, sleeping, or dreaming states of consciousness.

demands of the rest of my shift.”

In another student example, Joshua Scheck, who is now a family medicine resident at the University of Minnesota, said he was amazed to see the balance achieved with consistent TM practice. As a medical student, he observed significant stress and a loss of life-balance in himself and in “the same superiors who demand constant dedication to the art.” After meditating routinely, he says, “mountains became molehills, and the molehills that would have arisen previously did not arise at all. Benefits are experienced daily rather than momentarily. With a sound mind and the ability to tackle the tasks of a given day, I feel as though my patients will benefit significantly.”

For Danielle (Dani) Terrell, who started the TM technique last year as a first-year student, TM couldn’t have come at a better time. “It has helped me go further along the path to becoming the person I’ve always wanted to be, but struggled to be—the person who is always calm, extremely cool and logical under pressure, not easily agitated or stressed, and cognitively sharp. I’m much more resistant to stressors. Practicing TM also makes me want to make healthier choices by exercising and eating better foods.”

She observed, “Medicine is a perennial career on the most stressful jobs list: often physicians quit, resort to drugs, or commit suicide in the face of the pressures involved. With TM in my toolkit, I now feel one step removed from negative behaviors in response to stress, and several steps closer to living a more balanced life no matter what my circumstances are at work. I believe that if every first-year medical student learned and practiced TM, the physician burnout rate, suicide rate, and error rate would dramatically decrease.”

Although Terrell is pursuing a life in neuroscience, she described having “a heart for population medicine” and seeing TM as a tool in helping people with sedentary life styles and difficulty adopting healthy modalities. “I don’t have to convince patients to stop, or change much of anything. I just need to convince them that TM is a positive behavior that can offer significant health benefits. As a certified community

health educator, my earnest hope is that we can encourage individuals and insurance companies to adopt the exponential benefits of prevention, because that is where cost savings occur. Ideally, I would like to see TM prescribed to all patients by general practitioners—before they have clinical abnormalities in blood pressure or diabetes—on their first visit.”

Implications for Patients and Physicians

Our experience with beginning years of MDED-400 is that students can easily take control of their own wellness by gaining deep rest and improving brain functioning with twice daily TM practice. Attending physicians and students report that TM has added balance to their lives.

Having TM as a tool means our students can recommend something that they know will help, based upon their own experience and upon substantial evidence. They can avoid burnout and maintain their enthusiasm for practicing medicine. They can also become the role models we all aspire to be. Our students have demonstrated that we can join them in restoring our own balance, enthusiasm, and mastery.

The medical profession is in desperate need of support. We’re told, “Physician, heal thyself.” But how? Stritch students have demonstrated that TM might just be the prescription to help answer this charge, by making our profession a more rewarding experience while also offering something of great value for our patients.

Carla L. Brown, EdD, is an adjunct professor at the Stritch School of Medicine and director of the Center for Leadership Performance, Chicago. Gregory Gruener, MD, MBA, is vice dean for education, and the Ralph P. Leischner, Jr., MD, Professor of Medical Education, and professor and associate chair of the department of neurology at Stritch. For more in-depth information about the logistics of starting the TM technique, please contact Dr. Carla Brown at cbrown@tm.org.

The Supporting Science

Multiple studies show the transcendental meditation technique can reduce stress, anxiety and cardiovascular disease risk **By Maura Tresch, MD**

MEDICAL SCHOOL can leave you with no time for yourself and feeling trapped. Stress can start to own you. Looking for a solution, I started the Transcendental Meditation (TM) technique through the Stritch School of Medicine elective.

I had low expectations: my idea of meditation was just sitting, chanting or emptying the mind, if that is even possible. But I was surprised how easy it was to practice TM. I just sit for 20 minutes twice a day, using a simple technique that doesn't require focus, concentration, or effort.

Immediately after starting TM, I was falling asleep more easily and I had more restful sleep through the night. After a month of practicing TM, I had an "Aha!" moment: I realized TM was the one thing I was doing just for myself. It allowed me to de-stress. I no longer had the feeling of being trapped—I literally felt free.

The technique itself is mental, but the rationale for it is based in research on the physiology of TM. This is the science of restful alertness, resulting in the mind being more awake and the body deeply rested, which allows stresses to naturally dissolve. Doctors require solid research and evidence, or concrete experience, to accept methodologies outside the usual medical school curriculum. Through our Stritch elective, renowned doctors, scientists and TM instructors, referring to 380 peer-reviewed published articles, allowed skeptical students to review the extensive science behind TM. We not only validated the benefits of TM, we also became active practitioners. We are now better able to recommend TM to peers and patients.

Not Just Any Meditation Method

It is commonly thought that all types of meditation have the same result. According to meta-analyses, however, TM is not like other meditation techniques. A wide spectrum of results has been reported. I will concentrate on two areas: effects on stress and anxiety and cardiovascular health.

Neurological results of the TM technique are distinct from sleeping, dreaming, waking, resting and relaxing, or practicing other meditation methods. Through the use of FDG-PET in one study, researchers found that during TM, the brain experienced a decrease in blood flow to limbic centers and increased blood flow to the frontal brain. This increased blood flow accelerates brain function and efficiency, and boosts serotonin production. Other physiological changes during TM include decreased respiratory rate, lower heart rate, and a drop in cortisol levels. These changes are consonant with the findings of a

meta-analysis by Dillbeck and Orme-Johnson, which found that compared to sitting with eyes closed, the TM technique decreases the respiration rate, plasma lactate levels, and increases basal skin resistance, indicating that TM reduces sympathetic activation more than ordinary rest with eyes closed.

Other studies strongly indicate the brain is coherent and paradoxically restful and alert during TM.

EEG studies found that alpha waves were generated from the frontal area during TM, as opposed to the back of the brain during normal, eyes-closed rest. Compared to a baseline of sitting with eyes closed, EEG synchrony among all brain areas increased during TM, but did not increase in non-meditating controls who continued resting with eyes closed. Coherence seen on EEG supports claims that TM helps psychologically, because coherence is associated with psychological health and improved learning.

Studies measuring the effects of meditation on the EEG, including dozens of investigations by independent laboratories around the world, have shown the positive impact on the brain. TM practice increases EEG alpha coherence and synchrony by integrating or functionally binding brain systems. This process enables many cognitive and motor processes, including perception, memory, learning, and creativity.

Effects on Stress and Anxiety

TM can help patients with a variety of psychological conditions, including stress, anger and irritability, ADD/ADHD, movement disorders, migraine headaches and psychosomatic illness. Practicing TM has also been shown successful in helping depressed patients who have a strong reactive or anxiety component.

Decreases in anxiety and post-traumatic stress disorder (PTSD) symptoms resulting from TM deserve further study. Anxiety disorders afflict 40 million U.S. adults, about 18% of the population at a cost of more than \$42 billion a year, almost one-third of the country's \$148 billion total mental health bill. Anxiety increases the risk of chronic disease, such as coronary heart disease, and it motivates people to smoke and drink, further diminishing health.

In people with PTSD or anxiety, the amygdala is overactive and fires incessantly. By strengthening the prefrontal cortex with TM, the amygdala is able to calm down. A number of meta-analyses show TM benefits patients with anxiety. For example:

- TM is not just a means to fight anxiety during meditation. It prevents anxiety throughout the

day and night, decreasing cortisol levels throughout the 24-hour cycle.

- A meta-analysis of 146 studies on trait anxiety from Stanford University found that TM is the most effective technique known for reducing anxiety. It is more effective than all other meditation and relaxation techniques.
- A recent review that included 30 studies on mindfulness, TM and other forms of meditation published in *Psychological Bulletin*, one of the top journals of the American Psychological Association, found TM more effective in reducing trait anxiety than any other meditation technique.

In people with drug, alcohol, and tobacco addictions, studies have demonstrated improvement with TM practice. Charles Alexander, et al, reviewed 19 addiction studies conducted between 1972 and 1994. All but two studies showed significant reductions in the use of cigarettes, alcohol, and illegal drugs in diverse groups worldwide. In evaluating TM versus other cessation methods, TM was found to be most effective. TM appears to help the meditator take care of basic needs, eliminating the need to reach out for other stimuli.

Effects on Cardiovascular Risk

Psychosocial stress causes physiologic mechanisms that can result in atherosclerosis, ischemia, myocardial infarction, and even mortality. Daily TM practice appears to reduce these risk factors. In research on TM's cardiovascular effects, one study evaluated intimal layer thickness in African-American patients with hypertension. Two groups were evaluated: an education group and a group practicing TM. In both groups, the patient's medications were not adjusted, and no exercise program was started. The TM group experienced a significant reduction of thickness of atherosclerotic walls and opening up of the carotids.

According to an evaluation of results from the INTERHEART Trial, psychosocial stress is a major risk factor for developing heart disease (the trial also evaluated smoking, diabetes, hypertension, and the ApoB/ApoA ratio). But TM's positive impact on stress and cardiovascular health is not a new finding.

In 2013, the American Heart Association looked at alternative and complementary medicine's effect on hypertension. Study results showed that psychosocial stress is as important a risk factor as hypertension, diabetes, and smoking on cardiovascular disease. The AHA recommended that alternative treatment should include the TM technique as part of the treatment plan for individuals with blood pressure > 120/80 mm Hg.

More than ten randomized controlled trials investigating the effects of TM on blood pressure have been published. Comparative studies of meditation also have been researched in one meta-analysis looking at 17 studies. When evaluating relaxation methods, biofeedback, or combination of the two

versus TM, the TM technique showed statistically significant improvement in blood pressure. At this time, the TM technique is the only meditation practice that has been shown to lower blood pressure.


In another study, coronary artery disease was evaluated using angiography in African-American subjects who were already being treated for hypertension. Half of the subjects learned the TM technique: the other half received medical education on how to manage heart disease. Over an average of five years, those who had learned TM had a 48% lower risk of dying or experiencing a heart attack or stroke as compared to the control group. To put this in perspective, anti-hypertensive drugs have risk reductions of about 25%, statins about 30%, anti-platelet drugs and thrombolytics, also about 25- 30%. The patients in this study were already on anti-hypertensive meds and statins, which were not adjusted during the study, and the TM group still experienced this impressive, almost 50% risk reduction. This is like finding a whole new class of drugs. A dose-response relationship was seen with up to two TM sessions per day.

The preventive value of TM is also seen financially. A number of studies in the U.S. and Canada support the cost-effectiveness of TM in treating hypertension; decreasing hospital admissions in a number of major disease categories and decreasing health care use; and lowering medical costs for older people with practice of TM. One study (2005) contrasted trends in physician visits for people over 65 within the population of Quebec for nine years prior to TM introduction. Researcher Robert Herron explained the results: "After five years of practicing meditation, the cumulative average reduction in annual payments to physicians of the 163 people in the TM group relative to the matched 163 non-TM controls was 70%." This is very important, because health care costs of people over 65 comprise roughly one-third of our health care costs.

Take Care of Yourself

By recommending TM we can inoculate our patients against stress and its associated effects. With TM we do not "manage" stress—we get rid of it. With the stress gone, the health of the body and mind can improve. This is the essence of preventive medicine.

I have been told that "you cannot help others before you help yourself." When we take an airplane flight, the stewardess tells us that in the event of an emergency, we are to put on our own oxygen mask before we help someone else. To properly care for my patients, I must first care for myself so that I can give them my best possible attentive mind.

Maura Tresch, MD, is a global health scholar and family medicine resident at St. Vincent's Medical Center in Jacksonville, Florida. She graduated from Loyola University Chicago Stritch School of Medicine in 2015. For a list of references, please see: <http://qr.net/Refs>. 

Physician Wellness through Transcendental Meditation Loyola University Chicago Stritch School of Medicine

"We have an important role in society to help keep people well, and when they become ill, to diagnose and treat their illnesses and to try to prevent these, whenever we can. That's high-stakes work.

"It takes a lot of education, a lot of technical skill, cognitive skill, and continuous learning for the 25 to 45 years that you are practicing as a physician. That's a long time to be in a high-stakes situation, and it is important to learn self-care so you don't burn out—so that you remain resilient and exhibit outstanding professionalism the whole time you practice as a physician."

Referring to the TM elective at Stritch, "There's no risk to this, and we really care about our medical students. We want our students to learn self-care so they can be resilient doctors, and Transcendental Meditation is one of the things that can help them get there."

Linda Brubaker, MD, MS, FACS, FACO

Dean

Loyola University Chicago Stritch School of Medicine

Interview, Chicago Tonight: <http://ssom.luc.edu/meditation/> click



For more information about *Physician Wellness through Transcendental Meditation* at Stritch School of Medicine and about the TM program for wellness in universities, schools, and organizations contact:

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