



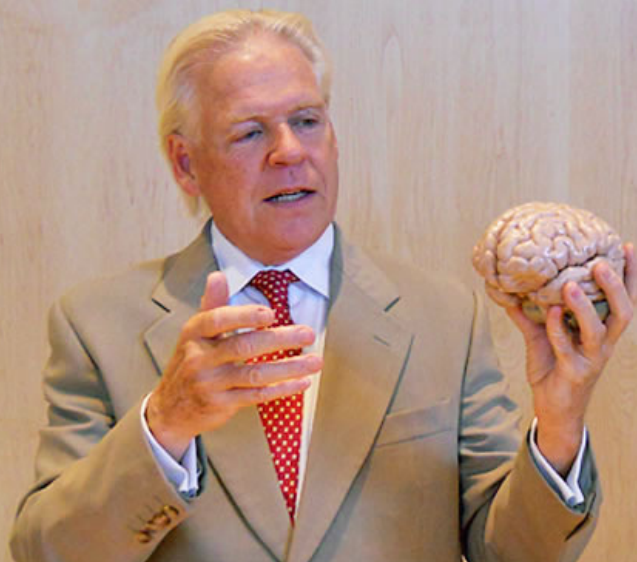
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ISSUE 9



“Very few people introduce order into their lives in an effective way. Most people’s diet and lifestyle, for example, do not add order—in fact, they actually decrease order. With more order in the brain system, the impact of risk factors for aging and Alzheimer’s are greatly reduced.”—Dr. Alarik Arenander

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Why Our Brains Age—and How to Slow the Aging Process

BY LINDA EGENES

Alarik Arenander, Ph.D., is Director of the Brain Research Institute and an expert in the neurobiology of brain development and mind-body health. He has conducted pioneering research at the University of California at Los Angeles, Penn State University at Hershey, University of Wisconsin at Madison, and Maharishi University of Management in Iowa. Here Enlightenment asks him to share his knowledge about brain physiology and how to keep our brains healthy as we age.

Enlightenment: Is there a relationship between stress and aging?

Dr. Alarik Arenander: Yes. Stress is a major source of disorder in brain functioning. In particular, the prefrontal cortex of the brain is very sensitive to stress, lack of sleep, poor diet, and substance abuse—all of which severely reduce its ability to function properly. Stress and fatigue cause the prefrontal cortex to go “offline.”

Aging is a process—a progressive disconnect or loss of order in the physiological and psychological systems... Aging is a progressive dysfunction that starts even

This is important because the prefrontal cortex is considered the “CEO” of the brain. It regulates judgment, planning, problem solving, decision making, moral reasoning, and sense of self—really important functions! And guess what? Research reveals that this key orchestrator of brain function increasingly goes offline with age, especially in people with Alzheimer’s.

So, yes, stress is a factor in aging and definitely impacts in a negative way the brain’s main control unit, the prefrontal cortex. And as we know, the Transcendental Meditation



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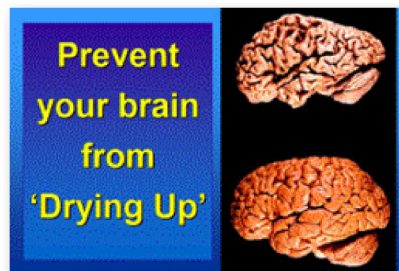
in 20- or 30-year-olds, accumulates with time, and morphs into disorders of bodily, mental, and behavioral function.

third decade of life. By the time a person in their 60s or 70s approaches their doctor to discuss a concern about memory and thinking, the underlying aging process may have already been going on for 40 or 50 years.

So aging is a process that starts even in 20- or 30-year-olds, that accumulates with time, and morphs into disorders of the body, mind, and behavior.

Enlightenment: Are there known causes of dementia or Alzheimer's?

Dr. Arenander: Age is the biggest risk factor or determinant for dementia, with Alzheimer's disease being the most common type of dementia. By the time a person reaches 80 years of age, they have a 50 percent chance of being diagnosed with Alzheimer's. This is not a good outlook.



Risk factors for Alzheimer's [besides age] include genetics, the quality of education, the quality of the work environment, diet, chronic disease, environmental toxins, substance abuse, and how many times you've hit your head.

technique has been shown to reduce stress better than any other stress-reduction technique available, in part by creating remarkably high levels of brain coherence in this region and across the whole brain.

Enlightenment: How would you define aging, and when does it start?

Dr. Alarik Arenander: Aging is a progressive disconnect or loss of order within the body and mind. What people don't realize is that the key markers for aging start as early as the

Other risk factors include genetics, the quality of education, their work environment, diet, chronic disease, environmental toxins, and substance abuse. And let's not forget how many times you've hit your head. Brain trauma is an important cause of Alzheimer's later in life. That's why it is so important to wear a helmet when you ride your bicycle. You only get one brain, and all these risk factors add up to build a case for or against whether you get dementia or Alzheimer's.

One important note here is that with the exception of age, most known risk factors are things we actually have control over. In fact, it's possible to be 80, 90, or even 100 years of age, and to function as well as a college student. Research suggests that the brains of these highly functional elderly people are more orderly than less functional elderly individuals. The famous Alzheimer's study of nuns documented that those with more complex cognitive functioning, or orderliness, early in their life had a better quality of life later on.

As we age, we need to create more order in the brain. Order refers to the intelligent flow of information. You could think of disorder as "noise" in the brain, and order as the "signal" in the brain. So, when the ratio of signal-to-noise decreases as a part of the aging process, thinking can become confused and memory fails. So we want to strengthen the signal, the order, while doing what we can to reduce the noise or

disorder.

Most risk factors introduce disorder into the physiology, and this is something we can try to prevent or reduce. Unfortunately, very few people introduce *order* into their lives in an effective way. Most people's diet and lifestyle, for example, do not add order. In fact, they actually decrease order.

With more order in the brain system, the impact of risk factors for aging and Alzheimer's are greatly reduced. If you have a way to instill more order in your brain, you can hold off, prevent, or even fix cognitive loss, which correlates with loss of brain functioning. That's where the practice of the TM® technique becomes very helpful.

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Enlightenment: What does science tell us are the main ways to create and maintain orderliness in the brain as we approach our 50s and 60s? Is there any research on this?

Dr. Arenander: Most research focuses on introducing various forms of orderliness into the brain physiology and the body. For example, easily walking a few miles each day can have a

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In fact, it's possible to be elderly—80, 90, or 100 years of age—and to function as well as a college student.

positive effect on brain function in aging individuals. Also, exercising our mental functions such as memory and sensory and motor activities can lead to improved performance in these specific areas. Software is available that has some good effects. Challenging cognitive activity can be helpful as well—taking on new projects, taking classes, doing crossword puzzles, learning a new language, etc.

Since aging is associated with increased inflammation, foods that offer anti-inflammatory phytonutrients are an important part of an anti-aging diet. These foods include most fruits and vegetables of color. Who doesn't like blueberries or strawberries? Most blue, purple, and red foods yield significant antioxidant activity, besides tasting good. Of course, one needs to buy them organically. Otherwise, these same foods can carry high loads of toxic agricultural chemicals.

You can also exercise your emotions by staying socially active. Higher levels of social engagement appear to have some protective effect.



You could think of disorder as “noise” in the brain. So, when the ratio of signal-to-noise decreases in the aging process, the thinking becomes confused and memory fails. So we want to strengthen the signal, or order, while doing what we can to reduce the noise, or disorder.

But science would argue that the most important category is rest—that is, some means of naturally bringing about greater degrees of orderliness. With age, sleep can become shortened and fragmented. Most individuals are sleep deprived from an early age and never allow the brain to benefit from the nourishing value of a full night's sleep. Adequate nighttime sleep is important.

Research supports the idea that even sleep is not enough. We need to experience a more concentrated and enlivening form of rest. That's why I recommend that individuals who wish to optimize the aging process begin to meditate. Decades of research on the practice of the Transcendental Meditation technique indicate that every risk factor, perhaps even the main risk factor of age itself, can be positively influenced by the practice of this simple, enjoyable meditation.

For example, the twice-daily routine of meditation can significantly lower one's biological age. You could be 60 years old but play tennis like a 45-year-old. Research also shows that individuals who practice the Transcendental Meditation technique live longer on average and have less chronic illness—that is, they experience a longer and better quality of life than individuals who do not practice the technique.

Enlightenment: How can Transcendental Meditation practice accomplish all these benefits for the aging process?

Dr. Arenander: A key finding of brain research is that with age, the orderliness of brain functioning is progressively lost. Brain orderliness, as measured by coherence of the electrical

waves in the brain, is a powerful indicator of how orderly the brain's 100 billion cells are. When different parts of the brain start to function in better alignment, or in phase with each other, it is possible to quantify the level of integration in rhythmic, orderly wave patterns. This is called *brainwave coherence*, and it correlates strongly with improved mental functioning and improved aging.



A number of good studies have shown that meditation, specifically the TM practice, can create remarkable levels of brain wave coherence. My own research shows that brainwave coherence increases quickly when one learns this simple technique—and continues to develop in the brain even during dynamic activity. This finding is important for a couple of reasons.

Firstly, research shows that with a tool like the TM technique, we don't have to lead a life of mental deterioration. The brain has flexibility and growth opportunities at any age. Just because we are getting older doesn't mean we have to



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move in the direction of senility or dementia; the research clearly indicates that there are ways to generate more orderly functioning in the brain.

More importantly, the increase in brainwave coherence *during* TM practice extends into waking activity—that is, after meditation—indicating that this form of meditation leads to profound, enduring changes in brain orderliness with regular practice. These changes support a long and healthy life.

These findings of increased brainwave coherence are consistent with hundreds of studies showing that orderliness increases in the mind, body, emotions, and behavior as a result of Transcendental Meditation practice.

For example, research on the TM program shows a reduction in most chronic illnesses, including cardiovascular disease and its risk factors, such as hypertension, elevated cholesterol levels, metabolic syndrome, insulin resistance, and substance abuse. Studies also indicate that decreased

biological aging and extended length of life result from the regular practice of the TM technique.

Finally, the research shows a reduction of risk factors for Alzheimer's and dementia. These findings are all symptoms of increased orderliness in mind and body.

Seven ways to increase orderliness in brain functioning

1. The most important category is rest. Getting a good night's sleep is important.
2. You can also benefit from a more concentrated and orderly form of rest. As a researcher and neuroscientist, I can say that the TM program is far and away the most effective and well-researched program for accomplishing this.
3. Walking easily a few miles a day can have a positive effect on your brain functioning.
4. Exercising your mind, such as memory and sensory and motor activities, can lead to improved performance in these areas.
5. Exercise your emotions by staying socially active. Higher levels of social engagement appear to have some protective effect.
6. Challenging cognitive activity can be helpful—take on new projects or classes, do crossword puzzles, learn a new language, etc.
7. Take advantage of foods that offer anti-inflammatory phytonutrients. An anti-aging diet can include most fruits and vegetables of color.

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written by a guest

Hey Alarik, Paul Corey here from the OR at Sharp Memorial Hospital in San Diego. Nice piece in "Enlightenment Magazine." Remember when you, I and Ali Rubottom edited Harold Bloomfield's first book in Santa Barbara? Well...hello once again and all the best. Paul

written by a guest

This is a wonderfully articulated article Alarik. I will be handing it out often. Thank you ! June

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