

A WHITE PAPER



YOGA AND MEDICAL MEDITATION™

AS ALZHEIMER'S PREVENTION MEDICINE

The Work of the Alzheimer's Research and Prevention Foundation

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"The greatest breakthrough for Alzheimer's disease in the past decade is the realization that the way we live our life is critical to the quality of life and brain health as we age."

George Perry, Ph.D., Alzheimer's Expert, Editor-in-Chief of the Journal of Alzheimer's Disease, and Dean, University of Texas San Antonio, Texas, USA.



About the Alzheimer's Research and Prevention Foundation

Founded in 1993 by Dharma Singh Khalsa, M.D., the Alzheimer's Research and Prevention Foundation (ARPF) is a 501(c)(3) non-profit organization dedicated to preventing Alzheimer's disease by funding research studies and providing educational outreach and memory screenings.

The ARPF believes that memory loss is neither a normal nor natural part of aging. You can take action today to maximize your brain power and reduce your risk of developing Alzheimer's, by following The 4 Pillars of Alzheimer's Prevention™.

This approach utilizes the best of conventional medicine, combined with the best of integrative or holistic medical modalities, which include:

1. Diet and Brain-Specific Nutrients
2. Stress Management With Yoga and Meditation
3. Physical and Mental Exercise
4. Spiritual Fitness.

Discover more at www.alzheimersprevention.org.

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Prologue

I recently met a middle-age woman named Katherine who was obviously in great physical and emotional distress. Her face appeared sad and stressed, with tight lines and deep wrinkles. Katherine's body was in spasm. She was a mass of rigid tension and sat at a right angle; everything was out of line.

Katherine shared with me that she had recently lost her husband after a five-year struggle with Alzheimer's. She told me that this was the most stressful and difficult time of her life. Katherine also revealed that this was not only very emotionally draining, but it was dangerous too, as she felt her own physical and mental health slipping away. Katherine was scared that she too would develop Alzheimer's. Unfortunately, her experience is commonplace and true.

But here's the good news.

There is hope for Katherine and many more men and women like her who are worried about losing their mind. It is now possible to keep your brain sharp as you age and to prevent Alzheimer's disease.

Katherine embarked on a healing program described in this white paper, that helped her heal in brain, body, and spirit.

Here are the Staggering Statistics

Alzheimer's disease (AD) affects 5.4 million Americans and many more millions world-wide. As baby-boomers age, these numbers are predicted to sky-rocket to 16 million in the USA alone by 2050.

Women especially bear the brunt of this raging epidemic, both as caregivers and patients. They are twice as likely as men to develop AD in their 60's.

- **A woman's lifetime risk for AD is higher than for breast cancer: 1 in 6 vs. 1 in 11**
- AD costs society as much as heart disease and cancer
- **Every 67 seconds someone is diagnosed with AD**
- It is the 6th leading cause of death
- **2/3 of all AD patients are women**

***"That which
can be
foreseen
can be
prevented."***

Charles Mayo, M.D.,
Founder of the
Mayo Clinic, 1924

The Four Pillars of Alzheimer's Prevention

"What lies behind us and what lies before us are tiny matters, compared to what lies within."

Ralph Waldo
Emerson

The search for a drug that impacts AD has thus far proven to be elusive. That's why the Alzheimer's Research and Prevention Foundation's (ARPF) Four Pillars of Prevention program is so critically important.

The Four Pillars encourage (1) a Mediterranean-Type of plant-based diet, (2) stress management, especially through yoga and meditation, (3) physical and mental exercise and (4) spiritual fitness. Each aspect of the program has been shown to reduce the risk of cognitive decline.

What this White Paper will highlight is our innovative research on a yoga meditation called Kirtan Kriya. The other three pillars of our program can be discovered at <http://www.alzheimersprevention.org/4-pillars-of-prevention>.

Yoga & Meditation - A New Dimension in AD Prevention

Our yoga meditation as Alzheimer's prevention medicine is compelling because it has revealed that Kirtan Kriya (KK), meaning singing exercise, a simple 12-minute yoga meditation, has the following benefits:

- **Reverses memory loss**
- Increases energy levels
- **Improves sleep quality**
- Up regulates positive genes
- **Down regulates inflammatory genes**
- Reduces stress in patient and caregiver
- **Improves psychological and spiritual well being**
- Activates significant anatomical areas of the brain
- **Increases telomerase, the rejuvenating enzyme that slows cell aging, by 43%, the largest increase ever recorded**
- No side effects, no cost

Here is a referenced list of our studies and working hypotheses that support our ongoing research, along with user-friendly pictures of brain scans and where they were published. This work was carried out at leading medical schools and published in prestigious medical journals, including *The Journal of Alzheimer's Disease*.

KK Improves Cerebral Blood Flow

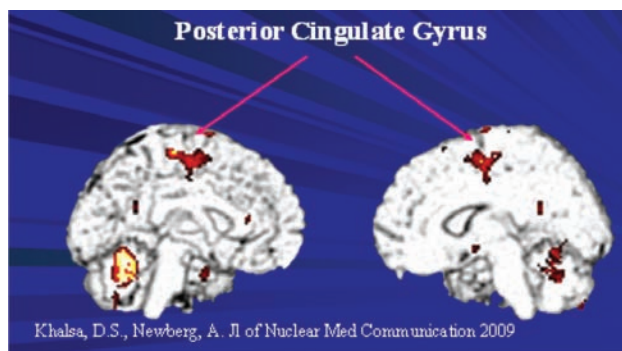
Formal research on KK began in 2003. At that time, we organized a brain scan study looking at the effects of KK on the brain.

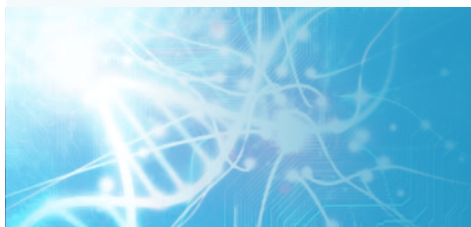


The above brain image is before and after - the practice of KK. Notice that the brain on the left is smaller and has dimples in the top part. These dimples signify a lack of blood flow. This is not the picture of a healthy-looking brain.

As you can easily see, the after picture shows a symmetrical, rejuvenated brain with lots of energy and blood flow bilaterally (increased blood flow = stronger brain connections and perhaps the creation of new brain cells). This is a picture of a healthy brain.

Below is a picture of the posterior cingulate gyrus (PCG), a structure that is crucial for episodic memory retrieval. **The PCG is one of the first areas to decline in function during the development of AD.** KK enhances blood flow to the PCG, and is therefore a critically important contribution to the risk-reduction discussion.





Studies have shown it is possible to change the brain for the better, improve connections between brain cells, and even grow new brain cells (neuroplasticity and neurogenesis). Is it possible, then, that if people did KK every day, dramatically fewer would get AD?

As yoga and meditation are sophisticated forms of physical exercise and mental stimulation, it certainly is reasonable to believe that they would also have this effect.

Moreover, as seen in the references below, solid evidence connects reduced cerebral blood flow with higher Alzheimer's risk, as well as its rapid progression.

Khalsa DS, Amen D, Hanks C, Money M, Newberg A. Cerebral blood flow changes during chanting meditation. *Nucl Med Commun* 30(12):956-961

Pereira AC, Huddleston DE, Brickman AM, Sosunov AA, Hen R, McKhann GM, Sloan R, Gage FH, Brown TR, and Small SA. An *in vivo* correlate of exercise-induced neurogenesis in the adult dentate gyrus. *Proc Natl Acad Sci U S A*. Mar 27, 2007; 104(13): 5638–5643.

De la Torre JC. Critical threshold hypoperfusion causes Alzheimer's disease? *Acta Neuropathol*. 1999 Jul;98(1):1-8.

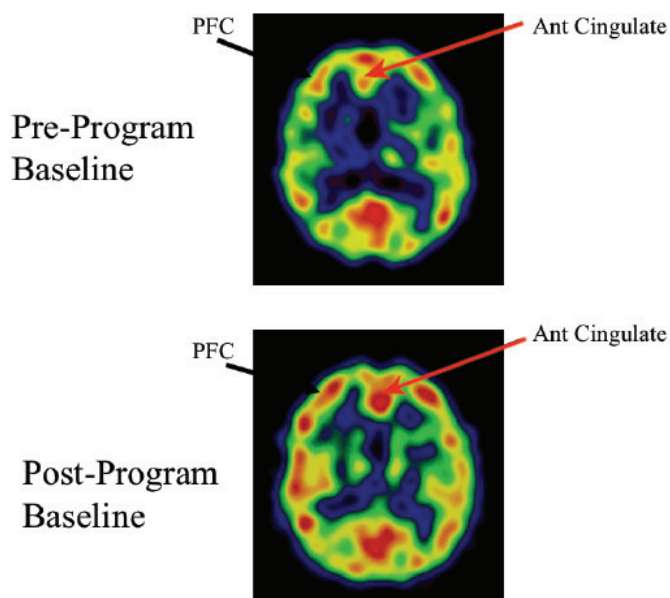
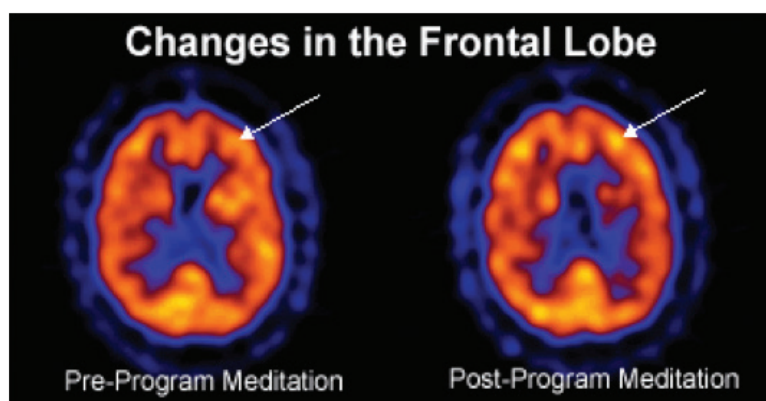
Nishimura T, Hashikawa K, Fukuyama H, et al. Decreased cerebral blood flow and prognosis of Alzheimer's disease. *Ann Nuc Med*. 2007 Jan; 21 (1):15-23.

KK Reverses Memory Loss

Our next series of studies was done at The University of Pennsylvania Medical School.

First, after 8 weeks, it was shown that the subjects' memory loss was reversed, compared to controls. This was published in 2010 in *The Journal of Alzheimer's Disease*.

Dramatic improvements may be seen on the following two scans:





Compared to the first time the patients practiced KK, after 8 weeks the arrow reveals a marked increase in frontal lobe activity, signifying improvements in attention, concentration and focus.

Another significantly increased area was the Anterior Cingulate Gyrus (ACG), an important brain area for balancing stress.

A part of the frontal lobe also seen to be enhanced in this scan is the Pre-Frontal Cortex (PFC). This improvement may help stop the progression of early memory loss, also known as Mild Cognitive Impairment (MCI) to AD.

Newberg AB, Wintering N, Khalsa DS, et al. Meditation Effects on Cognitive Function and CBF in Subjects with Memory Loss. *Journal of Alzheimer's Disease* 20 (20)(2010) 517-526. November 2010.

KK Enhances Mood and Well-Being

Our research has shown the following positive results in subjects practicing KK:

- **Less Depression:** 65% of subjects showed improvement on Depression Scales. Depression may be a risk factor for cognitive decline.
- Additionally, our published research reveals upturns in mood, energy, and spiritual well-being.

This is important, because other studies looking at meditation and psychological/spiritual well-being require extensive training and long meditation periods. Our work revealed that doing KK for *only 12 minutes a day* creates an even stronger effect.

Moss, Aleeze, Wintering N, Khalsa D, et al 2012. Effects of an 8 week Meditation Program on Mood and Anxiety in Patients with Memory Loss. *The Journal of Alternative and Complementary Medicine* (18), 1 48-53.

A Pilot Study of yogic meditation for family dementia caregivers with depressive symptoms: effects on mental health, cognition, and telomerase activity. *Int J Geriatric Psychiatry*. Lavretsky H, Epel E, Siddarth N, ...Khalsa D. 2012 *Psych* doi:10.1002/gps.3790.

KK Provides Anti-Aging Effect on Your Brain, Body, and Genes

Beyond the above studies, another paper revealed that KK has a profound anti-aging effect on your brain when practiced over the long term.

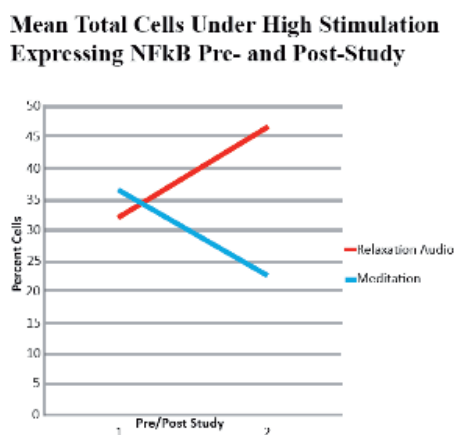
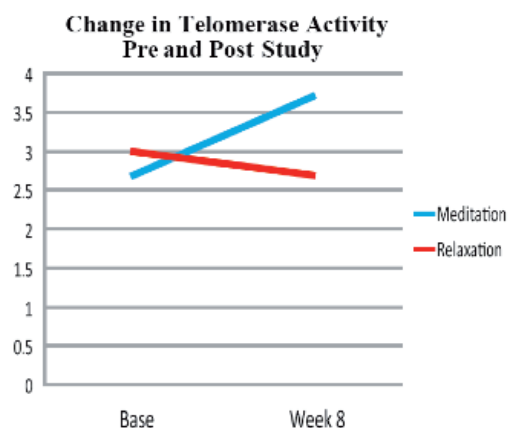
Newberg AB, Wintering N, ... Khalsa, DS. Cerebral blood flow differences between long-term meditators and non-meditators. 2010 Consciousness and Cognition 19(4) 899-905.

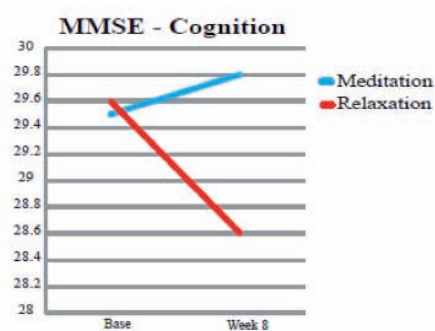
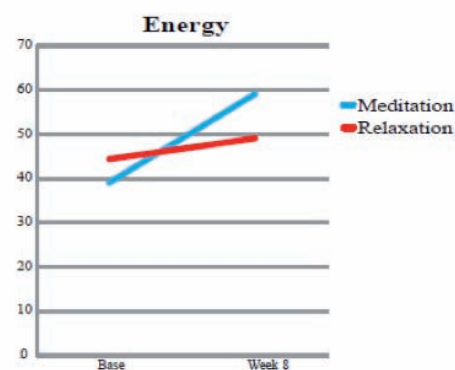
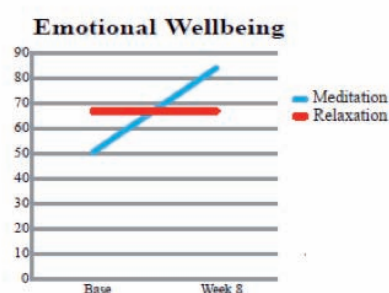
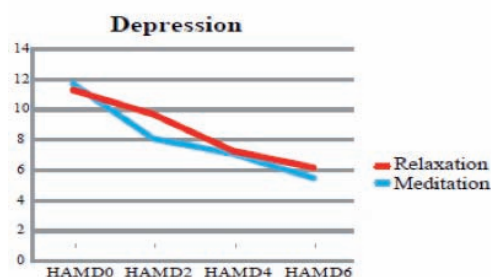
KK Leads to Less Stress, Increased Telomerase and Reduced Depression

ARPF also completed research at UCLA on the effects of KK on 39 stressed family dementia caregivers for 12 weeks vs. a control group utilizing a relaxation tape. The groundbreaking results of this study are seen in the following graphs.

Our research showed that KK:

- **Improved memory**
- Decreased inflammation
- **Diminished stress levels**
- Enhanced psychological and spiritual well-being (PWB/SWB)
- **Reduced depression**
- Increased energy
- **Boosted telomerase activity**





KK Dramatically Increases Telomerase Activity

The increase in telomerase of 43% by participants practicing KK was the largest increase found in any study. Shorter telomeres are associated with Alzheimer's (and a shorter lifespan).

Lavretsky H, Epel E, Siddarth N, ...Khalsa D. 2012 A pilot study of yogic meditation for family dementia caregivers with depressive symptoms: effects on mental health, cognition, and telomerase activity. *Int J Geriatric Psych* doi:10.100/gps.3790.

KK Down Regulates Inflammatory Genes

After 12 weeks of practicing KK, subjects showed down regulation of disease-causing inflammatory genes and reduced activity of the pro-inflammatory nuclear factor (NF)-kB. Chronic inflammation is a common finding in all major diseases including Alzheimer's and other forms of dementia, as well as cardiovascular disease, which is a risk factor for memory loss.

Black DS, Cole SW, Irwin MR... Khalsa DS. Yogic meditation reverses NK-kB and IRF-related transcriptome dynamics in leukocytes of family dementia caregivers in a randomized controlled trial. *Psychoneuroimmunology* DOI:10.1016/J.Psyneuen. 2012.06.011 (2012)

KK Up Regulates 19 Health-Promoting Genes

The positive benefits of this up regulation include immunoglobulin-related transcripts, which enhance immune system function and increased activity of disease-fighting natural interferon.

Black DS, Cole SW, Irwin MR... Khalsa DS. Yogic meditation reverses NK-kB and IRF-related transcriptome dynamics in leukocytes of family dementia caregivers in a randomized controlled trial. *Psychoneuroimmunology* DOI:10.1016/J.Psyneuen. 2012.06.011 (2012)

What this study tells us is that your lifestyle can defeat bad genes. This is called the science of "epigenetics." *Epi* means outside and points to the fact that your lifestyle can over-ride "bad genes" and you are therefore **not** a prisoner of your DNA. Your lifestyle can counteract your genetic predisposition.

The Reduced Stress from Doing KK is Critically Important

Studies show cognitive decline is caused by both acute and chronic stress as a result of elevated levels of the hormone cortisol killing brain cells in the hippocampus. As we've seen, KK reduces stress and lowers cortisol levels.

Lupien SJ, Fiocco A, Wan N, 2005. Stress hormones and human memory function across the lifespan. *Psychoneuroendocrinology* 30(3): 225-242.

Lupien, SJ, McEwen B, Gunnar M, et al. 2009. Effects of stress throughout the lifespan on the brain, behavior, and cognition. *Nature* Vol 10. 434-445.

One under-appreciated source of cognitive decline is Early Life Stress, also known as Adverse Childhood Experiences, which has been revealed to increase risk for mid-life memory loss, anxiety, and depression.

KK Replenishes Vital Neurotransmitters and Brain Chemicals

Depletion of neurotransmitter function at the synapse is a featured finding in AD. Yoga, meditation, and KK clearly are ways to enhance neurotransmitters naturally and play an important part in many of the positive results we have seen in our research.

Scheff SW, Nelder JH, Nelson PT. Is Synaptic Loss a unique hallmark of Alzheimer's disease? *Biochemical Pharmacology*, 2014;88 (4):517-528.

Newberg AB, Iversen J. The neural basis of the complex task of meditation: neurotransmitter and neurochemical considerations. *Med Hypothesis*. 2003;61 (2): 282-291.

KK Improves Sleep

Disrupted sleep is a risk factor for Alzheimer's. KK can help you fall into a deeper, more refreshing sleep.

Innes KE, Selfe TK, Brown C et al. The Effects of Meditation on Perceived Stress and Related Indices of Psychological Status and Sympathetic Activation in Persons with Alzheimer's Disease and Their Caregivers. *Evidence Based Complementary & Alternative Medicine: eCAM*. 2012; 9 pages (article ID 927509)

"Those Who Meditate Not Only Don't Develop Dementia, They Go Into Another Dimension."

Yogi Bhajan, Ph.D.,
Circa 1993

KK Enhances Psychological and Spiritual Well-being

KK facilitates a state of psychological and spiritual well-being, which promotes a healthy brain. The aspects of PWB include independence, personal growth, positive relationships, and purpose in life, all of which are associated with a better quality of life.

KK Promotes Clarity of Purpose

Having a purpose in life is associated with AD prevention. Meditators are pleased to discover stronger clarity of purpose and other aspects of psychological/spiritual well-being. This has been shown to lower Alzheimer's risk.

Boyle PA, Buchman AS, Barnes LL, Bennett DA. Effect of a purpose in life on risk of incident Alzheimer disease and mild cognitive impairment in community-dwelling older persons. *Arch Gen Psychiatry*. 2010;67(3):304-310.

Why Spiritual Fitness is So Important

Spiritual well-being involves 4 characteristics that enable you to achieve peace of mind.

1. **Patience** leads to persistence of a regular yoga and meditation practice, which brings with it the development of personal empowerment. When you develop patience you have the ability to slow down and enjoy life more because you're in the "flow" and can let the Universe work for you.
2. **Acceptance** brings self-acknowledgment and self-appreciation. It also gives tolerance, which allows one to see the faults in themselves and others but yet to look beyond these faults and accept others and themselves as they are. This leads to forgiveness, which releases anger, which is toxic to brain, immune, and cellular function. It also conveys a higher state of mental awareness.
3. **Compassion** conveys kindness, which leads to empathy, which emboldens healthy feelings and communication. Compassion also fosters clarity and commitment and the courage to be yourself without fear, and to pass to the next level of spiritual growth, which is surrender.

*"When you
move beyond
yourself, you
might find
peace of mind is
waiting there."*

George Harrison
in *Within You and
Without You*
Sergeant Pepper's
Lonely Hearts
Club Band
The Beatles,
Circa 1968

4. **Surrender:** "Surrender to the stretch" is said in yoga practice. In this case, the stretch that we're surrendering to is our soul; our spirit. When you surrender to your soul, you gain the strength to sacrifice and to serve others and give to them without thought of reward for yourself. This is called *seva* in yoga and brings with it a sense of true happiness and serenity. Serenity gives peace of mind and a sense of universal love where the One is seen everywhere. This is the ultimate in brain longevity and is what many people call enlightenment or illumination.

Spiritual well-being, therefore, is the purest aspect of living and brings the person to discover, often for the first time, peace of mind.

Khalsa, DS. Unpublished observation and understanding from 40 years of personal practice. 2014.

How To Do Kirtan Kriya

KK is a 12-minute singing exercise that people have been practicing for thousands of years. It brings together several actions: breath work, singing or chanting, finger movements (mudras), and visualization. Hence, it is a multifaceted, multisensory exercise that engages the whole brain and increases cerebral blood flow.

Posture: Sit comfortably in a chair with your feet flat on the floor. Alternatively, you can sit on the floor with your legs crossed, although older adults are not likely to choose this option. The essence of the posture is to be comfortable and sit with the spine straight with only the natural curvature.

Breath: Breathe naturally as the meditation unfolds.

Eyes: The eyes are closed.

The Chant, or Mantra: The chant uses the sounds, Saa, Taa, Naa, Maa. These ancient sounds taken together mean "my true identity" or "my highest self." The tune to which these sounds are sung is the first four notes of the familiar children's song, "Mary had a Little Lamb." That is, the notes are "Mar-y had a." See Figure 1.

The Mudras, or Finger Movements: The thumb is touched to each of the other four fingers in sequence. Both hands perform the same mudra set simultaneously. Figure 1 illustrates.

- On Saa, touch the index fingers of each hand to the thumbs.
- On Taa, touch your middle fingers to your thumbs.
- On Naa, touch your ring fingers to your thumbs.
- On Maa, touch your little fingers to your thumbs.

Always go forward in sequence: thumb to index finger, middle finger, ring finger, and pinky; never go backwards.

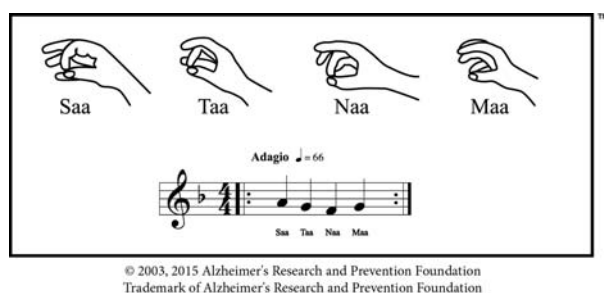
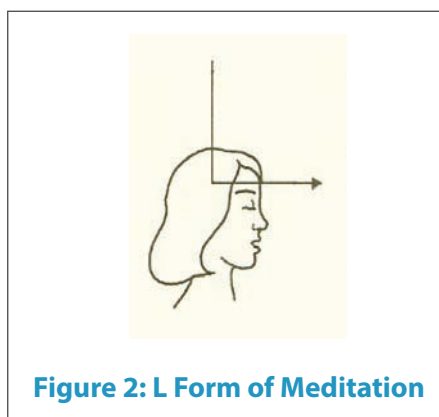


Figure 1

The Visualization: Visualize energy coming down from above into the middle of the top of the head, proceeding straight down into your brain, and then changing to a lateral direction so that it comes out of your head at a point in the middle of your forehead in the center, lined up with the nose (the spot referred to as "the third eye" in some Eastern traditions). Hence, the energy is visualized as following the path of a capital letter "L." One may think of this action as sweeping through like a broom. See Figure 2.





The Sequence: Sing the sounds *Saa Taa Naa Maa* while also performing the mudras with the fingers of both hands. At the same time, visualize the sound flowing in through the top of your head and out the middle of your forehead in an L shape.

1. For two minutes, sing out loud.
2. For the next two minutes, use a stage whisper.
3. For the next four minutes, say the sound silently to yourself.
4. Then whisper the sounds for two minutes and then out loud for two minutes, for a total of twelve minutes.

To come out of the exercise, inhale very deeply, stretch your hands above your head, and then bring them down slowly in a sweeping motion as you exhale.

KK Activates the Whole Brain

According to Kundalini Yoga tradition as taught by Yogi Bajan, there are several mechanisms by which Kirtan Kriya conveys its benefits. The use of the tongue in Kirtan Kriya during the chanting is believed to stimulate the 84 acupuncture meridian points on the roof of the mouth in a certain permutation and combination that sends a signal to the hypothalamus and pituitary, as well as to the brain itself. KK may also rejuvenate the brain synapse by increasing important brain chemicals, such as acetylcholine, norepinephrine, and dopamine.

Moreover, the dense nerve endings in the fingertips, lips, and tongue are associated with a high level of representation in the motor and sensory areas of the brain. Therefore, when you utilize the fingertips in conjunction with the sound, specific areas in the brain, as seen on the SPECT scans above, are activated.

In our most recent publication, it was revealed that each aspect of KK stimulates a separate part of the brain. It was often wondered what the visualization aspect of KK effects were. Now we know that this part of the technique actually activates the occipital lobe of the brain, for both vision on a physical level and on a larger plane as well: as in vision of mission or purpose. And as seen above, having a purpose has been shown to be of preventive value for AD.

Pomykala KL, Silverman DHS, Geist CL, Voegel P, Siddarth P, Khalsa DS, Lavretsky H. A pilot study of the effects of meditation on regional cerebral brain metabolism in distressed dementia caregivers. *Aging health* 2012 (5) 509-516.

ARPF's Unique Vision: What's New in Our Research?

1. Slowing The Progression of Memory Loss: Subjective Cognitive Decline (SCD) and Mild Cognitive Impairment (MCI)

We are delighted to announce that we are doing research on Medical Yoga and KK as Alzheimer's prevention medicine in people with MCI, which accelerates the development of AD. This is being done at the University of West Virginia School of Public Health and UCLA School of Medicine.

At UCLA 60 subjects were recruited for clinical outcomes. The control group was a memory training program. We compared the cognitive effects and biomarkers of neuroplasticity of Yoga and KK to memory training in a 12-week study in adults age 55 and older with MCI and memory complaints (SCD).

The University of West Virginia study is similar except more factors were analyzed and the study group consisted of people with MCI and SCD residing in a retirement continuing-care facility.

2. FINGER Study

In a new evolution of our work, the ARPF has partnered with the Ministry of Health and Welfare in Helsinki, Finland and the Karolinska Institute in Stockholm, Sweden. We are conducting the largest study in history on the prevention of Alzheimer's called the FINGER Study (Finnish Geriatric Intervention *Study* to Prevent Cognitive Impairment and Disability), involving 1,200 subjects.

In this groundbreaking research, we moved from basic to advanced understanding of the role integrative medicine plays in the prevention of AD. The FINGER study utilizes the model of our Four Pillars of Prevention, including:

1. Intensive nutritional intervention
2. Physical exercise
3. Cognitive training
4. Control of cardiovascular risk factors

Multiple other aspects of brain health and cognition leading to the prevention of AD such as depression, cardio and cerebrovascular morbidity



and mortality, health service utilization, neuroimaging, and AD biomarkers are also part of this innovative work. The results are positive and continue to be forthcoming. FINGER will continue with a 7 year follow up study.

Significantly, this work also includes the measurement of telomere length before and after the program, which is more advanced than measuring telomerase alone.

The ARPF's partnership with the FINGER study, in conjunction with our research at UCLA and the University of West Virginia on KK and slowing the progression of SCI and MCI to AD will provide a viable road forward for millions of people around the world to stay mentally sharp as they age and prevent AD.

Imtiaz B, Tolppanen AM, Kivipelto M, Soininen H. Future Directions in Alzheimer's disease from risk factors to prevention. *Biochemical Pharmacology*. 88 (4) (2014) 661-670.

Kivipelto M, Solomon A, Ahtiluoto S, et al. The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER): Study design and progress. *Alzheimer's & Dementia*. (2013) 1-9.

Ngandu T, Lehtisalo J, Kivipelto M, et al. A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *The Lancet online*, 12 March 2015.

3. Einstein Aging Study

The ARPF is delighted to help support the Einstein Aging Study of Yeshiva University in the Bronx, New York. This is a community-based research project of older adults to identify factors that contribute to cognitive decline, dementia, and other health outcomes. In particular, researchers are interested in the experience of stress and pain among older adults and how they cause, exacerbate, or arise from cognitive dysfunction.

4. Virtual Reality-Based Balance Training and Cognitive Function

The ARPF has partnered with The University of Arizona School of Medicine, Department of Surgery in Tucson, Arizona, to study virtual reality –based balanced training and cognitive function in a 30 subject pilot project. KK will be added in a future related study.

Schwenk M, Grewal G, Mohler J, Khalsa D, Najafi B, et al. Interactive balance training integrating sensors-based visual feedback of movement performance: a pilot study in older adults. *Journal of NeuroEngineering and Rehabilitation*. 2014, 11:164.

Summary

Modern research reveals that lifestyle activity can promote cognitive health in aging and protect against cerebrovascular pathology and beta-amyloid pathology, which lead to AD.

KK Yoga Meditation is an important addition to lifestyle design to prevent AD as it leads to enhanced cognitive function, less stress, decreased depression, improved genetic health, reduced inflammatory markers, increased telomerase, better sleep, lower blood pressure, and enhanced cerebral blood flow. That's why we call it The Mind Body Medical Treatment for Memory Loss and Alzheimer's Disease®.

Along with diet, exercise, mental stimulation, socialization, and control of other risk factors such as diabetes, KK is now part of the Alzheimer's prevention conversation. The ARPF continues to work to be the leader in yoga and meditation as Alzheimer's prevention medicine within the Alzheimer's community, the yoga community, and beyond.

Wirth M, Haase C, Villeneuve S. et.al. Neuroprotective pathways: lifestyle activity, brain pathology and cognition in cognitively normal adults. *Neurobiology of Aging*.2014(2) 15.

If you have any comments or questions, or desire further information, do not hesitate to contact me. I look forward to hearing from you.

Yours in Alzheimer's Prevention,

Dharma Singh Khalsa, M.D.

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About Dharma Singh Khalsa, M.D

Founding President/Medical Director Alzheimer's Research & Prevention Foundation



Dharma Singh Khalsa, M.D., was born in Cleveland, Ohio and was raised in Miami Beach, Florida. He attended the University of Florida and graduated from Creighton University School of Medicine in Omaha, Nebraska. Dr.

Dharma, as he is known, received his postgraduate training in anesthesiology at the University of California, San Francisco where he was chief resident. As chief resident, he conducted highly acclaimed research on anesthesia for cardiac surgery and obstetrical anesthesiology.

He is also a graduate of the University of California, Los Angeles Medical Acupuncture for Physicians Program, and has studied mind/body medicine at Harvard Medical School's Mind/Body Medical Institute. Dr. Dharma is board certified in anesthesiology, pain management, and is a diplomate of the American Academy of Anti-Aging Medicine. Moreover, Dr. Khalsa has been a practitioner of advanced yoga and meditation for four decades.



In 1987, Dr. Dharma established the first holistic pain program in the Southwestern United States at Lovelace Medical Center in Albuquerque, New Mexico. In 1990, he was recruited to become the founding director of the Acupuncture, Stress Medicine, and Chronic Pain Program at the University of Arizona, College of Medicine's teaching hospital in Phoenix. In this position, he became the first director of acupuncture in an American medical school.

Since 1993, he has been the President and Medical Director of the Alzheimer's Research and Prevention Foundation in Tucson, Arizona, the original voice in the integrative or holistic medical approach to Alzheimer's prevention and treatment. The ARPF is dedicated to fighting Alzheimer's disease and finding a cure through research and prevention.

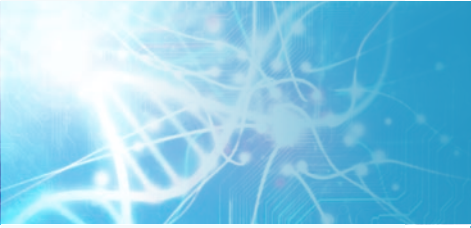
After founding the ARPF in 1993, Dr. Dharma became the first physician to advocate a lifestyle approach to the prevention and treatment of memory loss, including Alzheimer's. He is among the world's leading authorities on integrative medicine, and has written extensively on a wide range of health and healing issues.

His first book, the international best-seller *Brain Longevity* (Warner Books, 1997) is the original work of this kind to be written for the general public, and has been translated into twelve languages. Since then, Dr. Dharma has been honored as a medical pioneer by the integrative medical establishment, the media, and the public many times over.

Dr. Dharma has also authored six other books for the general public including *Meditation as Medicine*, *Food as Medicine* and *The New Golden Rules*. He has also written a number of medical textbook chapters, including one for Harvard Medical School and one for the University of Arizona.

Dharma Singh Khalsa, M.D. has been invited to share his work at workshops and seminars, as well as medical meetings, in the USA and around the world. In May 2003, Dr. Dharma was invited to testify before the Congress of the United States of America about the pioneering work of ARPF in the area of lifestyle influence on Alzheimer's disease, and called on Congress to fund a national education and outreach campaign designed to inform the public of the benefits of an integrative medical approach to Alzheimer's prevention.

At that time he also met with the U.S. Surgeon General, Vice Admiral Richard Carmona, M.D., M.P.H. At this meeting, Dr. Carmona stated: "Your work in the field of memory loss should now be considered mainstream."



Dr. Dharma and the ARPF continue to help design, fund, and support breakthrough research, including the FINGER study, the largest study in history on preventing Alzheimer's disease through a healthy lifestyle approach.

In 2015, Dr. Khalsa was appointed Clinical Associate Professor, Department of Internal Medicine and Integrative Medicine at the University of New Mexico, Albuquerque, New Mexico, where he is continuing innovative research work on behalf of ARPF.

Please Join Us Today!

Our research is made possible from generous contributions by people like you.

To learn about our educational materials and programs, subscribe to our e-newsletter, order the Kirtan Kriya memory exercise CD, or to make a donation, visit us at:

www.alzheimersprevention.org



"When it comes to brain health and being sure you are not one of the almost 50% of us who may develop dementia, the name of the game is prevention. There is no pill, no magic bullet that will keep your brain functioning optimally. For that, lifestyle strategies like diet and exercise have been shown to be of enormous benefit. But there is also the practice of meditation, and specifically Kirtan Kriya, that is emerging as an important tool for optimizing brain capacity and improving mood. The Alzheimer's Research and Prevention Foundation is the only organization undertaking a serious scientific evaluation of this noninvasive technique for the betterment of our brains."

Karen Koffler, M.D.
Medical Director, Carillon Hotel & Spa
(formerly Canyon Ranch), Miami Beach, Florida, USA



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