

# 17 Years of Medical Research of Kirtan Kriya on the Brain – Its Art and Science

Kirti Khalsa, CEO and Co-Founder  
Alzheimer's Research and Prevention  
Foundation



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## **What we will discuss:**

1-What is Alzheimer's Disease and Risk Factors

2-Discover how Kirtan Kriya dramatically improves brain function

3-Learn about ongoing research called The Pink Brain Project and how yoga and meditation prevent dementia in high risk women



# About me:

- From Rome, Italy
- Kundalini Yoga practitioner for 37 years
- Passionate about helping our elders stay healthy
- Rotarian



# ARPF: Designing and Funding Groundbreaking Work for 27 Years

- Dedicating research to the *prevention* of Alzheimer's through The 4 Pillars of Alzheimer's Prevention, including yoga/meditation and lifestyle
- Revolutionizing the conventional medical wisdom
- Establishing Alzheimer's disease (AD) as a preventable disease that can even be effectively treated and often prevented via a brain-healthy lifestyle
- Educating the public about the disease and ways to delay its development/reduce risk factors.



# Alzheimer's Disease / Dementia

Dementia: Old medical term. It's being discontinued because it's a generic diagnosis. Modern medicine is more precise and doctors now diagnose the *type* of dementia.

Alzheimer's Disease: A progressive disease that affects the brain. **The cause is unknown, there is no cure.** The most common symptoms are:

- Memory loss
- Disorientation
- Difficulty with words and names
- Difficulty with normal activities of daily living
- Can affect mood and personality
- In the advanced stages, the person is unable to function



# Risk Factors

## 1- Age

It's typically a disease of older people. In Taiwan, 1 in 13 people over 65 and 1 in 5 over 80

## 2- Family History

The risk is higher if a person has a direct relative with this disease

## 3- Genetic Predisposition

APOE-4 Gene

4- Other Illnesses: heart disease, stroke, head injury, diabetes

## 5- Lifestyle Choices

How you live your life affects your brain health



# The Devastating Statistics of AD in Taiwan:

- Women are 54% of AD patients, men 46%
- Dementia was expected to affect 270,000 people in 2017

AD on the rise.  
In 2011, there were 3.2 Million people over 65 years old.  
Of these, 18.36% had MCI and 7.94% had dementia.



- People of Chinese descent have lower APOE4 gene predisposition than Europeans/ Americans.



**There is Hope:**  
**Memory Loss is Not**  
**a Normal Part of**  
**Aging**



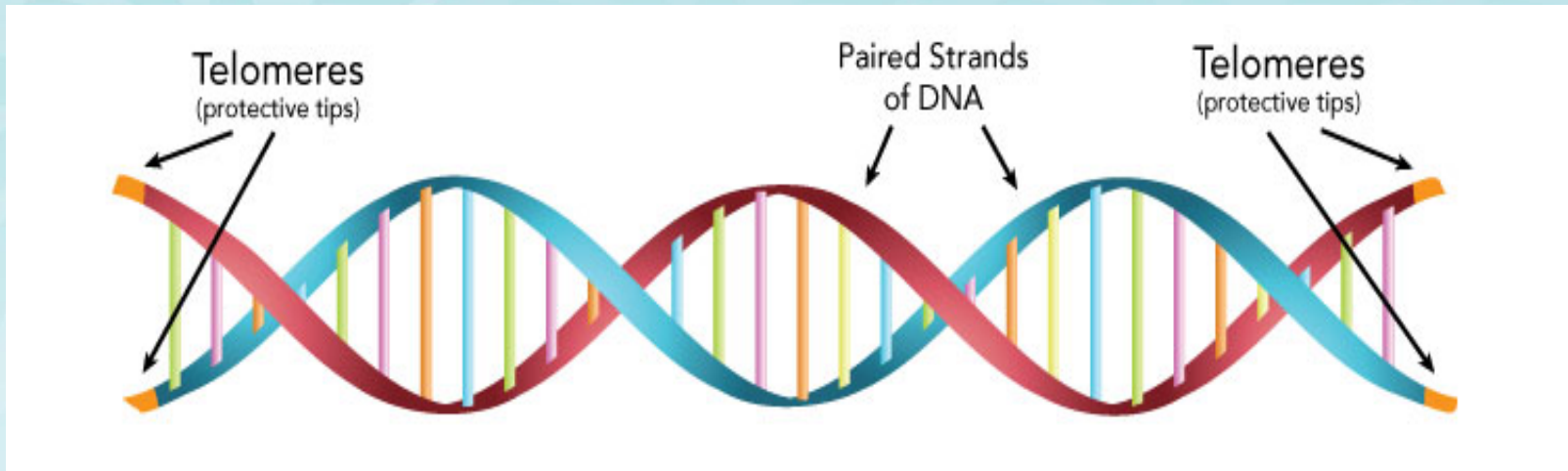


# FINGER Study (Finnish Geriatric Interventional Study for the Prevention of Cognitive Disabilities)

- 1,200 participants 60-77 at risk for dementia
- In its 7-10 follow up year
- Interventions: diet, physical exercise, cognitive training, measurement of vascular risk factors plus control group
- Findings are revolutionizing the medical community's approach to AD
- ARPF one of the core funders and supporters



# Poor Lifestyle Choices Impact Your Genes & DNA by Shortening Telomeres



# **Many Published Studies Reveal Multiple Benefits of Meditation:**

**From Better Memory to  
Improved Cellular & Genetic  
Health and Well-Being**

**(all goodness)**



# ARPF Research Partners



Original article

## Cerebral blood flow changes during chanting meditation

Dharma Singh Khalsa<sup>a</sup>, Daniel Amen<sup>b</sup>, Chris Hanks<sup>a</sup>, Nisha Money<sup>c</sup>  
and Andrew Newberg<sup>d</sup>

**Purpose** To examine changes in brain physiology during a chanting meditation practice using cerebral blood flow single-photon emission computed tomography.

**Methods** Single-photon emission computed tomography scans were acquired in 11 healthy individuals during either a resting state or meditation practice randomly performed on two separate days. Statistical parametric mapping analyses were conducted to identify significant changes in regional cerebral blood flow (rCBF) between the two conditions.

function in a way that is consistent with earlier studies of related types of meditation as well as with the positive clinical outcomes anecdotally reported by its users. *Nucl Med Commun* 00:000–000 © 2009 Wolters Kluwer Health | Lippincott Williams & Wilkins.

Nuclear Medicine Communications 2009, 00:000–000

**Keywords:** cerebral blood flow, meditation, single-photon emission computed tomography

<sup>a</sup>Alzheimer's Research and Prevention Foundation, Tucson, Arizona, <sup>b</sup>Amen



# Meditation Effects on Cognitive Function and Cerebral Blood Flow In Subjects with Memory Loss: A Preliminary Study

Andrew B. Newberg<sup>a,b,\*</sup>, Nancy Wintering<sup>a,b</sup>, Dharma S. Khalsa<sup>b,c</sup>, Hannah Roggenkamp<sup>a</sup> and Mark R. Waldman<sup>b</sup>

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Accepted 12 January 2010

**Abstract.** This preliminary study determined if subjects with memory loss problems demonstrate changes in memory and cerebral blood flow (CBF) after a simple 8-week meditation program. Fourteen subjects with memory problems had an IV inserted and were injected with 250MBq of Tc-99m ECD while listening to a neutral stimulus CD. They then underwent a pre-program baseline SPECT scan. Then subjects were guided through their first meditation session with a CD, during which they received an injection of 925MBq ECD, and underwent a pre-program meditation scan. Subjects completed an 8-week meditation program and underwent the same scanning protocol resulting in a post-program baseline and meditation scan. A region of interest (ROI) template obtained counts in each ROI normalized to whole brain to provide a CBF ratio. Baseline and meditation scans and neuropsychological testing were compared before and after the program. The meditation program resulted in significant increases ( $p < 0.05$ ) in baseline CBF ratios in the prefrontal, superior frontal, and superior parietal cortices. Scores on neuropsychological tests of verbal fluency, Trails B, and logical memory showed improvements after training. This preliminary study evaluated whether an 8-week meditation program resulted in improvements in neuropsychological function and differences in CBF in subjects with memory loss. While the findings are encouraging, there are a number of limitations that can be addressed in future studies with more participants and more detailed analyses.

**Keywords:** Cerebral blood flow, cognitive impairment, meditation, memory, single photon emission computed tomography





Contents lists available at ScienceDirect

## Consciousness and Cognition

journal homepage: [www.elsevier.com/locate/concog](http://www.elsevier.com/locate/concog)



### Cerebral blood flow differences between long-term meditators and non-meditators

Andrew B. Newberg<sup>a,b,\*</sup>, Nancy Wintering<sup>a,b</sup>, Mark R. Waldman<sup>b</sup>, Daniel Amen<sup>c</sup>,  
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#### ARTICLE INFO

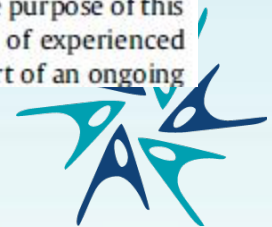
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Received 13 November 2009

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#### ABSTRACT

We have studied a number of long-term meditators in previous studies. The purpose of this study was to determine if there are differences in baseline brain function of experienced meditators compared to non-meditators. All subjects were recruited as part of an ongoing



## Effects of an 8-Week Meditation Program on Mood and Anxiety in Patients with Memory Loss

Aleezé Sattar Moss, PhD,<sup>1</sup> Nancy Wintering, MSW,<sup>1</sup> Hannah Roggenkamp, BA,<sup>1</sup> Dharma Singh Khalsa, MD,<sup>2</sup> Mark R. Waldman, BA,<sup>3</sup> Daniel Monti, MD,<sup>1</sup> and Andrew B. Newberg, MD<sup>1</sup>

### Abstract

**Background:** This study assesses changes in mood and anxiety in a cohort of subjects with memory loss who participated in an 8-week *Kirtan Kriya* meditation program. Perceived spirituality also was assessed. Previous reports from this cohort showed changes in cognitive function and cerebral blood flow (CBF). The purpose of this analysis was to assess outcome measures of mood and affect, and also spirituality, and to determine whether or not results correlated with changes in CBF.

**Methods:** Fifteen (15) subjects (mean age  $62 \pm 7$  years) with memory problems were enrolled in an 8-week meditation program. Before and after the 8-week meditation, subjects were given a battery of neuropsychologic tests as well as measures of mood, anxiety, and spirituality. In addition, they underwent single photon emission computed tomography scans before and after the program. A region-of-interest template obtained counts in several brain structures that could also be compared to the results from the affect and spirituality measures.

**Results:** The meditation training program resulted in notable improvement trends in mood, anxiety, tension, and fatigue, with some parameters reaching statistical significance. All major trends correlated with changes in CBF. There were nonsignificant trends in spirituality scores that did not correlate with changes in CBF.

**Conclusions:** An 8-week, 12 minute a day meditation program in patients with memory loss was associated with positive changes in mood, anxiety, and other neuropsychologic parameters, and these changes correlated with changes in CBF. A larger-scale study is needed to confirm these findings and better elucidate mechanisms of change.





## Review

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# Stress, Meditation, and Alzheimer's Disease Prevention: Where The Evidence Stands

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**Abstract.** Although meditation is believed to be over five thousand years old, scientific research on it is in its infancy. Mitigating the extensive negative biochemical effects of stress is a superficially discussed target of Alzheimer's disease (AD) prevention, yet may be critically important. This paper reviews lifestyle and stress as possible factors contributing to AD and meditation's



# Changes in Neural Connectivity and Memory Following a Yoga Intervention for Older Adults: A Pilot Study

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6/7/2016 Effects of Meditation versus Music Listening on Perceived Stress, Mood, Sleep, and Quality of Life in Adults with Early Memory Loss: A Pilot Randomized ...

## Effects of Meditation versus Music Listening on Perceived Stress, Mood, Sleep, and Quality of Life in Adults with Early Memory Loss: A Pilot Randomized Controlled Trial

**Article type:** Research Article

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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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Founding President/Medical Director  
Alzheimer's Research and Prevention Foundation  
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[www.alzheimersprevention.org](http://www.alzheimersprevention.org)

*"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.*





# HOW KIRTAN KRIYA MEDITATION BENEFITS ADULTS WITH EARLY MEMORY LOSS

## FINDINGS FROM A RANDOMIZED CONTROLLED TRIAL

By Professor Kim E. Innes, MSPH, PhD  
Scientific Advisory Council Member, Alzheimer's Research and Prevention Foundation

### SARAH'S STORY

*Sarah was worried.*

*Over the last 12 months, it seemed that her memory was slipping, and she was having difficulty concentrating.*

Formerly known as a productive, organized and detail-oriented employee, she was concerned that her work was suffering. Meeting deadlines was becoming more challenging, and she now found herself often needing to construct reminder lists in order to function. At times she felt overwhelmed by responsibilities she used to enjoy. The other day she completely forgot to attend a regularly scheduled meeting at work, and last week, she forgot to pick up the laundry and several items at the grocery store.

Just last night, she had difficulty recounting the plot of a movie she had just seen. Her husband noted that lately she was seeming more 'distracted' and forgetful than normal, and her children had begun chiding her about repeating stories.

Fearful that her memory was deteriorating, Sarah had also started to become anxious and depressed; increasingly, she had difficulty sleeping. She was afraid her boss or coworkers might notice something awry, and found herself making excuses to her friends. She still went to her Church regularly, but no longer always stayed for the fellowship meal.

*Her husband had suggested seeing a doctor, but Sarah was reluctant to seek medical care.*

She did not want to receive a diagnosis that she feared would harm her professional and social relationships, and for which she knew there was no effective treatment.

Sarah felt increasingly frightened and alone. She knew all about Alzheimer's disease, an ever more common progressive brain disorder resulting in a loss of memory, reasoning, language skills, and the ability to care for one's self; she had recently witnessed firsthand the slow and painful decline of a fellow church member, who now resided in a nursing home.



## Benefits of 12 Minutes a Day of Kirtan Kriya

### Effects

1. Increased Energetics
2. Improved Epigenetics
3. Increased Synaptic Function
4. Increased Gray Matter Volume
5. Upregulation of Immune Function
6. Reduces Multiple Risk Factors for AD
7. Increased Telomerase/Telomere Length
8. Down Regulation of Inflammatory Genes
9. Increased Cerebral Blood Flow to Significant Brain Areas

### Outcomes

1. Less Stress
2. Better Sleep
3. Less Inflammation
4. Increased Well Being
5. Reversal of Memory Loss
6. Increased Spiritual Fitness
7. Enhanced Executive Function
8. Improved Memory in SCD, MCI, early AD
9. Enhanced Mood with Less Anxiety and Depression



## Research Update

# The Pink Brain™

## Project:

# Reducing Risk for Alzheimer's Disease in High-Risk Women through Yogic Meditation Training

*We're excited to share the details of a breakthrough study that ARPF is funding at the University of California, Los Angeles. The Department of Psychiatry is in charge of this ongoing study. The Pink Brain Project has gained a tremendous amount of interest and recruitment was very successful.*

Our study consists of 100 older women (age > 50 years old and older women who are peri-menopausal and post-menopausal, and who have a high risk of developing AD; both subjective cognitive decline and high cardiovascular risk factors).

Participants are randomized to 12 weeks of either a yogic meditation (Kirtan Kriya+Kundalini yoga class) or memory enhancement training interventions.



# Conclusion

1. The Regular Practice of KK is Proven to Reduce the Risk of Dementia in Healthy People
2. KK is a great tool to practice self care for professional and family caregivers



# Take Kirtan Kriya Home

1. Self-led, 12-minute KK meditation now possible
2. Anyone can practice it
3. Best time to do it is first thing in the morning
4. CD and MP3 available for a \$20 donation
5. Includes simple instructions
6. It's easy, enjoy!

**[www.alzheimersprevention.org](http://www.alzheimersprevention.org)**





# Free Resources: Store at [www.alzheimersprevention.org](http://www.alzheimersprevention.org)



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- 2 Stress Management with Yoga and Meditation
- 3 Physical and Mental Exercise
- 4 Spiritual Fitness™

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# Brain Longevity<sup>®</sup> Therapy Training

(IMAGE TO BE INSERTED)

Due to the aging of our population, there is a great need for evidence-based, lifestyle tools that help older adults stay mentally healthy and sharp and remain active members of our community. Thus the creation of the **Brain Longevity<sup>®</sup> Therapy Training**.

Learn more at [www.arpf.com](http://www.arpf.com)

