

## MEMORY LOSS IN GERIATRIC AGE AND ITS PREVENTION THROUGH YOGIC LIFESTYLE

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**Abstract:** India is the second largest country in the world with 76 million elderly persons above 60 years of age as of the 2011 Indian census. The elderly population (70 years and above) are projected to increase five fold from 2001-2051. Condition like Alzheimer's disease, another disorder that causes dementia or a condition that mimics dementia disrupts work, hobbies, social activities and family relationships. Yoga is the ancient science aimed to get eternal happiness through eight limbs that include *Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana* and *Samadhi*. All these stimulate and enhance the functioning of the various internal organs and also in boosting overall health. Ageing can be improved with yoga, which prevents accumulation of stress metabolites and keeps the physiology supple. This paper emphasis on memory loss and suggests preventive yogic practices for memory loss in geriatric age.

**Keywords:** *Asana, Geriatrics, Memory loss, Yogic lifestyle.*

### Introduction

Memory loss and age-related problems are major issues in Geriatrics. Projections made by the United Nations has indicated that India will have 198 million persons of 60+ in 2030 and 326 million by 2050. In 2016, there will be an estimated 57 million males and 56 million females of 60 plus (1986-90 to 2011-16) (<http://socialjustice.nic.in/npopcomplete.php>).

Mild memory impairment is a common, even normal, consequence of the ageing process. It becomes abnormal when it affects an ability of an individual to function normally on a day-to-day basis. The reduced capacity of older people to learn and remember may be caused by stem cells in the brain dividing less frequently, rather than a shortage of neural stem cells as was previously thought (Gunther *et al.*, 2001). Longitudinal studies in the elderly have revealed a gradual decline in the cognitive abilities of older people, but differences between individuals in the rate of decline suggest that at least some of the age-related deterioration is due to the inclusion of subjects with incipient dementia. The elderly

people may demonstrate an incipient phase for Alzheimer's disease (AD) is supported by studies in the elderly which have shown evidences of Alzheimer's disease years before clinical symptoms are evident and this is more common in individuals with memory impairment in old age (Alzheimer's Association, 2004).

### Objectives

The purpose of this study was to examine directly the relationship between the practice of yoga and its impact on memory loss in geriatric age. The attempt of the study was to identify disease dictated by memory loss and prevention by yogic practices.

### Major findings of Research studies on Memory loss

Some of the early symptoms of many diseases consist of memory loss, confusion regarding time and place, problems with words in speaking or writing as well as changes in mood and personality. Age associated cognitive impairment can be accompanied by depression

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and changes in mood (**Ownby RL *et al.*, 2006; Rinck and Becker, 2003**) and the data suggest that mood disorders can aggravate the processes of cognitive decline (**Gualtieri CT *et al.*, 2008**). The effect of aging and memory loss on spirituality is less clear, although individuals with early memory loss have often turned to spirituality as an important coping mechanism (**Beuscher L *et al.*, 2008**). In fact, higher levels of spirituality have been associated with a slower rate of cognitive decline in patients with memory loss (**Kaufman Y *et al.*, 2007**).

Till now not many options in treatment of age-associated memory loss and cognitive impairment are available especially with associated mood-related problems. It may be possible to treat degenerative disorders including Alzheimer's disease, dementia and depression by stimulating the stem cells' ability to divide and produce new nerve cells (**Anonymous, 2006**). According to World Health Organization, 25% of the world population is suffering from mental illnesses. But only 40% of such cases are diagnosed and treated. One million annual suicides are the result of these undiagnosed or missed cases (**Anonymous, 2007**). Most common causes for these suicides are depression, dementia, anxiety and schizophrenia. These health issues are characterized by memory loss, confusion and disorientation.

### Prevention of Memory loss through Yoga

Yoga is viewed as a physical, mental and spiritual discipline that confers a sound body and mind (**Mohan *et al.*, 2002**). Two of the physical aims of yoga are *Pranayama* (breathing techniques) and *Asana* (posture), while one of the mental aims is the ability to maintain cognitive control, specifically in the areas of attention, memory and arousal control. One general claim is that yoga helps clear the mind and this may have an effect on the ability to attend to relevant stimuli and recall information subsequently (**Heriza *et al.*, 2004**). Inverted yoga positions have been associated with claims of increased memory and attention due to increased blood

flow to the brain. Yoga can prevent memory lapses by calming person and enhancing concentration. It can also improve powers of recall by increasing circulation to brain. Specifically, two inverted poses are suggested, the Open-Legged Forward Bend and Threading the Needle (**Schaeffer *et al.*, 2006**). More inverted poses including the headstand and child's pose are cited as ways to nourish the brain by increasing circulation of blood and oxygen ([http://www.womenfitness.net/yoga\\_ad.htm](http://www.womenfitness.net/yoga_ad.htm)). A study used both meaningful words and nonsense syllables to test immediate (short-term) verbal memory abilities before and after a one-month period of yoga training for college-aged (15 to 25 years) males and females. The results though incomplete, suggested that yoga did smooth the progress of immediate memory presentation more than the absence of yoga and that the advantage was greater for males than females (**Kocher *et al.*, 1979**).

Elementary school children who engaged in 30 minutes of yogic practices (by following a videotaped yoga session) twice a week for three weeks increased their time on task (paying attention to the teacher or task at hand) during three weeks period and at a later follow-up date, while their classmates' time on task remained essentially unchanged (**Peck *et al.*, 2005**). Similar work studied the performance scores of children aged 11 to 16 years on verbal and spatial memory tests for two groups, one attending a yoga camp and the other, a fine arts camp. Both groups were tested initially and after 10 days of their respective interventions. At the final assessment, the yoga group showed a significant increase (43%) in spatial memory while the fine arts and (control group) showed no change. The results suggest that yoga practice, including *Asana* and *Pranayama* improve delayed recall of spatial information (**Manjunath *et al.*, 2004**). Memory span and attention measured before and after yoga training changed positively as a result of yoga training in primary school children (**Anantharaman *et al.*, 1984**). Yoga has also been utilized with limited positive results in

rehabilitation with mentally retarded individuals (Pathak *et al.*, 1984) and in training visual perceptual sensitivity (Manjunath *et al.*, 1999).

The effect of yoga shows positive effect on the attention and behavior of boys with Attention-Deficit Hyperactivity Disorder (ADHD) (Jensen *et al.*, 2004). Boys diagnosed with ADHD were assigned to Yoga and Control group. Yoga group includes 20 yoga sessions and co-operative activities, respectively. Both groups were assessed pre and post intervention on the Conners' Parent and Teacher Scale (Revised) (Conners *et al.*, 1997) and the test of variables of attention (Greenberg *et al.*, 1997). Significant improvements from pre-test to post-test were found for the control group, but not the yoga group on several subscales of the Conners' Teacher Rating Scales, while the opposite effect was present on several subscales of the Conners' Parents Rating Scales. Some of the results of this study suggest that yoga may have merit as a complementary treatment for boys with ADHD already stabilized on medication particularly for its evening effect when medication effects were absent. Five cognitive tests (color cancellation, digit forward, digit backward, recognition and visual retention) were done to study the effects of yoga over the time span of an academic year for 12 year old participants.

Results showed improvement on most tests from the beginning to the end of the school year in both, a group that regularly participated in yoga and a group that did not. However, the statistical analysis did not directly evaluate the control and yoga groups, stating that the mean score of the yoga group was slightly higher than the control group (Sahasi *et al.*, 1984).

Similarly, *Anuloma Viloma Pranayama* (uninostril breathing) as part of a yoga technique increased spatial memory scores by 84% but did not cause an increase in verbal memory scores (Naveen *et al.*, 1997).

### Literature review on Memory and Yoga

Memory is the capacity to retain and recall information about past and present incidents. It

is the ability to analyze and synthesize the assimilated information and not for storage alone. In *Sanskrit*, the word 'memory' is called as '*Smriti*'. The *Yoga Sutra* of *Patanjali* describes *Smriti* as 'an experienced object not being lost from the mind' (Mahaprabhulal Goswami, 2009). Throughout the day, the mind is flooded with many informations, data and new happenings/developments/facts. Thus, mind has its natural way to sieve out only the information that is pertinent or useful. Thus, it is essential to train mind accordingly and ensure a healthy state of functioning. Memory is the latent capacity to retain and recall information, yoga assists in improving memory power through yogic techniques of *Asana*, *Pranayama*, *Pratyahara* etc. The brain functions of attention, cognition, processing of sensory information and visual perception are honed with yogic practices. *Patanjali* has classified mental functions in to five categories *viz.* *Pramana* (means of valid knowledge), *Viparyaya* (illusion), *Vikalpa* (imagination), *Nidra* (sleep) and *Smriti* (memory) (Mahaprabhulal, 2009). Here, *Smriti* is recalling of our previously recorded experiences. Perception, illusion, imagination and sleep are registered to find out whether it is matched with any previously stored information. Sometimes this stimulus is generated in the *Chitta* itself in the form of thoughts. This also triggers the recollection of the past memory.

*Hatha Yoga* emphasizes '*Chitta Vishranti*' i.e. the tranquility at the level of consciousness (Chamanlal, 1997). Yogic practices like *Asana*, *Pranayama*, *Dhyana*, *Om* chanting increase the circulation of blood to the brain. It is directly related to awareness and aims at release of tensions working at the level of consciousness (*Chitta*). This helps calm the mind and enhances concentration skills. Memory lapses can also be prevented through yogic practices that enhance the power of recall. One can draw upon the immense power of the mind with consistent yogic endeavor.

Two of the physical steps in yoga practice are *Pranayama* and *Asana* while one of the mental

aims is the ability to maintain cognitive control, specifically in the areas of attention, memory and arousal control. One common claim is that yoga helps to clear the mind and this may have an effect on the ability to attend to relevant stimuli and recall information subsequently (**Heriza *et al.*, 2004**).

### Findings based on Literature review

Yoga can help reduce and in some cases eliminate drug dosage and dependence in patients suffering from memory loss, diabetes mellitus, hypertension, epilepsy, anxiety, bronchial asthma, constipation, dyspepsia, insomnia, arthritis, sinusitis and dermatological disorders ([http://health.yahoo.com/health/ency/adam/000760/\\_overview](http://health.yahoo.com/health/ency/adam/000760/_overview)). *Pranayama* and *Pratyahara* are extremely efficient techniques to divert individual's attention from the objects of outer environment, to increase every person's energy potentials and interiorize them, to achieve control of one's inner functioning. Memory span and attention, measured before and after Yoga training, changed positively (**Anantharaman *et al.*, 1984**). *Omkar* meditation increases the efficiency of cells and organs. *Omkar* recitation is an important and well known yogic practice. It is generally prescribed before and/or after every session of yogic practices (**Vishwas *et al.*, 1995**).

### Implications

There are many yogic techniques that stimulate the brain and nervous system to improve memory and concentration. Yoga provides an excellent tool for improving memory power and fighting forgetfulness. *Hatha yoga* is a gentle form of yoga that consists of *Asana*, *Pranayama*, *Dhyana* and *Om* chanting, to achieve clarity of the mind that translates into all round good health. Memory power is given a boost while also improving the ability to maintain focus and concentration.

The Five steps of yogic lifestyle for overall well being

1. Right posture - *Asana*

2. Right breathing - *Pranayama*
3. Right cleansing - *Shuddhi kriya*
4. Right diet - *Satvika ahara*
5. Right mindset - *Dhyana*

There are some yogic techniques that exclusively stimulate the brain and nervous system to improve memory and concentration.

### Asana

Inverted postures nourish the brain by increasing circulation of blood and oxygen. Abundant blood is supplied to the brain during practice of *Shirshasana*. This is to improve memory and for increasing intellectual powers. Exercise boosts circulation, including blood flow to the brain which uses a full 25 percent of the oxygen that enters our lungs ([www.yogapoint.com](http://www.yogapoint.com)). It also boost brain-nurturing chemicals and reduces stress, which has been shown to damage the brain. Physical activity can also ease depression and delay the onset of Alzheimer's disease. The *Asanas* using a *Drishti* (gazing point) especially during balancing postures improves mental concentration. Spine lengthening postures, the forward and back bending poses, activate the spinal column and stimulate the nervous system.

### Types of Asana

*Asana* are not aimed at mere toning of the physical body. They are designed to activate energy channels thereby empowering the body from within.

During *Asana* practice, it is important to focus the eyes at the point between the eyebrows which promotes memory power (**Udupa *et al.*, 1978**). One must gently do away with restless thoughts and be aware of the movements of the body. Following *Asana* are useful for these purposes which can easily done by senior citizens.

1. *Vrikshasana*
2. *Natarajasana*
3. *Sarvangasana*
4. *Matsyasana*
5. *Bhujangasana*
6. *Bhadrasana*

7. *Shavasana*
8. *Padmasana*
9. *Siddhasana*
10. *Vajrasana*
11. *Ustrasana*
12. *Tadasana* etc.

### **Pranayama**

In *Pranayama*, the mind is focused on breath as it flows in and out of the body. Oxygen and *Prana* (energy) levels in mind and body also elevate due to the regulation of breath. Any activity which requires a total concentration of mind will control the breath also. *Pranayama* aims primarily on the control of mind. *Anuloma-Viloma*, *Bhastrika*, *Kapalbhati* and *Bhramari Pranayama* are the best. *Pranayama* increases concentration as well as nourishes the brain. Yogic breath or *Pranayama* is an excellent way to revitalize *Prana* and to train the mind to be present and alert. *Pranayama* cleanses and strengthens the physical body while calming and clearing the mind (M.M. Gore, 1991).

### **Shuddhi Kriya**

**Tratak Kriya:** Improves concentration, memory and mental power (Gheranda Samhita, 1999). It also increases working efficiency and the ability to read other's mind.

**Kapalbhati Kriya:** *Kapalbhati kriya* decreases *Kapha dosha* responsible for the *Tamas avarana* of the *Chitta*. After this *Kriya* the *dosha* is removed and the *Satva guna* is elevated resulting improvement in memory (Gheranda Samhita, 1999).

This *Pranayama* supplies pure life energy to the brain. It increases the blood circulation in the brain and removes blood clots thereby improving the memory power. Other than this, the toxic and foreign substances from the body are evacuated (<http://yousigma.com/health/yogaandbenefitssummary.html>).

### **Sattvika Ahara**

A yogic diet ideally follows a *Sattvika* or pure vegetarian food. A balance of fresh fruit,

vegetables, whole grains, milk, nuts and seeds in combination of both raw and cooked foods can be balanced yogic diet. These foods increase *Sattva* in the body because they are light, simple and full of necessary nutrients. Such yoga diet and lifestyle increase physical and mental vitality making anybody easier to experience clarity, lightness and peace of mind.

### **Dharana**

*Deshah Bandhah Chittasya Dharana.* (Patanjali Yoga Sutra, 2009). It is the practice of fixing the mind to an object for concentration. Daily practice of *Dharana* reduces the wavering attitude of mind and different kind of peace can be observed throughout the day (Riyaz et al., 2007). Routine practice of *Dharana* improves memory by controlling fluctuation of thoughts.

### **Dhyana (Meditation)**

*Tatra Pratyaya-Ekatanata Dhyanam* (Patanjali Yoga Sutra, 2009). When the mind remains without distraction on an object for a long time, it is called meditation.

*Dhyana* is a state of mind where no sensual thoughts or no contents occupy the mind. It is a step beyond *Dharana*, requiring even more mental focus and concentration. This practice controls the mind and makes it more conscious to pay attention on selected subject which further leads to increase *Smriti* power by decreasing *Chittavritti*.

### **Yogic Mudra (Posture)**

*Mudra* stimulates *Agya Chakra* by making concentration on this *Chakra* which is situated at the centre of the brain and therefore brain starts working speedily and increases memory (Asana Pranayama Mudra Bandha, 2005).

### **Sukshma Vyayama (Light exercise)**

Memory can also be improved by some light exercise i.e. *Buddhi* and *Dhriti vikasaka*, *Samaran shakati vikasaka* and *Medha Shakti vikasaka*. Types of *Sukshma vyayama*, reduce the *Kapha avarana* and balance the *Vata Nadi* to



increase memory and intellectual power (**Yogic Sukshma Vyayama, 1906**).

### Conclusion

Effectiveness of yoga therapy to improve memory, healing of psychosomatic and stress-related conditions is world wide accepted fact and same stands true in geriatrics also. The positive effect of this therapy is obtained by bridging positive co-ordination between body and mind. Traditional yoga was primarily concerned with spiritual transcendence, yoga therapy aims at holistic treatment of a variety of psychosomatic disorders ranging from memory loss to cognitive disability. The best feature about yoga, which makes it ideal as a tool for enhancing memory is that it utilizes various components to increase overall body and brain function.

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