Southern California University of Health Sciences
SCU Centennial Extravaganza
Aug. 26, 2011

Yoga, Ayurveda, Meditation and Pranayama (YAMP) techniques:
Turning Back the Aging clock Naturally

Ram Rao PhD

rrao2006@gmail.com
## Aging and the Brain

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Background-Research Interests

Cellular stress and its effects on brain structure and function

Neurodegenerative diseases

Cell models, animal models and neuronal stem cells
hESC differentiation to NSC

Role of Ayurvedic herbs

Buck Institute for Research on Aging, Novato, CA
AGING in USA-Statistics & Trends

The older population--persons 65 years or older--numbered 38.9 million in 2008.

They represented 12.8% of the U.S. population, about one in every eight Americans.

By 2030, there will be about 72.1 million older persons- 19% of the population.

80-85% of the aged population suffer from Age-associated diseases:
- cardiovascular disease
- neurodegeneration (brain & spinal cord) & degeneration of eye (macular, retinal)
- hypertension,
- cancer (breast, prostate, colon),
- Arthritis (osteoarthritis, Rheumatoid),
- osteoporosis,
- type 2 diabetes

http://izismile.com/2010/01/13/aging_stars_28_pics.html
In 1974, US Congress granted authority to form National Institute of Aging to provide leadership in aging research, training, health information dissemination and other programs relevant to aging, life span extension and longevity.

Quality-Life-span extension or Aging “Gracefully”- Disease-free life
Ayurveda & Three-fold cause of disease

The unwholesome conjunction of the sense organs with their objects,
Failure of intellect (Prajāparādha) and
Transformation (parinama)
– these are the threefold causes of diseases

Proper utilization and conjunction of the sense organs with their corresponding objects, Intellectual action and Stress-free transformation- beneficial to the maintenance of normal health.
- Caraka Samhita 1:X1:43

Parinama (A healthy transformation) is beneficial to the maintenance of normal health and healthy aging.
Parināma: Transformation due to Aging

Chronological aging: Refers to how old a person is - the most straightforward definition of aging.

Biological aging: Changes with individual's stress levels and is directly proportional to chronic STRESS.

If the brain is constantly/chronically stressed - it will show many of the signs of rapid aging and internal deterioration. Rapid biological aging may feature age associated problems including neurodegenerative and cardiovascular changes, obesity, spinal problems etc.

The need to still the brain is obvious. Brain is calm, optimally functioning and in the present, biological aging slows down and so does the body.
External/Internal causes of stress

- Major life changes
- Work
- Relationship difficulties
- Financial problems
- Being too busy
- Children and family

EXTERNAL

INTERNAL

CONDITIONED MIND

- Inability to accept uncertainty
- Pessimism
- Negative self-talk
- Unrealistic expectations, perfectionism

Layoff, mortgage
Stress, biochemical changes and Brain Function

Excessive activity/Stress
- Increased O2 stress
- Impaired Protein Degradation
- Neuroinflammation
- Decreased glutathione levels
- Accumulation of damaged/misfolded proteins, DNA and Membranes
- Impaired Synaptic Plasticity and Neurogenesis

Sedentary Lifestyle
- Cellular Complacency
- Reduced electrical/synaptic activity
- Reduced neurotransmitter signaling
- Reduced levels of cell survival proteins and stress response enzymes

Neuronal Dysfunction & Degeneration
Effects of Chronic Stress on the Brain

The hippocampus has high levels of cortisol receptors, and chronic stress impairs hippocampal function leading to:

- neuronal atrophy and destruction of neurons
- decreased short term memory
- decreased contextual memory
- poor regulation of endocrine response to stress

Our body responds to the way we think, feel and act. This is often called the “mind/brain-body connection.”

Poor state of Mind/brain due to chronic stress can weaken the body making us more susceptible to diseases and illness.

Many health problems are caused or exacerbated by stress, including:

• Pain of any kind
• Heart disease
• Digestive problems
• Sleep problems
• Depression
• Weight issues
• Autoimmune diseases
• Skin conditions, such as eczema
When a person thinks of the objects, attachment for them arises. From attachment desire is born. From desire stress (anger) arises. 2-62

From stress (anger) comes delusion. From delusion loss of memory, loss of memory leads to failure of intellect which results in the death of the individual. 2-63
1. Severe emotional stress can lead to premature aging of the human body. Low levels of a specific enzyme linked to aging and chronic psychological stress.


2. Depressed individuals have a higher incidence of various diseases of aging, such as dementia, cardiovascular and cerebrovascular diseases, depression may contribute to accelerated aging and cell damage.

Depress Anxiety. 2010 Apr;27(4):327-38. Wolkowitz OM, Epel ES, Reus VI, Mellon SH. Department of Psychiatry, University of California School of Medicine, San Francisco, California, USA.
3. Severe emotional stress could cause defects in the fetus, especially during the first trimester of pregnancy when fetal and brain development occurs at the fastest rate.


4. Chronic stress in adulthood decreased the vascular area fraction of the hippocampus-memory loss

1. **MYTH: THE BRAIN CANNOT GROW NEW BRAIN CELLS**

Research findings indicate that humans actually build/rebuild brain cells throughout life. Several regions of the brain that are involved in memory, reflection, decision making, planning and emotional control have neural stem cells that can mature into functioning neurons or glial cells.


2. Brain grows stronger from use and from being challenged in the same way that muscles grow stronger from exercise.
MYTH: NEURAL CONNECTIONS DECREASE WITH AGE

The brain is continually resculpting itself in response to experience and learning.

MYTH: CAPACITY TO LEARN AND INTELLIGENCE DECREASES IN OLDER ADULTS

Development continues all through adulthood and is driven by curiosity, thoughts, reflections and creativity. The brain remains capable of growth, maturation and resilience throughout life. Intelligence circuitry becomes more balanced in aged individuals.

A mentally active aged individual’s brain is a dense forest of thickly branched neural connectivity tree. It is this neural density that is the physical basis for the skills of accomplished older adults.
Supporting observations from other sources

Like the shining sun, self knowledge and learning builds equanimity of the MIND and destroys ignorance. Sanyasa Yoga; 5-16

The brain’s two hemispheres are more equally used by older adults. This is reflected in the display of bouts of novelty and ‘higher functions’ - awareness, perception, sage advice, spiritual enlightenment etc.
VATA VYADHI-
Ayurvedic Interpretation of Neurodegenerative diseases
Age associated neurodegeneration is associated with imbalances in *Vata* (*Vata Vyadhi*).

In addition, aging is associated with *Apana Vayu* Accumulation and Aggravation (*SANCHAYA & PRAKOPA*) leading to constipation and gas so commonly seen in elderly population.

When this combines with *Vata* provoking lifestyle including a dry, cold and light diet, irregular routines and overwhelming stress, it sets the stage for *Vata* to Overflow (*PRASARA*) and Relocate (*STHANA SAMSHRAYA*) to any dhatus that are weak.

A preexisting weakness in the brain areas triggers *Vata* Relocation to the nervous system and we have a condition of all 5 *Vayus* in the *Majja dhatu* of the Majja Vaha & Mano Vaha Srotas. Further Manifestation (*Vyakti*) and Diversification (*BHEDA*) of the 5 *Vayus* lead to degeneration and atrophy of nerves together with other complications.

The condition is exacerbated by *pitta or Kapha* provoking lifestyles. This defines the major *Vata/Pitta* pathology or *Vata/Kapha* physiology.
Medhya Rasayana

*yat jara vyadhi nashanam tat rasayanam*-

*That which negates old age and disease is called a rasayana.*

Medhya refers to the nervous system (brain & mind).

The medhya group of herbs helps enhance the ability to learn, retain and recall information.

Medhya rasayanas rely on the healing prowess of nature's own intelligence and have both a nurturing effect and a detoxifying effect on the nervous system.

Since the rasayanas are a perfectly balanced formulation, they nourish so perfectly that it does not create *ama* or toxins in the shrotas.
**Medhya Rasayana**

*Vacha* (Acorus calamus) is claimed as restorative, nervine and a mental tonic. It is believed to improve memory, intellect, speech, and correct aberrations of emotions.

*Mandukparni* (Hydrocotyle asiatica) - It is indicated to be used in the treatment of mental retardation, speech disorders, insanity, epilepsy etc.

*Shankhapushpi* (Convolvulus pluricaulis) - One of the best brain tonics. It strengthens the brain, brightens the memory and intellect. It is indicated in the treatment of loss of memory and associated mental disorders like insanity and epilepsy.

*Jyotishmati* (Celastrus paniculatus) - Powerful nervine and brain tonic which stimulates the intellect and sharpens the memory.

*Jatamansi* (Nardostachys jatamansi) - Highly aromatic plant bearing a biphasic action on Central nervous system indicating nerve stimulation and nerve sedation.

*Kapikacchu* (Mucuna pruriens) is frequently used for the treatment of Parkinsons disease and depressive illness in elderly persons. Mucuna pruriens seeds have been shown to contain significant quantity of L-Dopa.
Ashwagandha (Withania somnifera) is extensively used in Ayurveda as a general tonic and "adaptogen", helping the body adapt to stress. Preliminary studies indicate ashwagandha possesses anti-inflammatory, antitumor, antioxidant, immunomodulatory, hemopoietic, and rejuvenating properties.

Ashwagandha has been reported to increase memory and learning.

Preliminary data from our lab indicate the ability of this herb to stimulate neurogenesis and neurite outgrowth and to reduce Abeta plaques.

Brahmi (Bacopa Monniera) improves cognitive function, enhances nerve impulse transmission, aids in repair of damaged neurons, restoration of synaptic activity, and ultimately nerve impulse transmission. Anxiety, depression and Epilepsy
Medhya Rasayana

Mechanism of Action

Herb Delivery & BBB
The blood-brain barrier (BBB) is a barrier that occurs along all blood vessels (capillaries) supplying the brain that do not exist in normal circulation.

The barrier restricts the diffusion of microscopic objects (bacteria) and large hydrophilic molecules into the CSF, while allowing the diffusion of small hydrophobic molecules.

However, opening the barrier by any means allows entry of toxins and undesirable molecules to the CNS, resulting in potentially significant damage.

An attempt to overcome the barrier has focused on bypassing the BBB by using a novel, practical, simple and non-invasive approach i.e. intranasal administration (INA).
Nasya is especially desired for treatments of diseases of the parts above it; nose is the gateway for the head, spreading through this, it (nasal medication) cures them.
Intra Nasal Administration-The NASYA therapy

Pradhamana Nasya: Dry powders are blown into the nose with the help of a tube and is mainly used to treat kapha types of diseases such as headaches, heaviness in the head, cold, nasal congestion, sticky eyes and hoarseness of voice, cervical lymphadenitis, Epilepsy, drowsiness, Parkinsonism, inflammation of the nasal mucosa, attachment, greed and lust can be effectively treated by the therapy. Powders such as brahmi are traditionally used in this therapy.

Shaman Nasya: It is mainly administered to treat pitta-type disorders such as thinning of hair, conjunctivitis and burning infection in the ears. Generally, herbal medicated decoctions, teas and medicated oils are used.
Bruhana Nasya: This treatment uses ghee, oils, or medicated milk to cure vata disorders. Studies suggest that it is beneficial to cure vata-type headaches, migraine headache, dryness of voice, dry nose, nervousness, anxiety, fear, dizziness and emptiness. Negative thoughts can be banished by undergoing this treatment.

Navana Nasya (Decoction Nasya): This type of therapy is used in vata-pitta or kapha-pitta disorders. Decoctions and medicated oils are poured through the nostrils of the person undergoing the treatment.
The unwholesome conjunction of the sense organs with their objects,
Failure of intellect (Prajāparādha)

-Proper utilization and conjunction of the sense organs with their corresponding objects,
-Paying attention to the intellect

- beneficial to the maintenance of normal health.
- Charaka Samhita 1:XI:43
Role of the senses in the cause of disease. The senses are portals (gateways) to this world. External impressions are internalized by the 5 senses and processed by the brain.

**Faulty impressions**, Misuse or Overuse of the senses results in an under/over stimulation of sensory activity-susceptible to ill-health and disease.

Indulging in unhealthy behaviors in spite of the fact that we know we will not feel optimal afterward. **Not following what we know is true**-paves the way for susceptibility to disease.

Even though our soul leads us to harmony, and our senses lead us astray, we do not listen to our soul. This harms the body- brain and intellect.
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Pancha Tanmatras & Panchendriya Buddhi
(The 5 senses & 5 areas of perception)

Srotra Buddhi – Sound
(Brain stem, Thalamus, temporal lobe)

Sparsha Buddhi – Touch
(Thalamus, parietal lobe)

Chaksu (Rupa) Buddhi – Sight
(visual cortex, occipital lobe)

Rasana (Rasa) Buddhi – Taste
(neocortex)

Ghrana (Ghanda) Buddhi – Smell
(olfactory bulb; limbic system)
PanchaTanmatra Chikitsa

5 sense therapies (mantra, massage, visualization, optimum diet & herbs, aromatherapy), Yoga, pranayama, meditation

Trains the individual to listen to the inner voice-soul

Bring Vata to harmony-
He (vāta) is the doer of all actions, the soul of all things, possessor of all forms, chief of all living beings, the creator, supporter and controller of all; is omniscient, destroyer, lord of death and death itself. Hence, all out efforts should be made to maintain it normally always. 2–3a.
PRANA VAYU (Primary air)
Action: Sensory intake, inhaling, sensory stimulation

SAMANA VAYU (Balancing air)
Direction: Periphery to Center
Action: afferent nerve impulses (sensory input nerves)

VYANA VAYU (DIFFUSING air)
Direction: center to periphery
Action: efferent nerve impulse (motor nerves)
UDANA VAYU (UPWARD MOVING)

Action: expression, speech, memory; spiritual liberation

APANA VAYU (Downward moving air)

Direction: downward and outward
"Everywhere are His hands and legs, His eyes, heads and faces, and He has ears everywhere. In this way the Supreme exists, pervading everything."
The ear-auditory system-organ that detects sounds and acts as a receiver for sound.

The outer part of the ear collects sound. Leads to a bony canal leading to the EAR DRUM.

A waxy substance (cerumen) is secreted from the walls of the canal in order to prevent the bony canal from drying up and flaking.

20-fold amplification is achieved by a set of three bony structures: Ossicles: Malleus, Incus and Stapes.
Sound waves are transmitted to the entrance of the cochlea. Fluid in the cochlear area transmits the sound waves by way of vibrations projected by the hair cells which in turn converts the vibrations into nerve impulses that are carried by the cochlear nerve to the brain.

Sense of Hearing; Sense of Balance. The Mastoids are bony projections that lie behind the ear. They are connected with the middle ear and they help to balance the head on the neck.
Ear diseases due to vitiated Vata, eg: torticollis, lock jaw (Tetanus), difficulty hearing and deafness are all prevented if oil is regularly dropped into the ears.
Superbrain Yoga is a simple and effective technique to energize and recharge the brain. It is based on the principles of subtle energy and ear acupuncture.

Pilot studies on the effects of Superbrain Yoga on school children with disabilities such as ADHD/ADD, developmental and cognitive delays, Down syndrome and specific learning disabilities.

Children studied showed significant increase in academic and behavioral performance, greater class participation and improved social skills. Increased brain electrical activity following the exercise.
The right ear lobe corresponds to the left brain. The left ear lobe corresponds to the right brain.

When the right ear lobe is gently squeezed with the left thumb and left index finger with the thumb outside, it produces the necessary energy connection. This connection causes the left brain and pituitary gland to become energized and activated.

Similarly, when the left ear lobe is gently squeezed with the right thumb and right index finger with the thumb outside, it produces the necessary energy connection, which causes the right brain and pineal gland to become energized and activated.
For energizing and activating the Left Brain and the Right Brain, the left arm must be inside, while the right arm must be outside. The correct arm position is important for energizing and activating the brain.
Breathe in till your lungs are full of air. Close your ears with both the thumbs.

Press forehead with both the index fingers lightly.

Press eyes with the middle fingers of your hands on respective sides with little pressure. Breathe in. And now breathe out through nose sounding like the humming of a bee. Repeat the exercise 11 to 21 times according to your capacity.

Benefits: With the practice of this Pranayama the mind becomes steady. It is beneficial in conditions like mental tension, agitation, high blood pressure, heart disease etc. Profound effects on all five senses. It is helpful in controlling asthma and other respiratory diseases.
"Everywhere are His hands and legs, His eyes, heads and faces, and He has ears everywhere. In this way the Supreme exists, pervading everything."
The somatosensory system: Processing primarily occurs in the somatosensory area in the parietal lobe of the cerebral cortex.

It comprises of the receptors and processing centers to produce the sensory modalities such as touch, temperature and nociception (pain).

The sensory receptors cover the skin, transmission of information from the receptors passes via sensory nerves through tracts in the spinal cord and into the brain.
Sparsha Buddhi-Touch-Skin

Two main parts: Outer layer-Epidermis
Subdivided into 5 layers in descending order are the stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, stratum basale.

Skin cells are constantly dividing and regenerating, lower layers of cells replace the top layer of dead cells.

Takes about one month for lower layer to reach the skin surface
Inner layer - dermis

Consists of bundles of collagen and elastin fibres.

Embedded in this layer of cells are sweat, sebaceous and apocrine glands, hair follicles, blood vessels and nerves.

Nerves, hair shafts and ducts penetrate the epidermis but the blood vessels are confined to the dermis.

Fine network of nerve endings in both layers of skin and particularly numerous at fingertips. These transmit pleasurable sensations of warmth and touch as well as cold, pressure, itching and pain.
**Ayurveda** describes **seven distinct layers of the skin**, each with its own structure and function. The layers are designed so that each layer provides support to the layers above it.

**Avabhasini**: This is the outermost layer. It reflects the complexion and the **quality of the Rasa Dhatu** (nutrient fluid, the first of the seven tissues of the body). Internal and external re-hydration and regular massage supports the health and appearance of the avabhasini layer of the skin.

**Lohita**: This layer supports the outermost layer. It indicates the **quality of Rakta Dhatu** (blood). If there is *ama* (impurities) in the blood, it impacts the aura of the outer layer and increases sensitivity to heat and light.

**Shweta**: This is a white layer, and it provides **balance to skin color**, lightening the darker colors of the inner layers.
Tamra: This layer nurtures the upper layers of the skin. It supports the immune system. This is the layer that helps the skin perform its function of being a "barrier. Skin infections reflect an imbalance in this layer.

Vedini: This fifth layer sensually links the skin to the rest of the body. It is the center for transformation of sensation-feeling of pain, for example.

Rohini: This layer supports healing and regeneration. Imbalance in this layer retards healing and the disappearance of scars over time. A balanced diet, rich in nutritional value, supports the rohini layer.

Mamsadhara: This innermost layer is the platform for the skin's stability and firmness. When this layer is in balance, the skin looks young and supple.
RasaDhatu and Raktadhatu are the precursors for Mamsa Dhatu and Skin Upadhatu.

Skin is a mirror that reflects the qualities of the Raktadhatu (blood) and the Rasadhatu (body’s plasma tissue).

Hence it is a common saying that 'growing skin is the result of good quality Rasa and Rakta'.

Bhrajaka Pitta: contains Bhrajaka Agni, this fire gives off both HEAT and LIGHT. Light provides luster to the skin, heat provides color/complexion.
No amount of bleaching and facial massage or application of make-up through dexterity of a skilled beautician can hide the shallow look if the skin is unhealthy. Conversely, a healthy skin will always look attractive even when devoid of make-up.

Do not use on skin if you cannot eat it. What you rub onto your skin is absorbed and can be detected in the blood. What you put onto your skin does matter because our skin is a big porous organ that soaks in a lot of what we slather onto it.
**Snehana Therapy (Oleation):** Abhyantar Snehana (Internal); Bahya Snehana (External). Great way to develop self-love, self esteem and self nurturing, rejuvenates the 107 *marma* points. Application of Oil nourishes and Rejuvenates Rasa and from it all the downstream Dhatus and increases Ojas.

**Superficial massage**

**Deep tissue massage** (Mardana): Pressure massage, kneading of tissue.

**Udvartana:** Wet pastes of herbs, flour, mixed with milk or oil and is applied and allowed to dry. Light massage to remove the paste.

**Udgarshana:** Application of dry powders without making a paste.
Of the one who practices oil massage regularly, the body, not much injured, his physique is smooth, strong and charming, the onslaught of stress and aging is slackened.
A Preliminary Study of the Effects of a Single Session of Swedish Massage on Hypothalamic-Pituitary-Adrenal and Immune Function in Normal Individuals.


Swedish Massage Therapy caused a large effect size decrease in arginine-vasopressin, and a small effect size decrease in cortisol. Massage increased the number of circulating lymphocytes, and decreased levels of interleukin and IFN-gamma. Thus a single session of Swedish Massage Therapy produces measurable biologic effects and may have implications for managing anxiety, inflammation and autoimmune conditions.
"Everywhere are His hands and legs, His eyes, heads and faces, and He has ears everywhere. In this way the Supreme exists, pervading everything."
The eye consists of several parts that resemble a camera:

**Sclera** - the eye's white outer protective coat, normally seen as the "white of the eye".

**Cornea** - the transparent, curved structure at the front of the eye that covers the iris & pupil. Cornea refracts light.

**Iris** - the colored part of the eye - blue, brown, green, grey etc - that can be seen through the cornea, controls the amount of light reaching the retina.

**Pupil** - the black part of the eye in the middle of the iris. It constricts or dilates according to the amount of light passing through it.

**Lens** - the transparent disc (with both sides being convex) immediately behind the iris and pupil.
Aqueous humour - the transparent fluid (with consistency similar to water) that circulates behind the cornea and in front of the lens.

Vitreous humour - the material (like transparent jelly) that fills the eyeball between the lens and the retina.

Retina - the light-sensitive layer of millions of nerve cells that line the back of the eyeball. The cells consist of two main groups, called rods and cones due to their appearance under the microscope.

Rods - more numerous, spread out over the entire retina with more toward outer edge, respond to low levels of light.

Cones - far fewer, concentrated around the retina's centre, respond to color and to details.
Optic nerve and beyond - the "cord" of nerve cell connections that passes from the eyeball to destinations throughout the brain.

Macula - oval-shaped highly pigmented yellow spot near the center of the retina, responsible for reading vision. Damage results in loss of central vision.

Ayurvedic Approach to Age-Associated Macular Degeneration
California College of Ayurveda
http://www.ayurvedacollege.com/MacularDegeneration.htm
Eyes are the most beautiful expressive organs that also have the capability of vision.

They serve as the window to the soul.

**Alochaka Pitta** – Fire that digests light and visual impulses. Allows us to see the inner truth.
The eye is AGNEYI- (predominant with the tejas bhuta-fire element-Aochaka Pitta), it can be nourished by cooling modalities, it regains its strength after good sleep and nourished by the coolant nature of the night.
Kashayadhara; It involves measured dropping of herbal decoction added with honey to the eyes from a specific height. This has a cleansing property and is very soothing to the patient too.

Tarpana; This therapy involves placing medicated ghee over the bordered eye balls for a specific period. Tarpana improves vision and has proved to be very helpful in improving the distant vision to considerable level.

Shirobasti: This therapy is recommended for neurological disorders including that of eye. Medicated oil is placed above the head in a special cap for about 1 hour.

Netrapindi: Involves placing special medicated eye-packs. It soothes irritated eye, nourishes and relaxes tired eyes.
Shashtika Sweda: Massaging with a poultice made with herbal milk decoction paste over the closed eyes for a prescribed time and under controlled pressure.

Shirodhara: This is one of the major therapies in Ayurveda. Warm medicated oil, milk (Dughdhara) or butter milk (Takra dhara) kept in a bronze vessel with a hole on the bottom is allowed to stream over the Ajna Chakra or third eye for about 45 minutes to one hour. The treatment improves the eye sight and strengthens the internal and external ocular muscles.

Nasya: Administration of medicated oil by drops into both nostril is known as Nasya. This is done especially to clean up the passage and to nourish the organs and improve the nervous system.
One simple method of exercise is moving the eyeball—right and left; upwards and downwards and rotating it in the clockwise and anticlockwise directions.

PALMING: After rubbing your hands for about a minute to warm and energize them, place each palm over one eye. The palms are slightly cupped, so that they do not touch the eyelids or eyelashes. The fingers rest on your forehead, either crossed or parallel. The elbows rest on a table or on your knees.
Trataka: The practice of staring at some external object. It is used in as a way of developing concentration and strengthening the eyes. In its first stage, the individual fixes his/her attention on a symbol such as the OM symbol, a black dot, or the image of some deity, and stares at it, paying attention to each thought and feeling as it arises, and letting them go, so that the mind is completely absorbed in the symbol. Continue until the eyes begin to water, at which point they are closed, and relaxed.

The second stage is staring at a candle flame. The practice is the same up until the eyes begin to water, after which the eyes are closed, and the yogi tries to concentrate on the after image, and hold it for as long as possible. At first, it will be a real after-image, but later, it will exist only in the mind's eye, and the exercise in concentration comes from trying to maintain it there for a long period of time.
All out efforts should be made to strengthen the eyes by resorting to Nasya, anjana, tarpana, etc. For, once the vision is lost, the different kinds of things of the world will all become one kind only— that of darkness.
"Everywhere are His hands and legs, His eyes, heads and faces, and He has ears everywhere. In this way the Supreme exists, pervading everything."
Rasana Buddhi-Taste (neocortex)

Ghrana Buddhi-Smell (olfactory bulb; limbic system)

Sense of smell is closely associated with the sense of taste.

Evident when a person suffers from colds, sense of smell is lost and taste of food is not evident. Problems with these senses have a big impact on our lives.
When smell and taste become impaired, we eat poorly, socialize less, and feel worse. Smell and taste warn us of dangers.

Certain smells will bring memories of long forgotten special occasions. Areas of brain which process memories and recall are also closely linked to the limbic system that processes sense of smell.

The limbic system is a set of brain structures including the hippocampus, amygdala, anterior thalamic nuclei, septum, limbic cortex and fornix which seemingly support a variety of functions including emotion, behavior, long term memory and olfaction.
Taste and smell are most acute at birth and decrease in sensitivity after the age of 40 as the number of olfactory and gustatory receptors decreases.

Not only do we lose our sense of smell and taste with age, we lose our ability to discriminate between smells and taste.

It has been reported that more than 75% of people over the age of 80 years have evidence of major olfactory and gustatory impairment.
Ageing, neurodegeneration, and olfactory and gustatory loss

Welge-Lussen A.
Department of Otorhinolaryngology, University Hospital Basel, Basel, Switzerland.

Olfactory and gustatory function decrease with age and moreover, olfactory and gustatory disorders increase with advancing age and commonly seen in neurodegenerative disorders, especially in idiopathic Parkinson's disease (IPD) and Alzheimer's Disease (AD). There is no known adequate treatment for stopping or reversing this age-related decline in function and treatment remains difficult.
Diseases of the neck, head, ears, mouth and eyes, Excess salivation, diseases of the throat, dryness of the Mouth, nausea, stupor, anorexia and rhinitis are curable by mouth gargles (oil pulling)
GANDUSHA (Oil Pulling)

Technique involves swishing cold-pressed oil or refined oil in the mouth (Sunflower or Sesame)

The method:
As part of Dinacharya (Daily Routine), in the morning before breakfast on an empty stomach take one-two teaspoons of oil in the mouth but do not swallow it. Move Oil slowly in the mouth: rinse, swish, suck and pull through the teeth' for fifteen to twenty minutes. This process makes oil thoroughly mixed with saliva. Do not swallow the oil. As the process continues, the oil gets thinner and white. If the oil is still yellow, it has not been pulled long enough. After pulling for a sufficient time (15-20 mins) rinse the oral cavity with slightly warm tap water. Clean the sink properly.
A neti pot is a device used for irrigating the nasal passages. Neti pots flush out the nasal cavities by using gravity to draw the flow of saline

Saline nasal irrigation (SNI) has become more widely accepted as a home remedy to relieve conditions such as allergies, colds and mild sinus infections. Preliminary research indicates that SNI could also be an effective treatment for allergic rhinitis and chronic sinusitis.


Inhalation of hypertonic saline four times daily provides a modest improvement in lung function and respiratory symptoms without substantial adverse events. It appears likely that the mechanism of action of hypertonic saline is to provide long-term hydration of airway surfaces and promote a sustained increase in mucus clearance in patients with cystic fibrosis.
The primary circadian "clock" in mammals is located in the suprachiasmatic nucleus (SCN), a pair of distinct groups of cells located in the hypothalamus. Destruction of the SCN results in the complete absence of a regular sleep–wake rhythm.

The SCN receives information through the eyes. The retina of the eye projects directly to the SCN where they help in the entrainment of this master circadian clock.
The SCN takes the information on the lengths of the day and night from the retina, interprets it, and passes it on to the pineal gland.

In response, the pineal secretes the hormone melatonin. Secretion of melatonin peaks at night and ebbs during the day and its presence provides information about night-length.

Several studies have indicated that pineal melatonin feeds back on SCN rhythmicity to modulate circadian patterns of activity and other processes.
A circadian rhythm is an endogenously driven roughly 24-hour cycle in biochemical, physiological, or behavioral processes.

Although circadian rhythms are endogenous ("built-in", self-sustained), they are adjusted to the environment by external cues- the primary one of which is daylight.

Circadian rhythmicity is present in the sleeping and feeding patterns of animals, including human beings. Rhythmicity is also seen in cellular processes including body temperature, brain wave activity, hormone production, cell regeneration etc.
Circadian Rhythms, Dinacharya and Ratricharya

ACTIVITY

DIGESTIVE
SLEEP

AM 1 3 5 1 9 11 1 3 5 7 9 PM 11
Healing the Stressed Brain

No drugs? No surgery? No hospitalization, No special equipment? No health insurance hassle?

Life style practice that produces immense benefits simultaneously:
Relieves chronic stress
Delays premature aging and curbs age associated problems

Regular Yoga, Pranayama & Meditation (YMP) practice has been shown to produce immense benefits:

Reduces emotional stresses including fear, worry, anxiety, anger, rage, etc. Reduces chronic pain, increases cognitive function, Lowers blood pressure, improves post-traumatic stress syndrome and slows down brain aging.
1. **Meditation reduces cognitive stress, increases positive states of mind and slows cellular aging.**


2. **A yoga intervention for young adults with elevated symptoms of depression.**


*Woolery A, Myers H, Sternlieb B, Zeltzer L.* University of California, Los Angeles, USA. awoolery@ucla.edu

Subjects who participated in the yoga course demonstrated significant decreases in self-reported symptoms of depression and trait anxiety. These effects emerged by the middle of the yoga course and were maintained by the end.

3. **Yoga breathing, meditation, and longevity.**


*Brown RP, Gerbar PL.* Columbia University College of Physicians and Surgeons, New York, New York, USA.

Yoga breathing (pranayama) can rapidly bring the mind to the present moment and reduce stress. Breath work affects longevity mechanisms and is useful in the treatment of depression, anxiety, post-traumatic stress disorder, and for victims of mass disasters.
Yoga, Meditation and Pranayama (YMP)-

**REQUIREMENTS:**

Space & Materials-minimal, Loose comfortable clothing

You don't have to chant. You don't have to shave your head, burn incense or wear orange colored robes

Patience, dedication, focus, concentration, non judgment and **will power**
There's not a single pill or an operating procedure that can produce such immense benefits simultaneously. YAMP is becoming mainstream.
CONCLUSIONS

Stable Routines and Stable Transformation

Harmonious impressions and Listening to your intellect

Ayurveda & Sattvic lifestyle

Stress-free life, Stable mind, brain & nervous system-body connection-harmony

Yoga, pranayama, meditation
You don’t stop laughing because you grow old.

You grow old because you stop laughing.

- Michael Pritchard