

# Stress and Yoga

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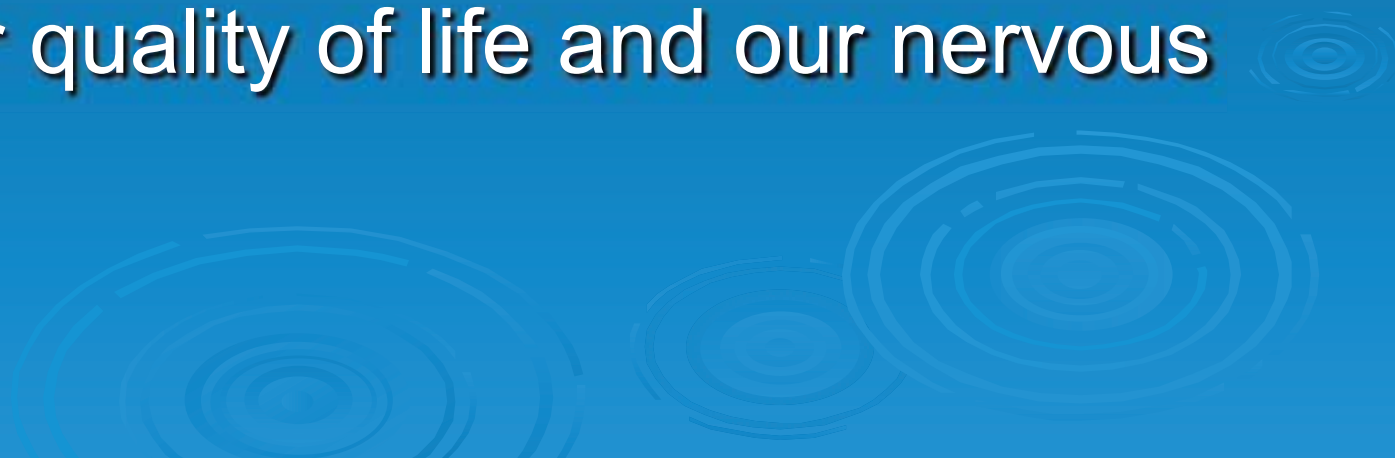
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# Pendulum of Life

- Each day we are greeted with news blasts and unanticipated chaos which pull us in opposite directions, as though we were swinging from side to side on a pendulum of life.
  - This acceleration of pace profoundly affects our quality of life and our nervous system.
- 
- The background of the slide is a solid blue color. In the lower right portion, there are several faint, concentric circles that resemble ripples on water, creating a subtle decorative pattern.

# Pendulum of Life

- Our reaction is to record, preserve, and create landmarks with the illusion of controlling and protecting our fragile worlds.
- The desire to make things permanent makes us feel pulled in opposite directions...it both connects us and fragments us.



# The Law of the Pendulum

- Galileo in 1602, identified the pendulum as a weight suspended from a point of pivot that swings freely back and forth between two opposite directions.
- "Each time it swings it makes less and less of an arc, until finally it is at rest. This point of rest is called the state of equilibrium, where all forces acting on the pendulum are equal". (1)



# Bridge the Gap

- One solution to calm that bridges these opposites can be yoga in its totality – calming the mind, balancing the body and shifting our perspective.
- This session will explore the benefits of the practices of yoga on the nervous system.

# Objectives

- Define the Stress response
- Understand the effect of stress on our health
- Discuss strategies for coping with stress
- Peer review studies that demonstrate the neurological impact that yoga can bring
- Experiential session reviewing practical aspects of yoga asana postures

# History

- Over 4000 years old originated in India (Riley, 2004)
- Upanishads 6 century BCE mentions yoga postures
- Patanjali 2<sup>nd</sup> described principles
- Raja Yoga 8 limbs

# Autonomic Nervous System

- Autonomic Nervous System (ANS), controls functions below conscious level
  - Sympathetic Nervous system (SNS) = Short term survival which promotes stress response of fight or flight mechanism
  - Parasympathetic Nervous system (PNS) = long term survival promoting rest and regeneration



# Benefit of Yoga

- Stress response is not always a matter of life or death but often psychological reaction to circumstances.
- Yoga offers a way to shift patterns that trigger the SNS.
  - Time out
  - Positive physiological changes in nervous system
  - Through repetition the magic arises.

# Benefit of Yoga

- Yoga activates the parasympathetic nervous system
- Yoga lengthens and strengthens musculature
- Yoga produces calm, even breathing.

# How it Works

- Strive for balance: Steady and comfortable
- Nervous system starts relaxing when you maintain the asana at least 15-20 seconds
- Then stress passes to deeper muscles which support the organs

# How it works

- Yoga Prescription is to practice the following together for maximum effect:
  - Postures
  - Progressive relaxation
  - Breathing
  - Meditation



# Patanjali's Yoga Sutras

- Yogash Chitta vritti Nerodah
  - Yoga is defined as the cessation of attaching to the fluctuations of the mind
- Stirah Sukham Asanam
  - Yoga is the balance between effort and grace
- Then we are at the center of the pendulum

# Asanas

- To build parasympathetic nervous system, do poses that encourage deep relaxation,
  - Forward bends
  - Hip openers
  - Seated, supine postures
  - Inversions.
  - Hold poses, as in restorative yoga,
  - Slow and full breathing.

# Asanas

- Increase balance and coordination
- Improve strength and flexibility
- Increase bone strength
- Regulate breathing ability
- Improve spatial and body awareness

# Forward Bends

- Lower blood pressure
- Stimulate an outbreath
- Calms nervous system
- Looking into the past







# Tadasana

- Transcends direction. Encourages us to experience the inward and outward push and pull of movement in all forms and relationships on both a physical and emotional plane.
- **Tadasana** practices living at the center of heaven and earth.
- When we practice like that, the asana, is not as static, with no boundaries.



# Supported Adhomukha Svanasana

- The same is true with **Sirsasana** but viewed from the opposite spectrum.
- When we practice **Adhomukha Svanasana** we are reaching forward and back side to side and front to back to find that state of rest the pendulum settles to, union. We can listen to our inhales and exhales and notice if we have a preference or tendency towards one or the other. DO ON THE CHAIR







# Vrksasana

- We experience this in the yoga practice by balancing everything we do on the right with what we do on the left, by taking time to find our foundation first either by pressing down into the earth directly or using blocks to help lift the earth up to meet us before we reach up, all as the delicate balance between doing and surrendering.





# Hatha

- “Yoga” comes from Sanskrit root “yuj”
  - to yoke or join individual soul with higher consciousness,
  - the union of opposites or integrating all aspects of an individual, with the goal of freedom from attachment to them,
  - the union of Ha, sun and Tha, moon, masculine and feminine, joy and sorrow, yin and yang, inner and outer, side to side, front to back, up and down.



# Breathing

- Most important tool in yoga practice
- Pranayama is conscious breathing
- Automatic – conscious controlled breath
  - Controlling fluctuations of breath controls fluctuations of mind
- Slow deep breath – relaxed nervous system- calm mind



# Breathing

- Restores natural rhythm of breath
- Calmes and balances nervous system
- Increases blood oxygen
- Helps us tune inside
- Lowers blood pressure and heart rate

# Relaxation

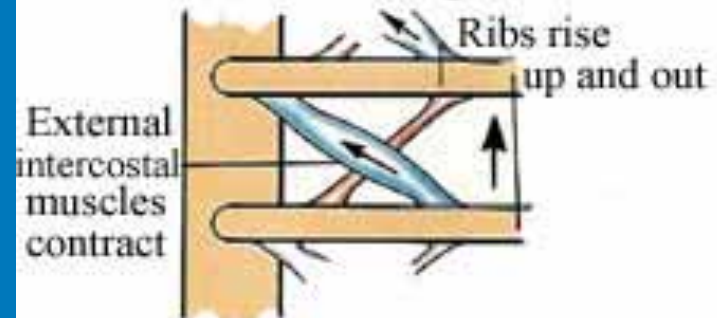
- Practiced progressively facilitates:
  - Recovering physically and emotionally
  - Alleviates muscle tension
  - Lowers blood pressure and heart rate
  - Improves quality of sleep
  - Calms the mind
  - Be present



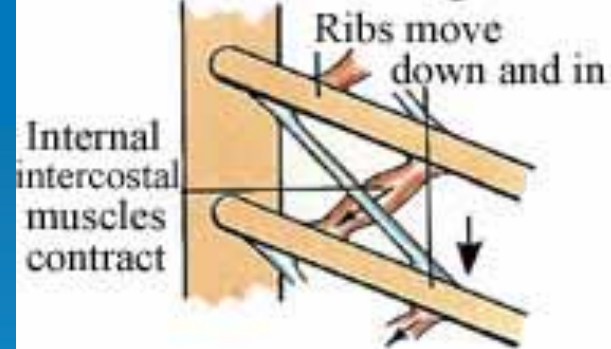
# Diaphragmatic Breathing

- Healthy breath diaphragm moves down and abdomen puffs out.
- Exhale diaphragm relaxes and moves back up and belly moves in.
- Reverse or paradoxical breathing is choppy stacato like (Khapalabhati)
  - Skull shining breath

## 1. Breathing IN



## 2. Breathing OUT





DAVID MARTINEZ

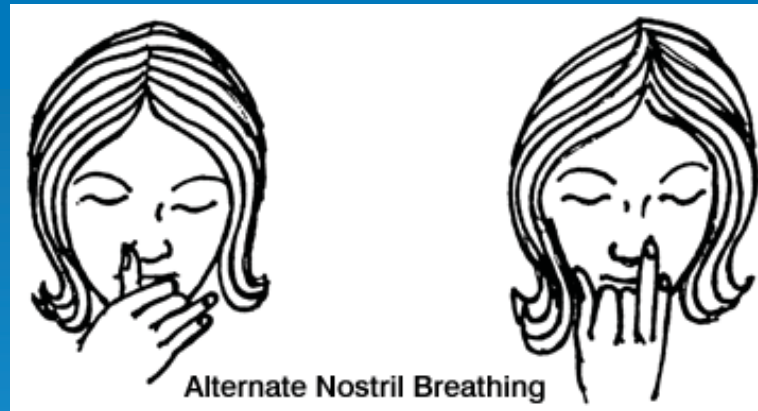


# Nadi Shodhana

- Left Nostril breathing stimulates parasympathetic nervous system or relaxation response
- Stimulates right hemisphere of brain
- Increases spatial performance
- Lowers blood sugar
- Decreases heart rate

# Nadi Shodhana

- Yoga practice to balance the SNS and PNS is Nadi Shodhana or alternate nostril breathing.





# Postures as Exercise

- Stimulates Sympathetic Nervous System
- Increases Blood pressure and heart rate
- Superficial muscles contract
- Sweat is produced
- Stress response is stimulated.

# Postures as Yoga

- Stimulates Parasympathetic Nervous system
- Decreases blood pressure and heart rate
- Superficial muscles relax, deeper muscles contract
- Nervous system relaxes with long holds of posture

# Breath work

## ➤ SNS: Kapalabhati

- Invigorating, stimulating, heating breath

## ➤ PNS: Ujai

- Also a heating breath but a deep full even breath

# Ujjayi Breath

## -Victorious Breath -

Sit comfortably. Begin to take deep breaths in through your nose and out through your mouth. Start to exhale like you are trying to fog up a mirror. Continue this, noticing the constriction you are creating in the back of your throat. Halfway through your next exhale close your mouth but continue to exhale like you are fogging up the mirror. Now you are breathing only through your nose. Try to keep the constriction in the back of your throat as you breath. You will eventually create the constriction on the inhale too. If you are straining to do this keep practicing. Over time you will create a smooth, relaxed breath. Your breath will begin to sound like the waves of the ocean or like Darth Vader breathing. The sound you hear as the breath moves through your throat will give you something to focus on and allow you to be in the present moment. Allow your inhales to be nice and deep. Bringing them into the low belly. Allow your exhales to be nice and long. Drawing your low belly towards the spine on the exhale.

Begin to let go of other thoughts and focus on the sound your breath is creating. You can do this for 5 breaths or 5 minutes. Each time a thought pops into your head let it go and bring your awareness back to the sound of your inhales and exhales. Enjoy your deep breaths and the time spent in the present moment!

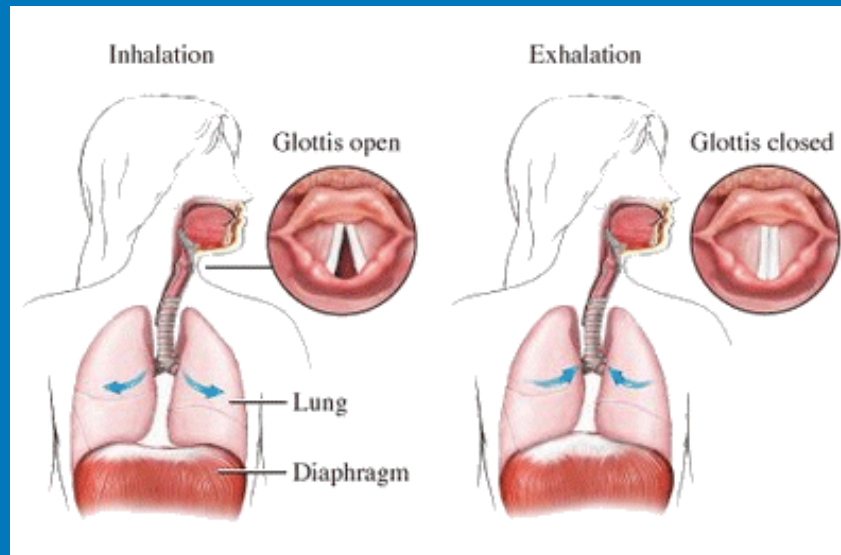
### Benefits:

- Helps quiet and focus the mind
- Warms you up from the inside
- Massages internal organs
- Releases stress and tension

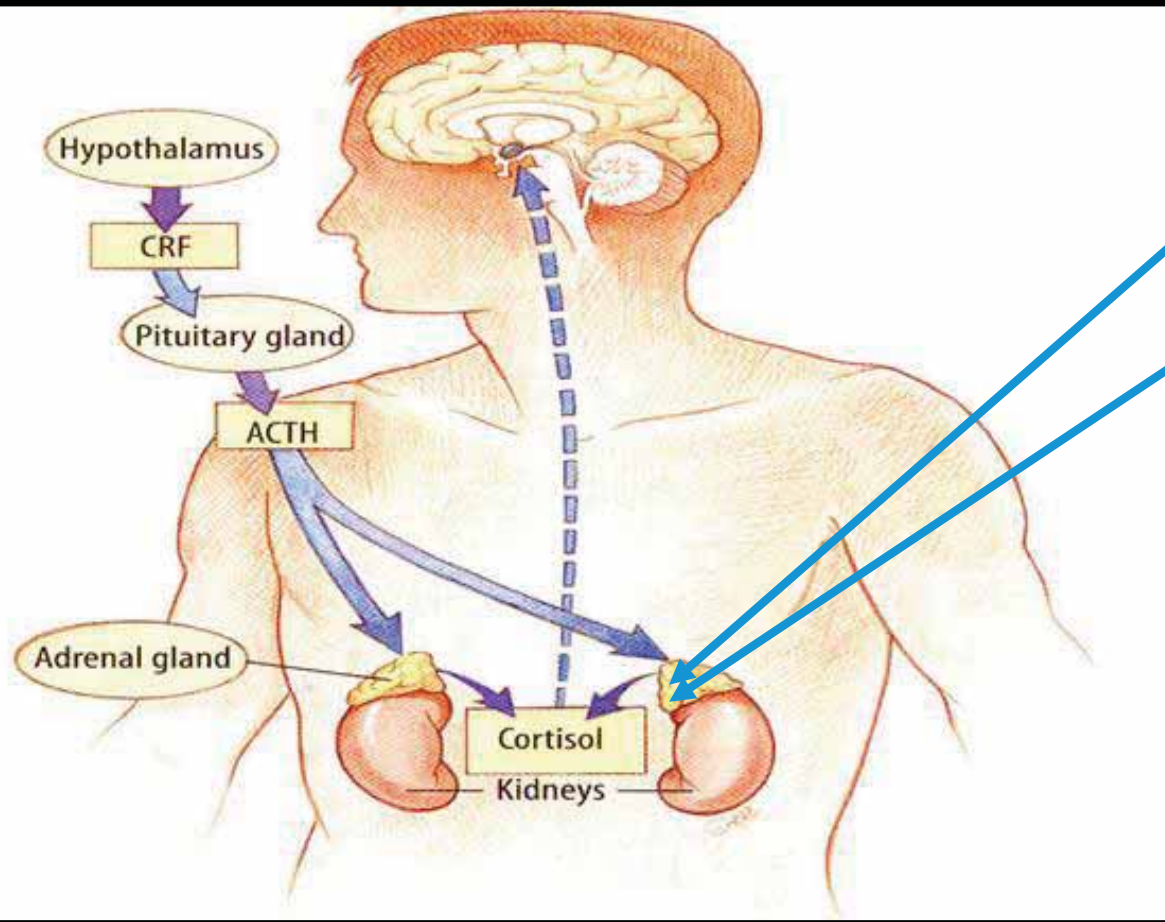
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# The Components that Generate the Stress Response



## Stress Hormones

- Cortisol
- Adrenaline

➤ Acute Stress → chronic stress

➤ Chronic stress + Hectic lifestyle

↓  
Super stress

# Multi layered Approach

- Integrating lifestyle,
- Mental terrain ( coping and resilience)
- Spirit
- Meaning and outlook in life

The Solution is long range rather than just an immediate fix

# Reiki

- A Japanese therapeutic practice
- Brings about systemic balance
- Provides a sense of self energetic awareness
- Calms the mind
- Energizes the body



# Aromatherapy

- The use of concentrated botanical oils for medical purposes
- Developed as a specific clinical science beginning in the 1930's by a French chemist Rene Maurice Gattefosse
  - Dunked his badly burned hand in a container of pure lavender oil and observed relief from pain and skin repair within hours

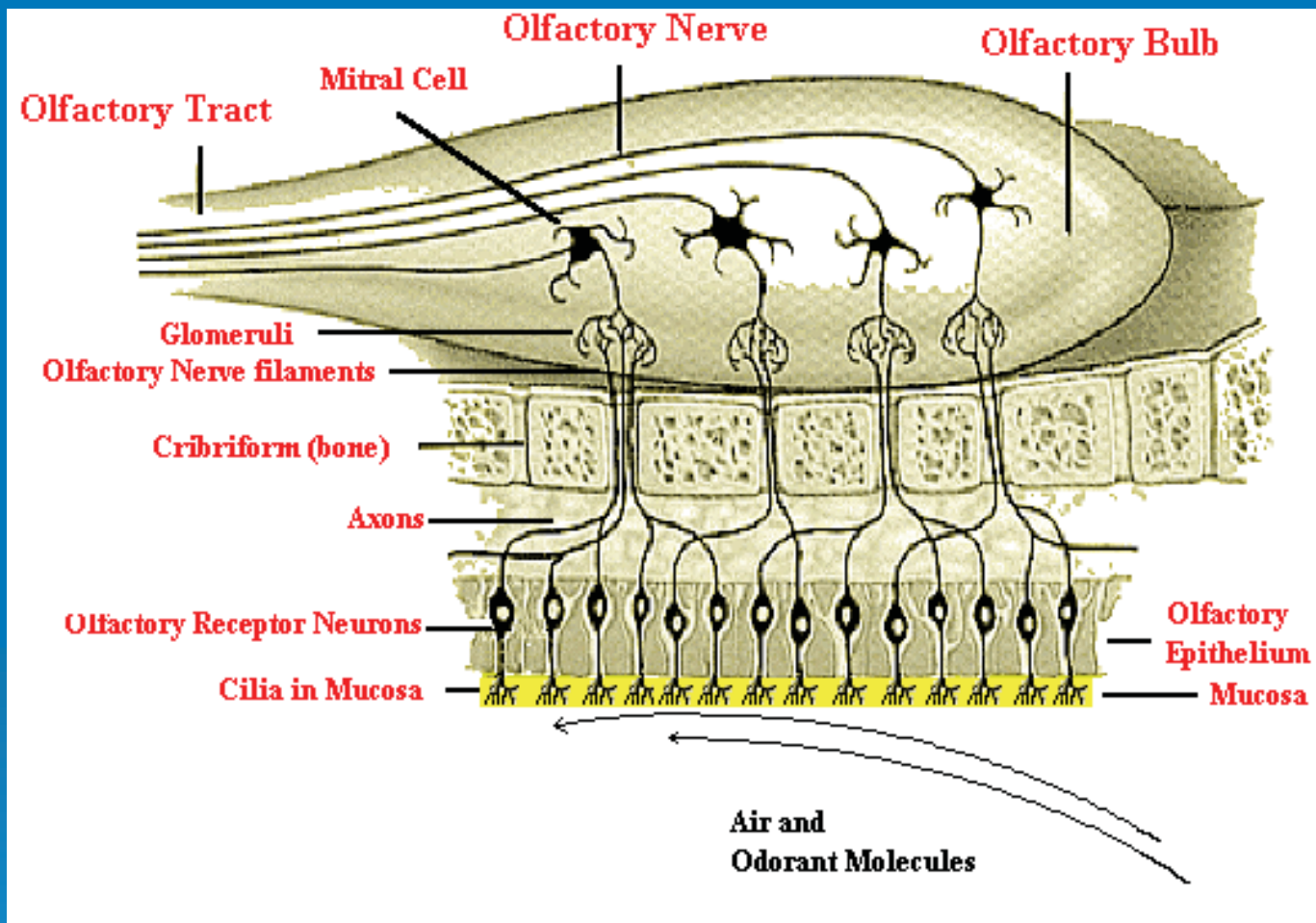
# Aromatherapy

## ➤ Science

- Humans can recognize up to 4000 scents
- Memory is stored in the limbic system
- Less than .000000000013 of an ounce is required to recognize a smell
- Olfactory neurons (nerves) are the only neurons which constantly replicate themselves
- One of the few sensory systems with direct access to the brain







RIGHT HEMISPHERE of the  
**Cerebral Cortex**

LEFT HEMISPHERE of the  
**Cerebral Cortex**

Corpus callosum

Medial view cut away  
to show the fan-shaped  
connective fibres of the  
cerebral cortex

Gyrus

Sulcus  
'White matter'

### Limbic System

Pineal gland

Thalamus

Hippocampus

Amygdala

Hypothalamus

**Limbic system, the seat of  
emotions**

Midbrain

Pons

Medulla

Spinal cord

Cerebellum

Spinal cord



# Aromatherapy

- All forms of application require dilution of the essential oils by 'carrier' oils
  - e.g. one drop of essential oil: ten milliliters of carrier (.5%)
- Direct undiluted contact can be toxic
  - Systemic poisoning (wintergreen)
  - Convulsions (sage)
  - Abortions (pennyroyal)
  - Rashes (cinnamon)

# Essential Oil Profile

## Lavender

### *Lavandula angustifolia*

**Family:** Lamiaceae (Labiatae)

**Origin:** Mediterranean region

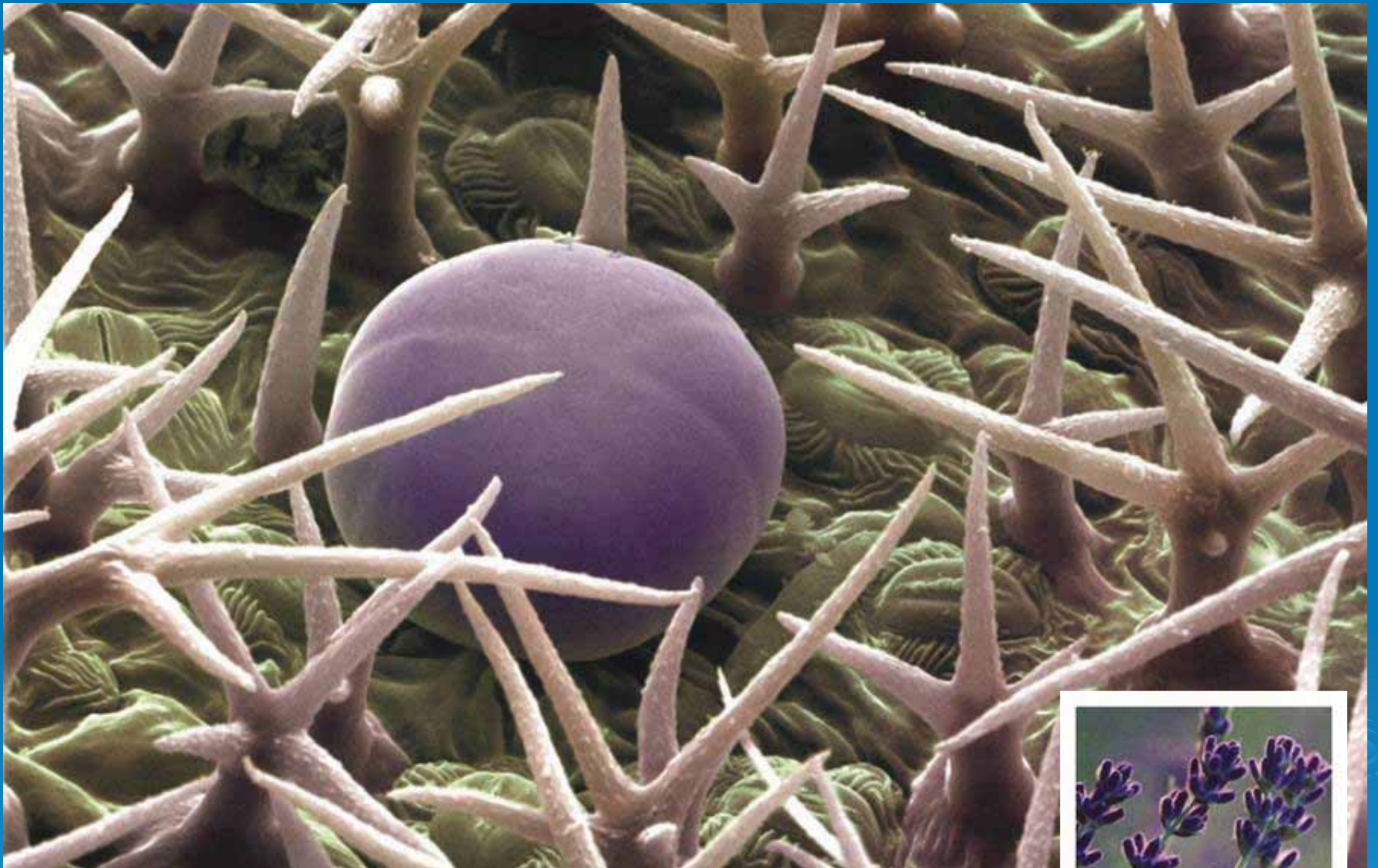
**Life Form:** Bushy, branching shrub

**Oil From:** Flowers

**Largest Producers:** France, Dalmatia, Algeria,  
and Italy







English lavender (*Lavendula angustifolia*) showing a sessile secretory gland surrounded by non-secretory trichomes [931x]



Micrograph by A.D. Syred in Svoboda and Svoboda 2000: Secretory Structures of Aromatic and Medicinal Plants: A Review and Atlas of Micrographs. Austin, TX: American Botanical Council. Inset photograph, [stevenfoster.com](http://stevenfoster.com). Both from Herbalgram 53:34-43, 2001.

# Essential oils for relaxation

- Lavender
- Ylang-Ylang
- Rosemary



# Meditation

- Dhyana = a sustained focus of attention on an object such as breath, mantra, or object.
- It is the practice of noticing the mind and training not to attach to it or to the results





# The Mind/Body Connection

## ➤ Meditation

- A focused form of awareness
- Rebalances the mind by passing over the conscious mind and activating a special part of the nervous system called the Autonomic Nervous System to release beta endorphins ( natural brain opiates)

# A Simple Meditation Exercise

- Sit comfortably in a chair
- Place one hand on your chest and the other on your belly
- Close your eyes and turn your attention to your breath
- Imagine as you are breathing in you are breathing in warmth and relaxation that is spreading towards every cell of your body
- Imagine as you are breathing out all the worries of the day are leaving

*BETWEEN the pole of the conscious  
and the unconscious,  
there has the mind made a swing:  
Thereon hang all beings and all worlds,  
and that swing never ceases its sway.  
Millions of beings are there:  
the sun and the moon in their courses  
are there:  
Millions of ages pass, and the swing  
goes on.*

*All swing! the sky and the earth and the  
air and the water;  
and the Lord Himself taking form:  
And the sight of this has made Kabîr a  
servant.*

*One hundred poems of Kabir*