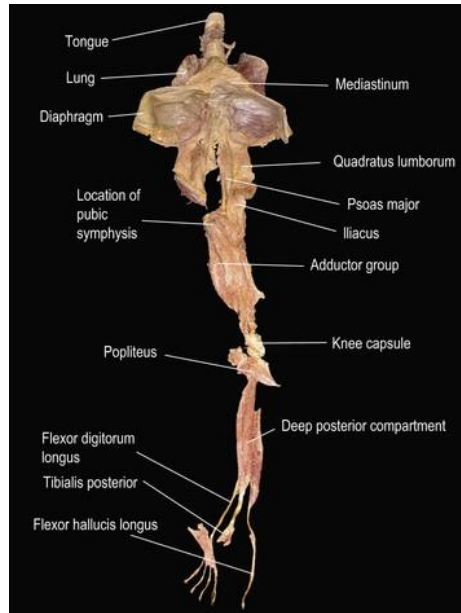




Nasal breathing

- Respiration is reciprocation:
 - Inhalation and exhalation, expansion and compression, descent and ascent, eccentric and concentric, air rolling in like a gentle wave and receding back out into the ocean....
- Respiratory functions
 - Provide oxygen for metabolism in the tissues
 - Remove carbon dioxide, the “waste” product of metabolism
 - Facilitates sense of smell
 - Produces speech
 - Maintains acid-base balance
 - Maintains body water levels
 - Maintains heat balance
- Nasal breathing
 - Filters and cleans the air
 - Warms the air
 - Moistens the air for easier absorption
 - Slows down the inhalation process
 - Nasal route adds at least 50% more resistance to air flow
 - Helps maintain the normal elasticity of the lungs, thus assuring optimal conditions for providing oxygen and good heart function
 - Allows for cranial expansion
 - Primary respiratory mechanism (Sutherland)
 - Inherent motility of the brain and spinal cord
 - Fluctuation of the cerebrospinal fluid (Potency of the Tide)
 - The mobility of the intracranial and intraspinal membranes
 - Mobility of the cranial bones
 - Involuntary mobility of the sacrum between the ilia
 - Air mixes with nitric oxide which is necessary for immune health and general homeostasis
 - Nitric oxide is boosted sixfold through nasal breathing, absorbing about 18% more oxygen compared to mouth breathing.
 - Lab tests have shown that nitric oxide increases the survival rate of mammalian cells infected with the coronavirus.
 - HRV increase
 - Increased CO2 levels and tolerance
 - Mucous activity
 - Pressure rise in the lungs during exhalation makes the air denser, simulating a lower altitude where the air is richer in oxygen per unit volume, which aids in perfusion into the alveoli
 - Increases alpha brain wave activity (relaxation/meditative) vs mouth breathing which is more beta.
 - Creates vacuum affect, especially when tongue on the roof of the mouth, to increase suction, increasing oxygen transport by 10-20%.



Deep muscle line of the body showing connections from tongue through the diaphragm and pelvic floor to feet

- Nose breathing during exercise
 - Perceived as less exertion during exercise
 - Lowers HR and breath rate
 - Shorter recovery times and better endurance
 - Significantly reduces galvanic skin (stress) response
- Nose's unexpected role in:
 - Triggering release of hormones and chemicals that help lower blood pressure and ease digestion
 - Limited nose breathing has been linked to erectile dysfunction
 - Regulates heart rate
 - Opens the vessels in our toes
 - Taste
 - 80% of what you are tasting is determined by what you're smelling
 - Helps store memories
 - The olfactory sense is the only one of the five senses directly connected to the area of the brain where memories form and emotions are processed.
- Nasal cycles
 - Vary throughout the day and change every 30 minutes to 4 hours
 - *Shiva Swarodaya* suggests there are nasal rhythms which are connected to each month and are correlated with when the pull of the sun and moon was at its strongest—during a new or full moon—research has suggested that humans are on the same cycle as to which nostril.
- Nasal lateralization (structural and/or “functional”): when a particular nostril is dominant in its use during nasal breathing either through growth and development or due to other factors such as deviated septum, nasal valve prolapse, history of facial trauma, etc.
 - Influences intraocular pressure
 - Influences rhythms and balance of the CNS and ANS
 - Can influence metabolism

- Influences cranial bone and muscle position and orientation
- Has been linked to people with schizophrenia, OCD, sleep disturbance
- Work of David Shannahoff-Khalsa
- Right nasal breathing:
 - Is more sympathetic
 - circulation speeds up, body gets hotter, cortisol levels, blood pressure and HR all increase.
 - Also feeds more blood to opposite (left) hemisphere, specifically to the prefrontal cortex which is associated with logical decisions, language and computing.
- Left nasal breathing
 - Is more parasympathetic
 - lowers temperature and blood pressure, cools the body and reduces anxiety.
 - Shifts blood circulation to the opposite side (right) of the prefrontal cortex, the area responsible for creative thought, emotions and formation of mental abstractions.
- George Catlin’s 6 years of research on 50 different Great Plains native American tribes where he lived among their people learning about their beliefs and traditions. His research found that despite many of these tribes not having any interaction with the others and despite marked differences in diet and behaviors, that these tribes all had teeth that were “as regular as the keys of a piano”, despite never having seen a dentist or doctor. None of them seemed to get sick or have chronic problems either. The tribes owed this to “the great secret of life”—nasal breathing. “The air which enters the lungs [from the mouth] is as different from that which enters the nostril as distilled water is from the water in an ordinary cistern or frog pond,” he wrote in his book “The breath of life or mal-respiration and its effects upon the enjoyments of life of man” from 1841.
- Our skulls are out-evolving us.
 - In the past 250 years in particular since the Industrial Revolution when food started to be mass produced, we cooked our food more, we have become more sedentary,
 - Teeth have become more crowded, masseter and pterygoid muscles have shrunk, 3rd molars have become more impacted, palates have become higher and more narrow, airways have become impacted, our environment has become more polluted, etc.
- Olfactory—an intimate connection with our environment
- Nasal cavity, oropharyngeal cavity, olfactory receptor cells and central olfactory brain regions which process this
 - Orthonasal route of inhaled air is not the only way odor molecules reach the olfactory receptor cells. They also are received via retronasal route which is from the back of the oral cavity thru the nasopharynx into the back of the nasal cavity.
- As humans became bipedal and lifted their snouts from the noxious odors of the ground, evolutionarily our snouts became smaller as our eyes moved more anteriorly. This also increased the expansion of the visual, auditory and somatosensory systems compared to the olfactory brain regions.
- Lining of the nose is blanketed with erectile tissue and is more intimately connected with our genitals than any other organ—when one gets aroused, the other responds.
- Language is necessary for human smell
 - Paradoxical as it is difficult to actually describe smells with words, but yet there is an incredible memory of smells both pleasurable or noxious.
 - The brain creates representations in the olfactory bulb by different patterns and they are stored as “odor images”.

Sources: [Breath](#), by James Nestor; “Mouth vs Nasal Breathing”, by Trisha O’Hehir and Amy Francis (www.bronsonfamilydentistry.com); The Postural Restoration institute course manuals and lectures