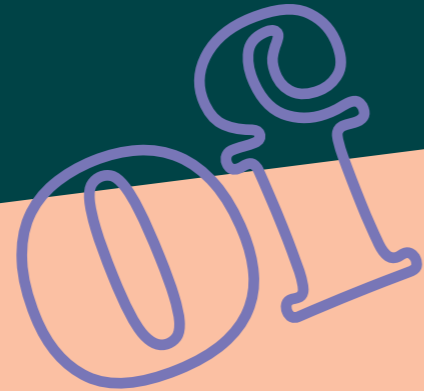


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THE HISTORY OF BREATH

According to the law of averages, you are likely to take 670 million breaths throughout your lifetime. Some of them you are very aware of, most of them not.

So why is it so interesting and worth while to study the breath? Well, it embodies a force, a remedy, and a pipeline through which we can acquire a near-superhuman capability.

We've made remarkable progress in cleaning up our cities, developing vaccines to eradicate diseases that once plagued our ancestors, enhancing literacy rates, achieving greater heights in physical stature, advancing in technology, and strengthening ourselves both physically and intellectually. On average, we now live 2-3 times longer than people in medieval times, and our global population has surged a thousandfold compared to just 10,000 years ago. Despite these extraordinary advancements, we seem to have lost touch with one of the most fundamental and crucial biological functions: **proper breathing**.

THE HIDDEN POWERS OF THE NOSE

Breathing through the nose is a practice rooted in ancient wisdom, with a plethora of benefits for both physical and physiological well-being. Around 1500 BCE, the Ebers Papyrus, one of the oldest medical texts ever discovered, offered a description of how nostrils were supposed to feed air to the heart and lungs, not the mouth.

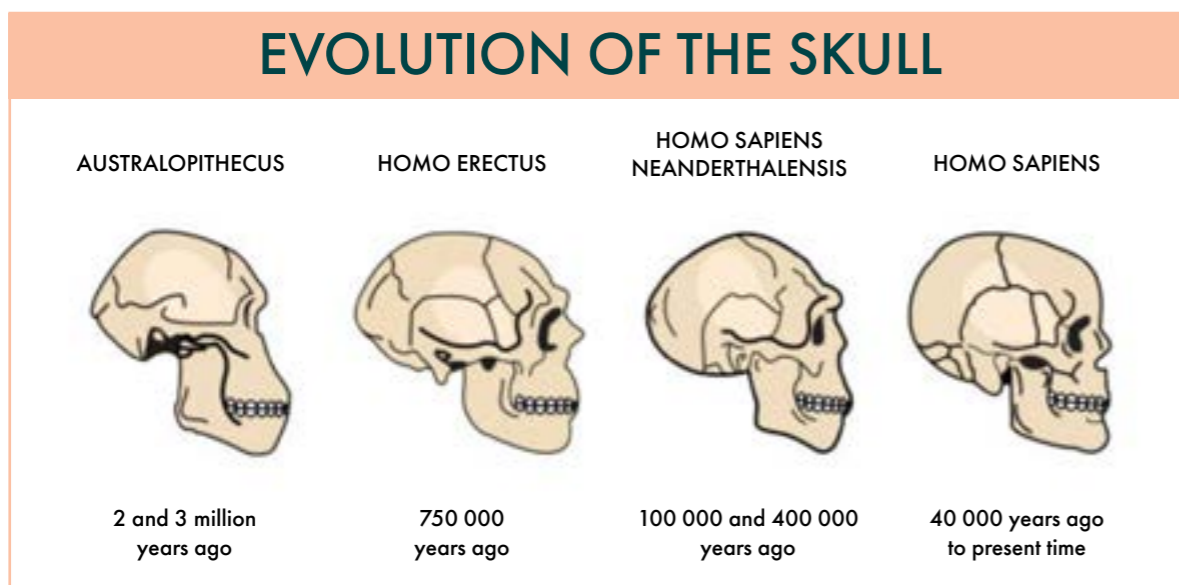
Unlike mouth breathing, which is a more recent phenomenon and offers no enhancement to performance, nasal breathing is deeply ingrained in our evolutionary heritage. There are still many doctors, researchers and scientists that argue that the mouth is just as fine a hole to breath in as the nose, but more and more we are becoming aware of the hidden, and almost magical, powers of the nose. The dunes, stalactites, and marshes within the human nose harmonize a myriad of essential functions for the body - and there are there for a reason! Later in this manual you will read about the anatomy and physiology of our respiratory system. But let's have a look at how we got here - where we have a huge mass of people breathing through their mouths, and suffering from asthma, sleep apnea and snoring.

Our ancestors instinctively relied on nasal breathing for survival, particularly in perilous situations, where it allowed them to intake larger volumes of air in anticipation of intense physical exertion. Mouth breathing, on the other hand, became associated with emergency scenarios, triggering the primal fight-or-flight response. However, in modern times, this response is often activated without the accompanying physical activity, disrupting the body's natural equilibrium. In the animal kingdom, mouth breathing typically signals sickness, injury, or distress, whereas nasal breathing serves as a natural defense mechanism, filtering out germs and bacteria from the air we inhale. Therefore, embracing nasal breathing not only honors our evolutionary heritage but also nurtures our overall health and well-being.

From a physiological standpoint, nasal breathing promotes the use of the diaphragm, facilitating deeper abdominal breaths, while mouth breathing predominantly engages the upper chest - so why have we started a bad habit of mouth breathing?

Well, evolution. If you compare an ancient skull to modern skull you would notice many things, the old skull show

- an enormous forward facing jaw
- expansive sinus cavities
- broad mouths
- straight teeth (which is bizarrely fantastic due to the fact that none of them had ever seen a dentist or even brushed their teeth)



Nearly all ancient humans shared this forward structure, all the way from Homo sapiens 300 000 years ago until just a few hundred years back. Now our skulls shows an opposite growth pattern; recessed chins, slumped back jaws and shrunken sinuses.

The forward facial growth and the large mouth created wider airways. When mouths fail to widen adequately, the roof of the mouth tends to elevate instead of expanding outward, resulting in what's known as a V-shape or high-arched palate. This upward growth hampers the growth of the nasal cavity, causing it to shrink and disturb the intricate structures within the nose. The diminished nasal space results in obstruction and hinders airflow. These people did not suffer from sinusitis or sleep apnea, they didn't have any respiratory issues because of their airways being too wide to be blocked. Today, humans hold the unfortunate distinction of being the most congested species on Earth.

As air enters through the nose, it passes through scroll-like, spongy bones known as turbinates. These structures condition and direct inhaled air into a steady, regular pattern. These six maze-like bones (three on each side) begins at the opening of your nostrils and end just below your eyes. The turbinates are coiled in such way that if you split them apart, they'd look just like seashells.

To grasp the concept of the nasal cavity, try running your tongue from the front of the roof of your mouth to the back as far as it can reach. You might be surprised to discover that the roof of the mouth is actually the floor of the nose.



The significant amount of space within the skull dedicated to the nasal cavity underscores the critical importance of these functions.

Together with sacs and valves, turbinates creates a complex system that regulates the direction and speed of the air to optimize exposure to a network of small arteries and veins, as well as to the mucous blanket. This process serves to warm, slow, humidify, and sterilize the air before it reaches the lungs, making the lungs more able to extract more oxygen with each breath.

Approximately 50% of individuals suffer from chronically inflamed turbinates, where the erectile tissue lining the sinuses becomes excessively swollen, hindering comfortable nasal breathing. In addition to sinus size and function, problems can also arise from nostrils that are too small or prone to collapse during inhalation, obstructing the free flow of air and exacerbating breathing difficulties. Furthermore, around three-quarters of modern humans exhibit a visibly deviated septum, indicating that the bone and cartilage dividing the right and left airways of the nose are misaligned.

THE NOSE IS A SILENT WARRIOR: THE GATE KEEPER OF OUR BODIES, PHARMACIST TO OUR MINDS AND WEATHER VANE TO OUR EMOTIONS

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NOTES

JAW & SKULL

Our earliest human ancestors, situated along the eastern coast of Africa, subsisted on a raw meat diet that demanded significant time and effort. Gradually, they began utilizing rocks to tenderize the meat, reducing the time and energy spent on chewing and digestion. This surplus energy was redirected towards the expansion of brain size. Approximately 800,000 years ago, the advent of food processing through fire further economized time and energy, resulting in a remarkable 50% increase in brain size compared to preceding ancestors. Consequently, Homo erectus began to exhibit a more human-like appearance, diverging from their ape-like predecessors. So, while it started much earlier (ca 12,000 years ago), 1500 AD is a good benchmark for when agriculture truly became a global norm. This leading to the widespread refinement of grains and milling processes that removed germ and bran from rice, resulting in the production of starchy white seeds or white flour. Additionally, preservation techniques such as canning were developed, extending the shelf life of meats, fruits, and vegetables, while also rendering them more accessible and softer in texture. However, life, particularly for city dwellers, was often grim, characterized by human waste flowing through the streets and air polluted with coal smoke. Infections, diseases, and plagues were constant threats.

In these societies, for the first time in history, individuals could subsist entirely on processed food devoid of freshness, rawness, or naturalness. This highly processed diet lacked essential fiber and a full spectrum of vitamins and nutrients, leading to adverse health outcomes. The consequences included a population that was sicker and smaller, with diminished mouth and facial bone development, increased dental diseases, and crooked teeth and jaws. Dental problems were so severe that extraction of all teeth was often necessary. This trend was observed worldwide, with societies that adopted modern, processed diets experiencing up to ten times more cavities, significantly crooked teeth, obstructed airways, and overall poorer health.



This culinary innovation also bore additional consequences. The rapidly expanding brain necessitated additional space, which was acquired at the expense of the front of our faces, the traditional domain of our sinuses, mouths, and airways. Over time, the muscles in the front of the face slackened, and the jawbones weakened and thinned. As a result, the face shortened, and the mouth diminished in size, leaving behind a bony prominence that replaced the flattened snout of our forebears - our nose. The shape of our modern noses, sitting on the outside of the face and vertically positioned, are less efficient at filtering air.