

# How Mouth-breathing Can Affect Our Growth, Development, Appearance and Functioning

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**“If you want to conquer the anxiety of life, live in the moment – live in the breath.”** Amit Ray

Our body represents an amazing array of highly inter-related, coordinated, and regulated systems. The system of the *upper airway*, includes the nose which is designed for smelling, filtering, moisturizing, and injecting nitric oxide into the air before it makes its way down past the tonsils, adenoids, and into the lungs. When this *upper airway* is functioning properly, our entire body responds favorably. Conversely, when there is upper airway *dysfunction*, our entire body can be negatively affected.

When we breathe properly, we do so through our nose, lips together, and with our teeth slightly apart. *Proper breathing then is silent, rhythmic, and effortless.* Our diaphragm, through negative pressure, pulls the air deep down into the lungs which fills them up completely. This in turn, allows the blood to be efficiently oxygenated and distributed throughout the body. When proper breathing occurs, our body is in a state of **parasympathetic nervous system dominance**, and we feel refreshed, relaxed and safe.

*Normal breathing is also critically important to growth and development.* When a growing child cannot breathe properly through their nose, the development pattern of their face, nose, mouth, jaws, and inner ear structures can be negatively impacted. Chronic mouth-breathing therefore influences the health of the lips, mouth shape and size, tongue, teeth, tonsils, adenoids, throat, ears, and lungs. Associated problems are: dry lips, dry mouth, crooked teeth, narrow faces, crowded tongues, mismatched jaw sizes, bad bites, TMJ problems, tooth decay, bleeding gums, a chronically stuffed-up nose, post-nasal drip, frequent sore throats, enlarged tonsils and adenoids, and lung problems such as asthma.

*When a child must constantly breathe through their mouth, it creates a different pattern of muscle behavior than when the child can regularly and easily breathe through their nose.* And for a mouth to be kept open, certain muscle must contract, while others release. **The muscle pattern in a chronic mouth-breather therefore is very different than that of a person who breathes most of the time through their nose.** The extra muscle activity required to maintain an open mouth creates enough force that it can influence the growth and development of the jaws and face, through distortion, retarding growth, and by making them narrower. Narrow mid and lower faces have less room for the nose, teeth, blood vessels, and Eustachian tubes. As a consequence, the nose becomes congested easily, ear infections occur more frequently, and the need for orthodontic braces increases dramatically.

**Chronic mouth-breathers also have a dysfunctional breathing pattern, called over-breathing,** where the person breathes primarily with their upper chest instead of through their diaphragm. *Over-breathing* is more functionally difficult than proper diaphragmatic breathing, and is less effective as it never completely fills the lower part of the lungs. As a consequence, this type of breathing is more labored, erratic, noisy, and inefficient.

**The brain stem senses when breathing is labored, erratic, and incomplete, and it interprets the situation as being an existential threat, thus stimulating the release of the stress hormones *adrenalin* and *cortisol*.** Adrenalin increases the heart rate and prepares the body for a threatening situation, which includes slowing down the digestive system. Cortisol increases blood sugar levels and helps to idealize our metabolism for the perceived threat. When a person is an over-breather, they are therefore primarily in a state of **sympathetic nervous system dominance**. A chronic state of sympathetic nervous system dominance can lead to **sympathetic dystrophy** – a dysfunctional sympathetic nervous system which can lead to chronically high blood sugar levels, inflammation, diabetes, poor sleep quality, chronic anxiety, depression, and GI disorders such as acid reflux and bowel disorders.

Chronic mouth-breathing can also lead to impaired brain functioning as well as impaired mental development in children. As stated earlier, chronic mouth-breathing leads to more adrenalin being released at night, which interferes with sleep quality. The poor sleep quality then interferes with proper brain growth, development, regeneration, and maintenance, which then influences memory and cognition. As a result, mouth-breathers wake up tired and struggle to maintain focus and on task as the day progresses. *They may also appear hyperactive due to sympathetic dystrophy, a situation which is commonly mis-diagnosed as ADHD, and treated with stimulants which can further damage the brain.*

Chronic mouth-breathers -and this is particularly true in children- have *dark circles under their eyes*. This is due to lack of development of their midface and the obstruction of the blood vessels which are attempting to move unoxygenated blood away from the eyes. **This phenomenon called *venous pooling* represents a deficiency in midface development.**

### Causes of Mouth-Breathing:

- **Partially, or fully obstructed noses** due to inflammation and swelling from allergies, deviated septum, polyps, and other physical obstructions.
- **“Tongue-ties”** – tongues which are not fully mobile cannot influence the shape of the mouth as much as a fully unrestrained tongue. When the normally strong tongue muscle is restrained, it becomes weaker and more passive, while the lip muscles become stronger and dominant to compensate. *(Tongue-ties are the primary reason many infants cannot breast feed, in spite of it being an easy fix)*
- **Bottle feeding** of infants establishes a repetitive mouth muscle pattern which is different than the pattern established while breast-feeding. Breast feeding requires a strong tongue which must function in coordination with the lips to “latch” securely and create adequate suction. Bottle feeding on the other hand, requires much less work, and subsequently encourages a weak tongue and over-active lip muscles. The over-active lip muscles and weak tongues then act in unison to shape the growing face and make it narrower. A narrower face leads to a narrower nose, and narrow noses allow for less air volume. Add in a few allergens which create inflammation in the nose and sinuses, and you quickly have a nose which is easily obstructed.
- **Pacifier use** causes the tongue to habitually posture *below* the nipple while it is being sucked. This is the *opposite* of the normal functioning of the tongue during breastfeeding. Consequently, a weak and more passive tongue develops, and an abnormal swallowing pattern is established which narrows the face and nose.

## Goals for Healthy Growth and Development

1. Majority nose breathing
2. Diaphragm-driven breathing
3. Strong tongue
4. No snoring
5. No teeth-grinding
6. Passive, soft lips and facial muscles
7. A fully displayed and broad smile
8. Wide dental arches which provide proper room for the tongue and *all of the teeth*
9. Large, open airways which are used effortlessly, quietly, and efficiently
10. A dominant parasympathic nervous system (“Rest and Digest” instead of “Fight or Flight”) which supports good digestion and a more relaxed, lower stress state of mind and body.