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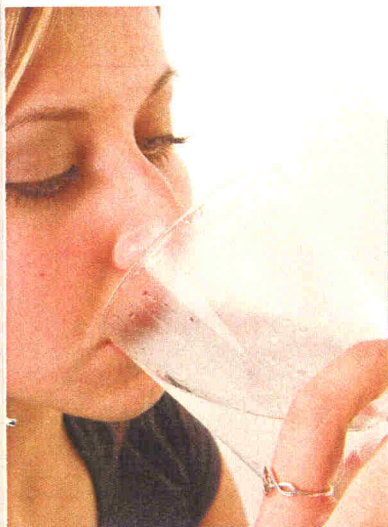
with **Perio Reports** by Trisha E. O'Heir, RDA, RDH

Ergonomics –
It is **All**
About
Breathing

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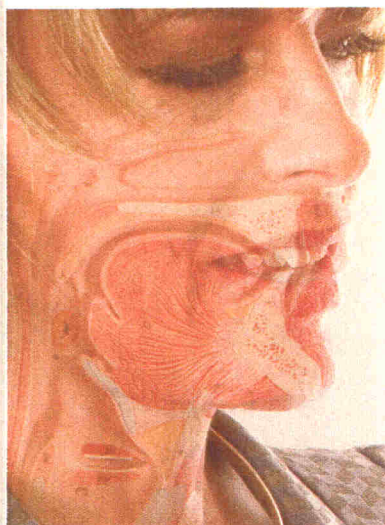
Extreme Caries Case



Ergonomics

An Interview with Lois Brugener, RDH

by Trisha E. O’Hehir, RDH, BS
Editorial Director, *Hygienetown Magazine*



Ergonomics – the science of designing the job, equipment and workplace to fit the worker – is an essential part of our life and workplace these days, with a focus on sitting posture, relaxed shoulders and comfortable arm position. I recently encountered a new philosophy on ergonomics – at least new to me. Lois Brugener, RDH, approaches ergonomics from the perspective of airway and breathing, not simply posture and her approach really makes sense. Without adequate breathing, posture doesn’t really matter. For Brugener, breathing includes both oxygen from the air, and limbic fluid flowing through the spine to the brain. Sitting properly with arms positioned correctly sounds ergonomic, but with a forward head position, the airway is compromised. Sitting with no back rest leads to slumping, which also compromises the airway and flow of spinal fluid to the brain.

Brugener has been a clinician for nearly 30 years and suffered through three surgeries to correct problems resulting from repetitive stress syndrome. She’s learned the benefits of proper ergonomics the hard way, through personal experience and through extensive study of body mechanics, Brain Gym, posture and airway. Brugener wants to help other hygienists work longer by providing an integrated ergonomics system that supports proper posture and an open airway. She accomplishes this by focusing on open airway breathing, proper chair ergonomics and connecting the right and left sides of the brain.

Many clinicians go to the gym, the chiropractor and masseuses, but all these efforts don’t undo what sitting at the dental chair all day does. The same is true for patients. Brushing and flossing doesn’t help undo the effect of sleeping all night long with their mouth open. Ergonomics with a focus on airway can be applied to both clinicians and patients. According to Brugener, it’s really all about breathing.



It's All About Breathing

Lois, tell me about your definition of ergonomics.

Lois Brugener, RDH: Ergonomics is first allowing the person to achieve ideal airway and posture. Then adjusting the environment to meet the clinician. Unfortunately, we often find ourselves adapting to our environment rather than the other way around. Spinal breakdown is not caused primarily by osteoporosis, but instead by poor spinal hygiene over a lifetime.

How does posture affect breathing?

Brugener: Poor posture and therefore less than ideal breathing begins as infants. Bottle feeding rather than breastfeeding can change the development of the orofacial muscles. The slumped posture in car seats and baby carriers leads to lower sternum positioning and forward head posture. As adults, we also slump and slip into a forward head posture, which puts crimps in the airway, just like crimps in a hose prevent the water from flowing, crimps in the airway cut down oxygen flow to the brain.

When you take into consideration development of the orofacial muscles, it seems there is more to the breathing piece than simply sitting up straight.

Brugener: There's actually a lot more and there are things that happened to us as babies and things happening every day and every night when we sleep that affect our breathing and therefore affect our ergonomics. Many things mount up influencing breathing – it's not just how we sit on a stool during the day. How people breathe at night determines how much oxygen they take in. When oxygen decreases, several things happen. Destructive sleep apnea occurs when breathing temporarily stops and oxygen decreases. When the airway is restricted, the mandible can move forward trying to open the airway and in some cases this motion causes bruxism.

Is there research on what happens when sleep apnea decreases the oxygen intake?

Brugener: In a UCLA study, researchers showed that when oxygen drops to a specific level, part of the brain begins to deteriorate. Wouldn't it be great to coordinate the brain, and the

continued on page 84



tongue to increase oxygen levels and therefore the health of the brain? With a healthier brain and a healthier tongue, we might have a great way to prevent sleep apnea.

How does this philosophy impact how we sit during the day?

Brugener: We can sit with correct posture for a few minutes, but our core strength isn't enough, even for those who are exceptional athletes like an Olympic equestrian sitting on a horse. They can hold perfect posture for seven to 10 minutes. That's it. Without support, we will eventually slump, go into forward head posture and compromise our airway. Sitting at the dental chair or at a computer requires back support. I've recently found the BQ Ergonomics stool with back support that also provides stimulation of the spinal column and seat that tilts forward and backward with you to maintain and support proper posture. Increased circulation of the spinal fluid to the brain during long periods of sitting stimulates the Reticular Activating System, for better focus and concentration. It's all about airway and circulation. Just like the ABCs of CPR, airway, breathing and circulation.

Were you taught this ergonomic/airway philosophy in school?

Brugener: To some extent, yes, my philosophy began with what I was taught in dental hygiene school and then what I learned in practice and in lots of post dental hygiene studies. In school the foundation was basic histology and head and neck development and how breastfeeding and bottle sucking influenced tongue position. The sucking motion is important for proper jaw growth and muscle development. With optimum oral facial development, the airway develops in balance with the oral structures.

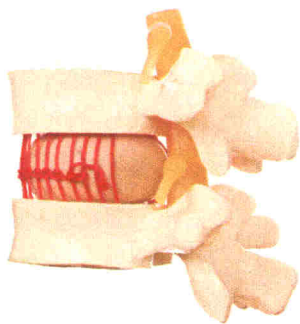
Many of my instructors, both hygienists and dentists were about to retire and they had long careers of observations they shared with us that raised questions about the problems related to breastfeeding versus bottle feeding. Over the years in private practice I noticed a connection between the oral development of infants and life-long breathing patterns. There is a difference in arch development and tongue function between breastfeeding and bottle feeding. The difference can actually influence forward head posture and the position of the spine and consequently ergonomics. With proper posture, the sternum moves forward, lung function increases, which increases oxygen to the body and muscles. This helps allow muscles to function more efficiently. Wearing facemasks reduces oxygen intake, so optimum breathing is desired.

What sorts of things did you observe in patients?

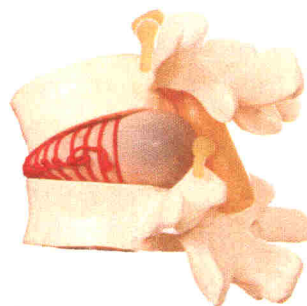
Brugener: I noticed that bottle-fed babies showed compromised development and coordination of oral facial muscles. Besides patients, I also noticed this in my own daughter. Due to medical problems and medications I was taking when my daughter was born 16 years ago, I was told not to breastfeed her. Breastfeeding is again considered the ideal approach, but over the years, it hasn't always been encouraged. During some decades, bottle feeding was encouraged over breastfeeding. What I noticed in my daughter as a result of bottle feeding was a lack of oral muscle development that prevented her from having a continuous lip seal during sleeping and waking hours. She developed a very high maxillary arch and airway problems.

Did this lead to any other problems?

Brugener: As you can imagine, I was quite upset when she developed decay in the cingulum areas of both maxillary central incisors. She didn't eat sugar and ate mostly raw foods and very few processed carbohydrates. I brushed and flossed her teeth, so the oral hygiene was good. However, she was influenced by mouth breathing. She tossed



Vertebrae and disk in healthy seated position.



Disk protruding from unhealthy slumped seated position

and turned and couldn't sleep through the night. The mouth breathing affected her oral balance to favor caries. Her breathing patterns that were influenced by bottle feeding have had a lasting impact on her life, not just sleeping, but caries and posture. It all impacts ergonomics, with breathing at the center.

Growth and development was different for my child than what I experienced, but look at kids in school now, they carry heavy backpacks and most have open mouth posture. So many have a family history of asthma and allergies. Once nasal breathing is established, the tongue needs to be reconnected to the brain to learn proper positioning. Brain Gym is one way to help the tongue learn new positioning.

I've never heard of Brain Gym before, can you tell me more about it and how you found out about it?

Brugener: Brain Gym is an international, nonprofit organization focused on movement that connects the brain to learning. Brain Gym uses a specific set of movements to enhance learning things like academics, coordination, memory, concentration, attitude, responsibility and so on. I first heard about it from one of patients who told me her son couldn't floss his teeth until he did movements to coordinate right and left sides of the brain. My daughter was having trouble coordinating her eyes to read, so that's why I first looked into it. I took a class and realized why so many people can't floss and also plays a role in forward head posture and lack of lip seal. Brain Gym is one piece of the puzzle that shaped my approach to patient wellness.

The dental profession believes that tongue thrust is an infantile undeveloped swallow pattern based in the brain stem with genetics being one component. If Brain Gym works to coordinate right and left hands to floss, right and left eyes to read, perhaps the Brain Gym exercises could also coordinate the brain and tongue as well to open the airway.

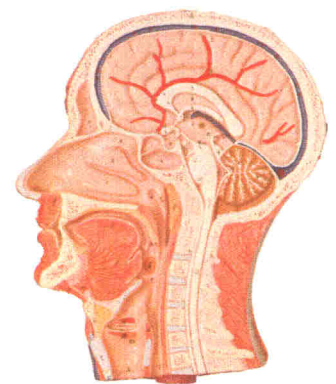
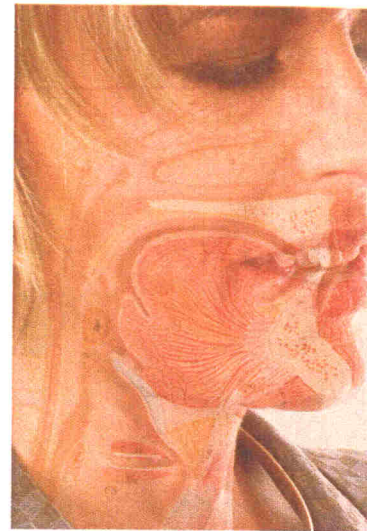
What is your advice for clinicians?

Brugener: I have two pieces of advice. First, think about your own airway and how your posture and ergonomics can enhance your airway and allow maximum oxygen to reach your brain.

My second piece of advice is to take the information about airway to your patients. Look closely at them. What do you really see? Don't stop after taking in the vast amount of information you do routinely. Here's the fun part, ask yourself what can you do with all this information.

Look in the throat. Note if the tongue is above the occlusal surfaces, if the arch is too small, where the tongue is resting, or is it pushing? Look at the upper arch, is it narrow, vaulted, or does it round gently. Are the teeth crowded? Consider development of the bone and the muscle forces on tongue and cheek sides. Connect the dots of all you see and what you've learned about pathogenesis, good plaque, bad plaque, digestive enzymes, swallowing, acid reflux, sleep apnea, oral disease, the tongue and of course the airway. What is stopping your patients from breathing?

You've raised many interesting points about ergonomics and breathing. This might explain why slumping on a sofa, tends to put me to sleep. Slumping crimps the airway, cuts down the oxygen and makes me drowsy. From now on, when I think ergonomics, I'll also think about the ABCs of CPR, airway, breathing and circulation. Thank you Lois for your perspectives on ergonomics and breathing. ■



When the orofacial and tongue muscles are not developed properly, the airway can be compromised.