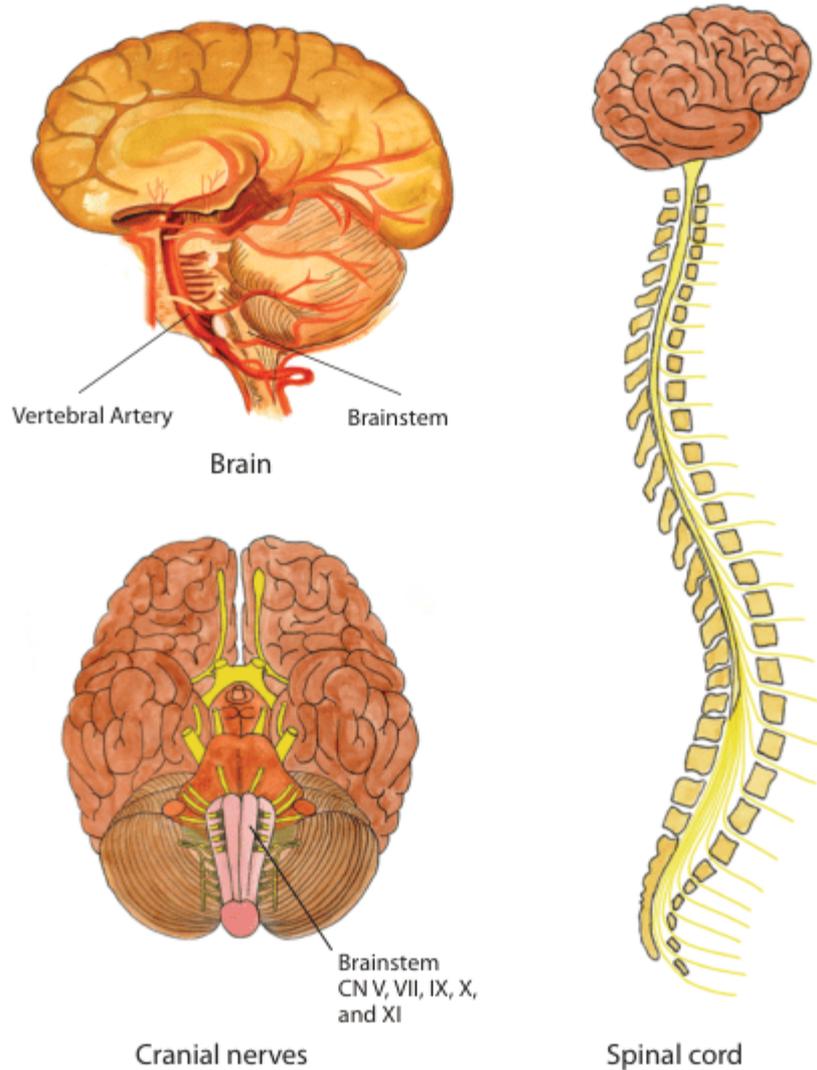
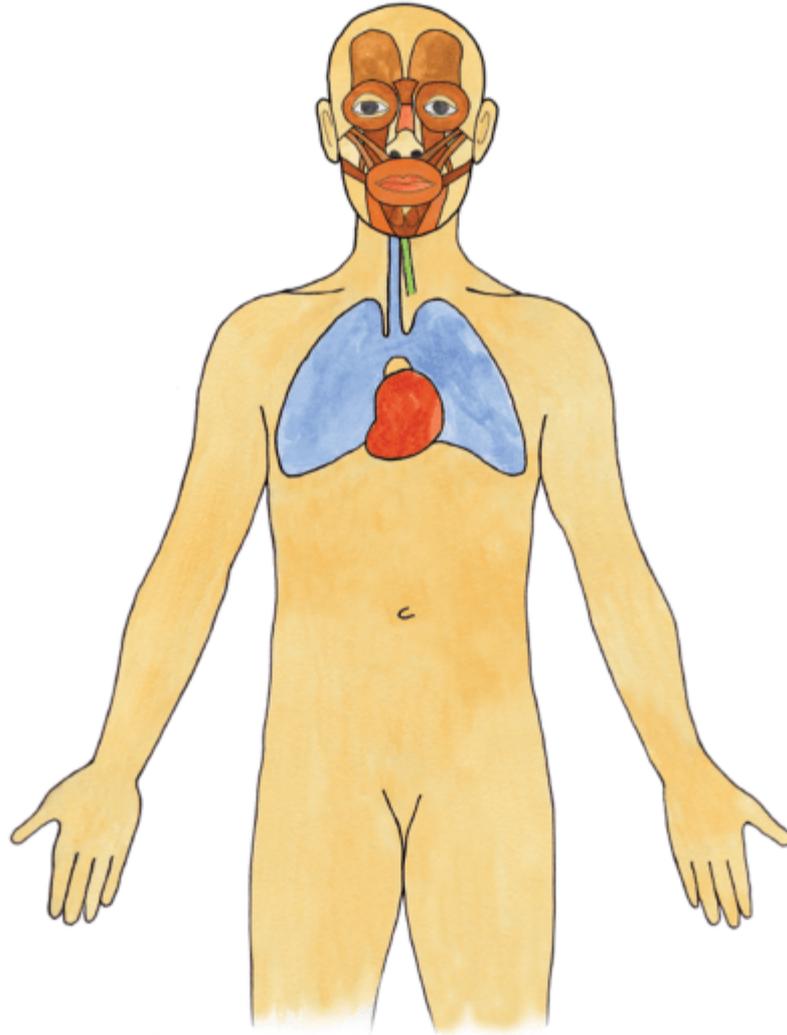


## Appendix



The brainstem extends from the brain; it lies on the underside of the brain and is the beginning of the spinal cord. Cranial nerves, except for cranial nerves I (olfactory) and II (optic), originate in the brainstem. The vertebral artery supplies blood to the brainstem and the five cranial nerves.

ACCESSING THE HEALING POWER OF THE VAGUS NERVE

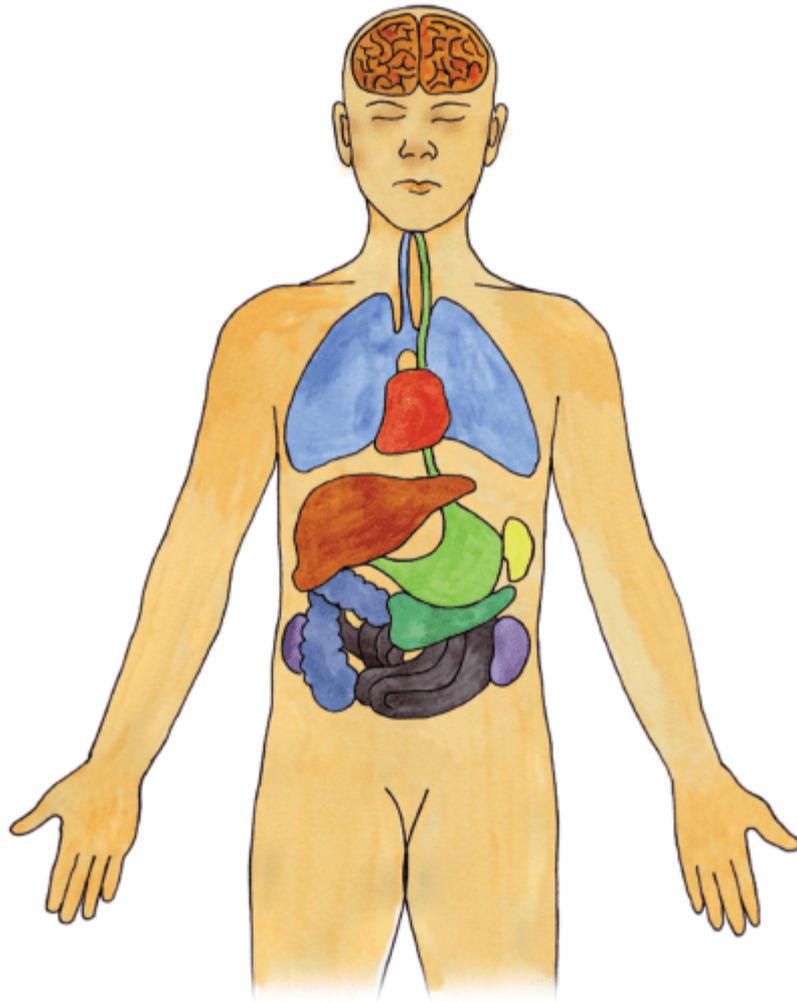


Ventral vagus

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The two divisions of the vagus nerve each go to the heart, the lungs, and the airways. In addition to this, the ventral vagus branch extends to the muscles of the throat (larynx and pharynx), and it relates to movements of the face. In the drawing, the red represents the heart, and the blue represents the lungs and the two tubes—the bronchial on the left and the esophagus on the right.

## Appendix

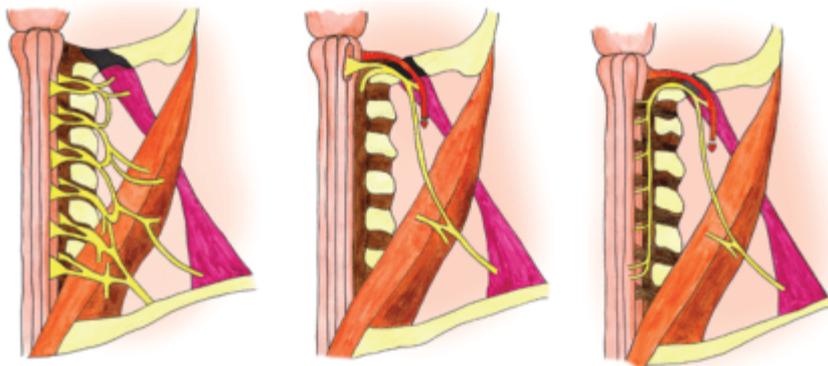


Dorsal vagus

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In addition to reaching the heart and lungs, the dorsal vagus nerve branch goes to the subdiaphragmatic organs of digestion (except for the descending colon). It goes to the stomach, liver, pancreas, spleen, ascending colon, and transverse colon. In the drawing, blue stands for the lungs, red for the heart, green for the stomach, brown for the liver, grey-green for the pancreas, darker blue for the ascending and transverse parts of the large intestine, yellow for the spleen, and grey for the small intestine.

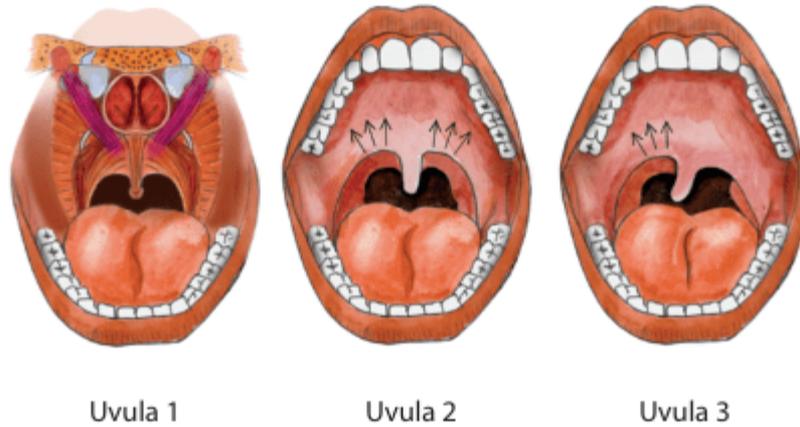
## ACCESSING THE HEALING POWER OF THE VAGUS NERVE



CN XI

These illustrations show the different branches of CN XI. The drawing on the left shows branches which originate in the spinal cord at the level of the cervical vertebrae and go directly to the trapezius and the sternocleidomastoid muscles. The middle drawing shows branches that originate in the spinal cord at the level of the cervical vertebrae and go up into the skull and then exit the skull through the jugular foramen and go to the two muscles. In the drawing on the right, the branch originates in the brain stem, exits the skull through the jugular foramen, and then goes to the two muscles. All of these nerves going to different bundles of muscle fibers allow flexibility and precision in the movement of the neck.

## Appendix



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**To test the pharyngeal branch of the ventral vagus nerve branch:** The *levator veli palatini* muscle should pull the soft palate up when we say "ah, ah, ah" in a percussive manner. The uvula should go up symmetrically, as in "Uvula 2." If it goes up to one side but not the other, as in "Uvula 3," then there is a dysfunction of the pharyngeal branch of the ventral vagus on the side that doesn't rise equally.

## ACCESSING THE HEALING POWER OF THE VAGUS NERVE



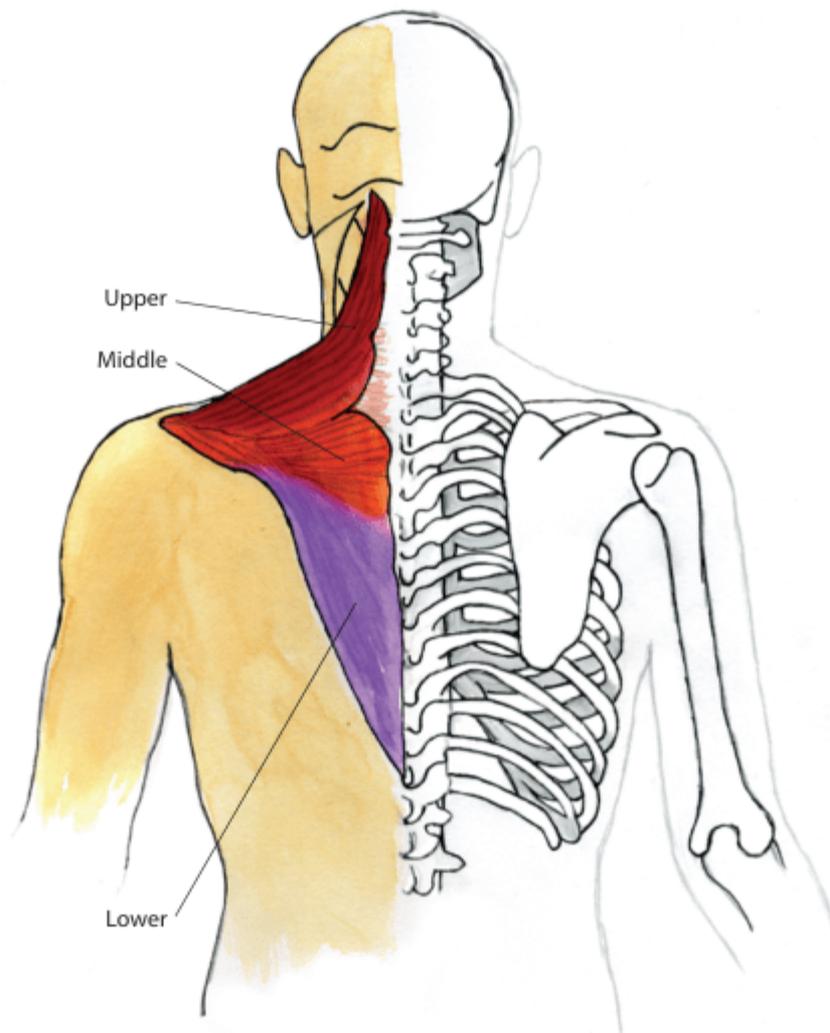
Central nervous system

In this illustration you can see a representation of the central nervous system, showing the brain, the brainstem (a narrowing of the lower part of the brain, which continues down into the body as the spinal cord), and one of the five cranial nerves that has its origin in the brain stem.

All of the twelve cranial nerves originate on the inferior (bottom) surface of the brain or from the brainstem. We are especially interested in CN V, VII, IX, X, and XI. All five of these nerves need to function properly if we are to be socially engaged. In order to function properly, these cranial nerves need an adequate blood supply. Rotation of the atlas, axis, or other cervical vertebrae can reduce the blood supply to the brainstem, resulting in dysfunction in these cranial nerves.

The eleventh cranial nerve (CN XI), one of the five nerves necessary for social engagement, also innervates the trapezius and sternocleidomastoid muscles.

Appendix



Trapezius

The trapezius muscle has three parts: the upper (in the illustration, dark red), middle (red), and lower (purple).



### Baby on stomach

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When a baby is lying on its stomach, one of the first movements it makes is to lift its head. To do this, it tenses all three parts of its trapezius muscle. Tightening the fibers of its upper trapezius tips its head back and up. Tightening its middle trapezius pulls its shoulder blades together and stabilizes its arms so that they can support the weight of its body. Tightening the lower trapezius allows it to arch the entire length of the spine.

In the photo, you can see that the head is lifted up and tipped back. The shoulder blades are pulled together in the back. The entire length of the spine is arched in a bow. Then, when the baby has lifted its head, it adds the sternocleidomastoid muscles' activity to rotate its head. The combined action of the trapezius and the sternocleidomastoid muscles allows it to move its head and focus its senses of sight, smell, and hearing on objects of interest anywhere in front of it.

## Appendix



### Baby on all fours

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When the baby comes up on its hands and feet to crawl, the three parts of the upper, middle, and lower trapezius muscles continue to tighten in the same way as when it lay on its stomach and lifted its head.

However, this relationship changes drastically when the baby stands up on its legs. The upper trapezius no longer tips its head up and back as it did when the baby crawled on all fours.

## ACCESSING THE HEALING POWER OF THE VAGUS NERVE



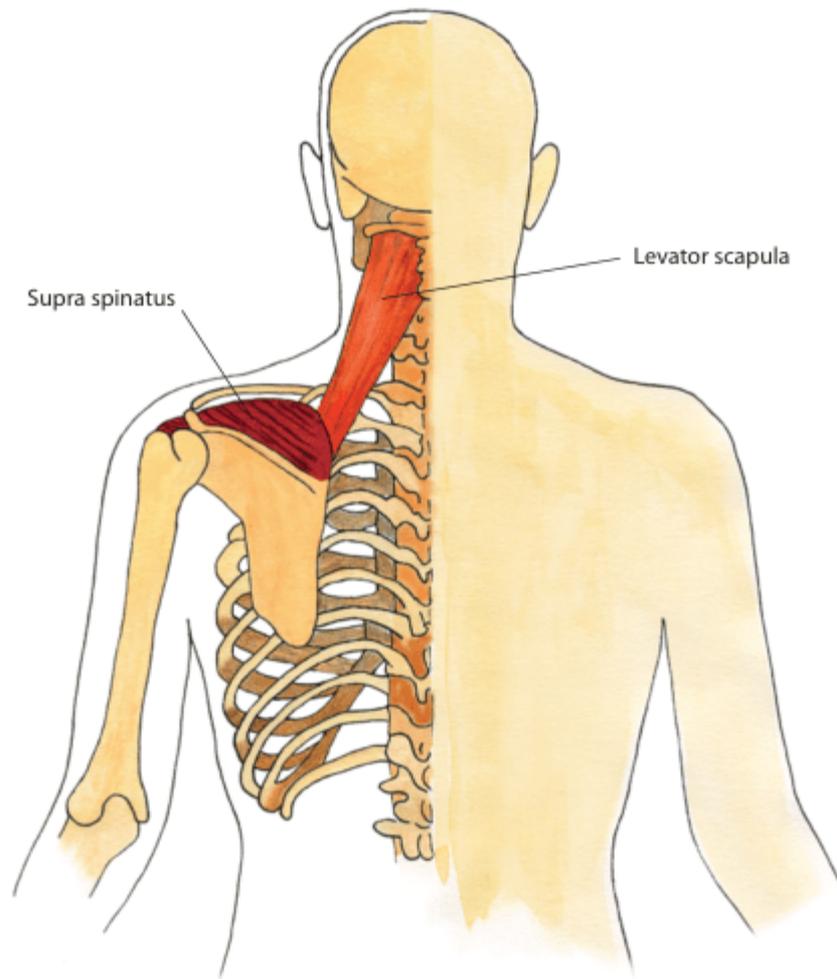
Baby standing

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If the relationship between the head and the body were the same as when crawling on all fours, the head would be rotated ninety degrees, with the face looking straight up towards the sky. However, when standing, the head rotates to face forward. Therefore, the upper trapezius has much less tension in a standing position compared with lying on the stomach or crawling on all fours. A forward head posture comes from an upper trapezius that is not too tight but too flaccid. As years pass, the upper trapezius becomes even more and more slack, and the head slides increasingly forward on C1.

The Twist and Turn trapezius exercise in Part Two of this book helps to bring the head back into better alignment because it stimulates all three parts of the muscle.

Appendix

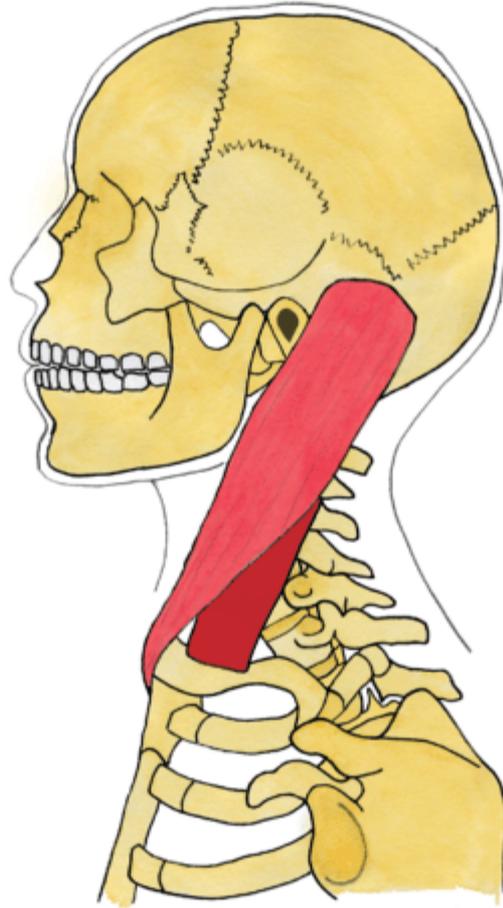


Supraspinatus

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The supraspinatus muscle runs along the top of the shoulder blade.

## ACCESSING THE HEALING POWER OF THE VAGUS NERVE

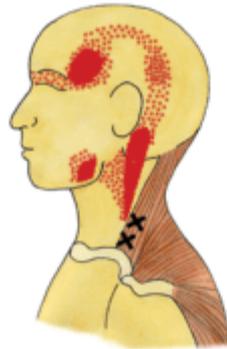


### Sternocleidomastoid

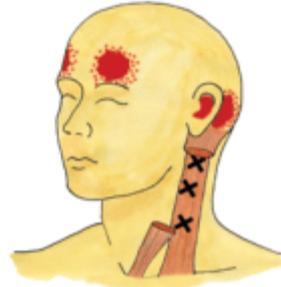
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Here you can see a drawing of the sternocleidomastoid muscle. The sternocleidomastoid muscles, one on either side, allow us to turn our head to the right or left. Working together, the trapezius and sternocleidomastoid muscles allow us to move our head precisely, to position our eyes, ears, and nostrils to get important information from our environment.

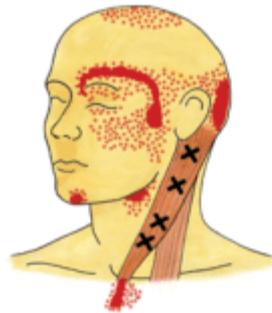
## Appendix



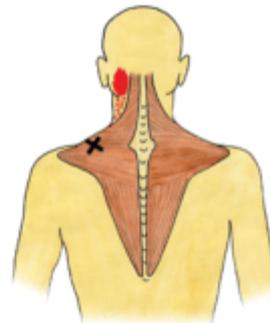
Headache 1



Headache 2



Headache 3



Headache 4

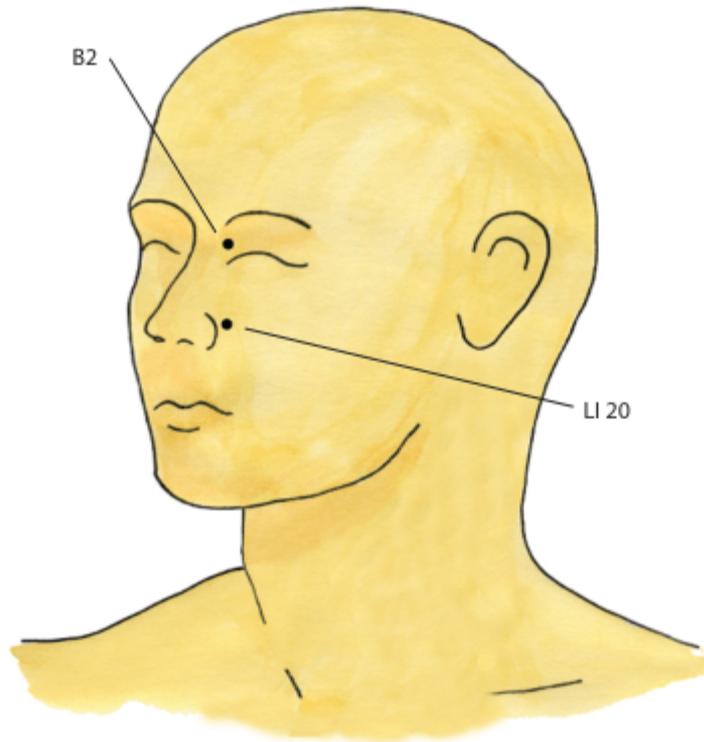
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Based on years of experience in my private clinic, and contrary to widely accepted medical practice, I believe that dysfunction of CN XI, which innervates the trapezius and SCM muscles, is involved in migraine headaches.

Migraine headaches are tension headaches, and there are four kinds, each caused by a different pattern of tension in either the sternocleidomastoid or trapezius muscles. If you are having a migraine, look at the four drawings and see if you recognize which pattern of pain (in red) has been plaguing you.

Because these parts of the muscles are innervated by CN XI, the first step in treatment of migraines is to establish proper function of CN XI using the Basic Exercise (see Part Two). Then find the appropriate trigger points (TP), each marked by an X, and massage these for a few minutes until you feel relief.

ACCESSING THE HEALING POWER OF THE VAGUS NERVE

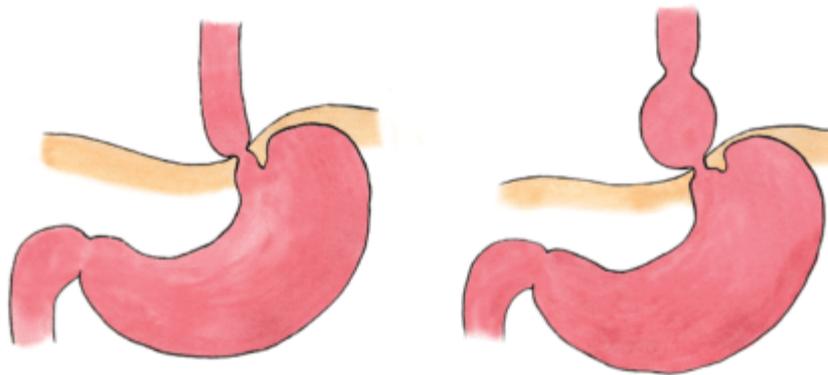


Acupuncture points

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Massage of acupuncture points for the Natural Facelift for CN V and CN VII: LI 20 (the acupuncture point Large Intestine 20), to the side of the top of the nostril on each side), and B2 (at the inside of the eyebrow).

## Appendix



Stomach 1

Stomach 2

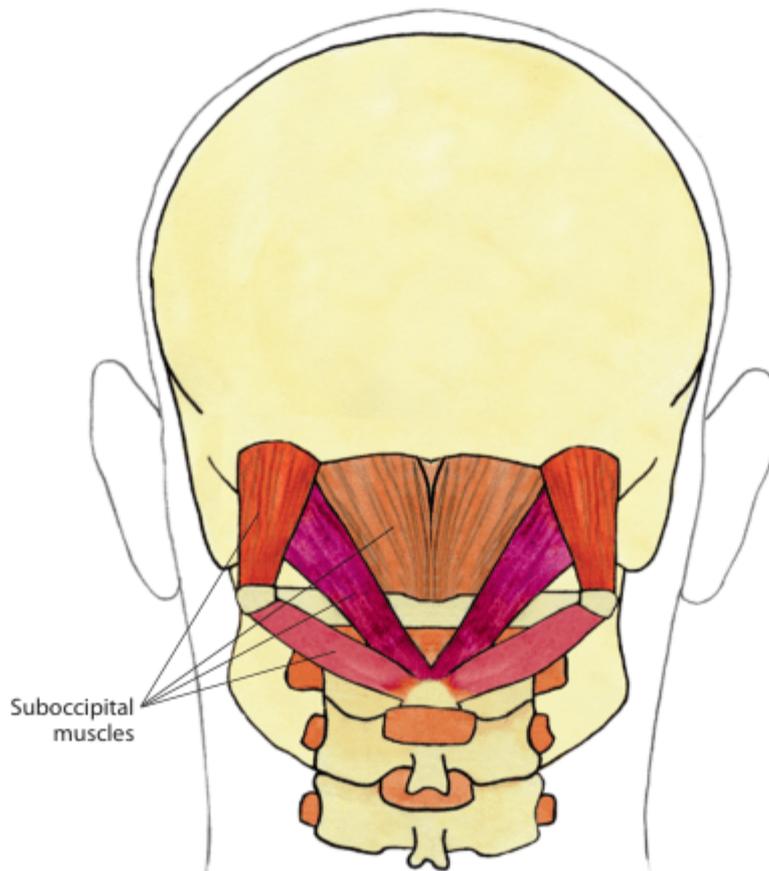
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Normally, the stomach should be down in the abdomen, well below the respiratory diaphragm. The esophagus is a muscular tube running from the pharynx (back of the throat) into the stomach, passing through an opening (hiatus) in the respiratory diaphragm and into the stomach. When we swallow, the esophagus carries food from the throat to the stomach.

“Stomach 2” shows a hiatal hernia. The upper third of the esophagus is innervated by the ventral vagus nerve. If there is ventral vagus dysfunction, the esophagus shortens, pulling the stomach up against the bottom of the diaphragm and creating a hiatal hernia. Part of the stomach may even be pulled up into the thoracic cavity. This disturbs the proper function of the diaphragm, which cannot descend as it should on the inbreath.

I have found a dorsal vagal state together with a hiatal hernia in almost everyone who has come to my clinic with a diagnosis of COPD.

## ACCESSING THE HEALING POWER OF THE VAGUS NERVE

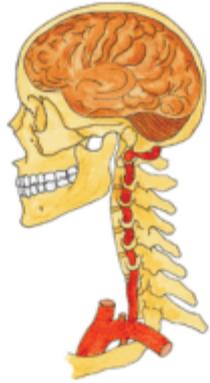


### Suboccipital muscles

The four pairs of suboccipital muscles are located below the occipital bone at the base of the skull. The suboccipital triangle is a region of the neck bounded by three of these muscle pairs: the *rectus capitis posterior major* (above and medial); the *obliquus capitis superior* (above and lateral); and the *obliquus capitis inferior* (below and lateral).

Whereas the trapezius and sternocleidomastoid muscles are responsible for the gross movements of the head on the neck, the suboccipital muscles allow for finer control of these movements.

Appendix



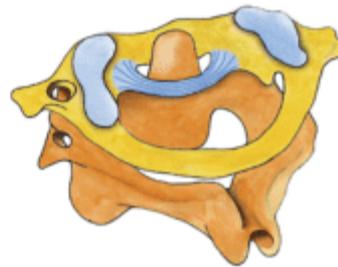
Vertebral arteries



Suboccipital muscles  
with vertebra



Atlas



Axis and atlas

The suboccipital muscles play a critical role in stabilizing the head on the neck by stabilizing the cranium on the atlas (the top neck vertebra, or C1) and the atlas on the axis (the second vertebra, C2).

Tensions in the muscles of the suboccipital triangle can pull the occiput, C1, and C2 away from their optimal position in relationship to each other. Tightening and imbalance of the suboccipital muscles can also put pressure on the nerves and blood vessels in the suboccipital triangle.

The vertebral artery (red) passes between the suboccipital muscles on its way to the brainstem, so tension in these muscles can also reduce blood flow to the brainstem.

## ACCESSING THE HEALING POWER OF THE VAGUS NERVE



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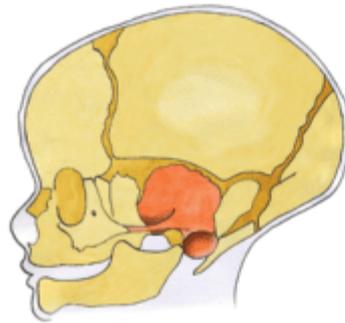
### Suboccipital nerve

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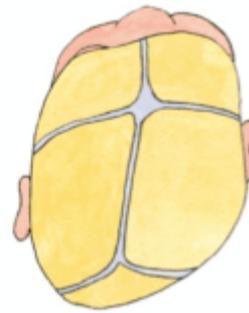
The suboccipital muscles are innervated by the suboccipital nerve, which passes through the suboccipital triangle and branches to the suboccipital muscles.

Using the gentle techniques in the Basic Exercise, we can balance the tensions in these muscles. Then the bones can assume a better position with regard to each other, allowing more blood to flow through the vertebral arteries. There is often an almost instantaneous improvement of not only the position of the bones but also the function of the ventral vagus nerve branch.

## Appendix



Baby cranium



Baby cranium from above

A flat back of the head is caused by chronic tension in the sternocleidomastoid muscle on one side of the head—most often the right side. This tension is most likely caused by a dysfunction in CN XI.

There are eight bones in the cranium, and fourteen in the face. At birth, the bones have not yet calcified and grown together at the sutures. They are joined by tough sheets of elastic connective tissue. The flexibility of these bones, and the elasticity of the connective tissue between them, are important in the birthing process. The cranium is compressed under tremendous pressure as it travels down the birth canal, and it is not a straight passage. The cranium's flexibility allows it to change shape as it passes through this irregularly shaped tube.

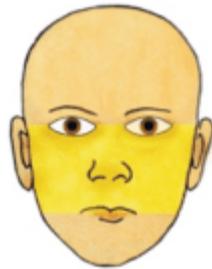
After birth, muscles of the neck and the forces of the fluids inside the cranium begin to bring the baby's head into a more symmetrical and rounded form. A chronic pulling from the sternocleidomastoid muscle, however, is enough to pull the individual bones of the skull out of shape in relationship to each other.

A change in the shape of the back of the head can affect the blood supply to the brain—some parts get an excessive blood supply, and other parts a reduced supply. Since I have become aware of the shape of the back of the head, I have noticed a “flat back of the head” on every one of my clients on the autistic spectrum or with ADHD. The drawing “Baby cranium from above” illustrates a severe case of deformation of the cranium, usually caused by a tight sternocleidomastoid muscle.



It is possible to lessen skull deformation by releasing chronic tension in the SCM muscle on one side, even in adults in whom the bones of the skull are believed to have grown together so that the shape of the skull is fixed. Far from it! It is surprising how much you can round a flattened back of the head, regardless of age.

## ACCESSING THE HEALING POWER OF THE VAGUS NERVE



Face



Facial muscles

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Many of us do not have much movement in the muscles of our face. Face-muscle movement can occur spontaneously, or can be consciously put on such as, for example, when we smile for a photo.

Spontaneous changes of facial expression, especially when someone is looking directly at another person, are a sign of social engagement. These small changes occur at a rate of several times per second. The individual expressions are too fast to notice, but we can see that there is life in the face.

When someone is socially engaged, the spontaneous facial movements occur in the zone between a line drawn across the middle part of the eyes and a line between her lips.