

3.13.1.1: The Vocal Tract

The main components of the vocal tract are sketched in the figure below. The **nasal cavity** (1) is actually a set of connecting chambers in the front part of the face, above the **oral cavity** (2) or mouth. The **hard palate** (3) separates the mouth from the nasal cavity. The **soft palate** (4) extends the hard palate and connects with the **uvula** (6), the part you see hanging down in your mouth when you look in the mirror. The teeth (5), lips (7) and various parts of the tongue (9, 11, 13, 15) are also shown. The **pharynx** (8) connects the mouth to the **trachea** (16) or wind pipe and the **esophagus** (not labeled). The **epiglottis** (10) closes the trachea when you swallow food so that the food goes down the esophagus and not into your lungs. The **vocal cords** (12) or folds are located at the **glottis** (14), the external part of which is called the **larynx** (17).

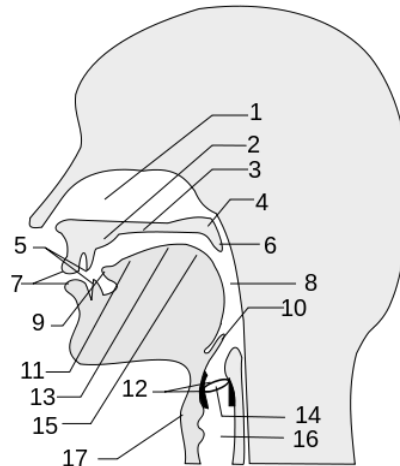


Figure 3.13.1.1.1

The **vocal cords** or vocal folds are actually two folds of skin that can be brought together to partially block the flow of air coming from the lungs. When they do this the Bernoulli effect causes them to snap shut until the air behind them builds up enough force to them open again. The picture on the left is a picture of the folds (looking down into the throat from the mouth) when the folds are relaxed and open. On the right is a diagram of the vibration process.

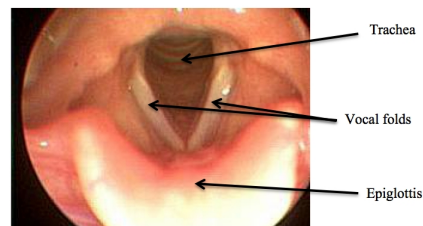


Figure 3.13.1.1.2

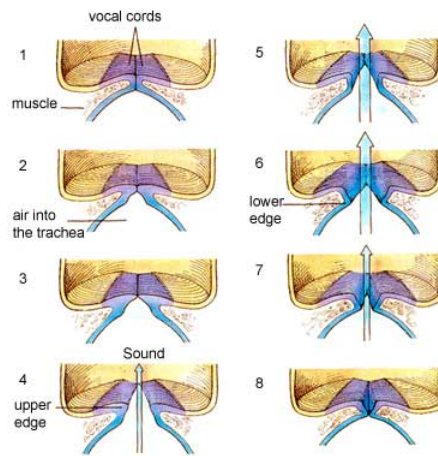


Figure 3.13.1.1.3

In the same way that a brass player's lips buzz, the vocal cords open and close to form a buzzing sound. By tightening the muscles around the flaps we can change the frequency of the buzz but only slightly. The following are videos of vibrating vocal cords in singers.

Video/audio examples:

- Video with explanation of [vocal cords while singing](#).
- Web page with several [videos of vocal cords while singing](#).
- YouTube of [Mel Blanc's vocal cords](#).

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