

Reading Assignment: Chapter 6, Physiology of Phonation (p. 221-254); supplemental reading: Chapter 3 of Dr. Hill's Lecture Notes available at my BU web site (**recommended reading online, not printing as it is long**). You may search for specific terms or topics using the Adobe Acrobat Reader search tool (binoculars).

A. Phonation Activities Overview

1) Phonation –

a) Vocal attack:

Simultaneous vocal attack:

Breathy vocal attack:

Glottal attack:

b) Sustained phonation:

Register:

c) Termination of phonation:

2) Articulation

3) Muscular Activity –

a) interactions among intrinsic laryngeal muscles

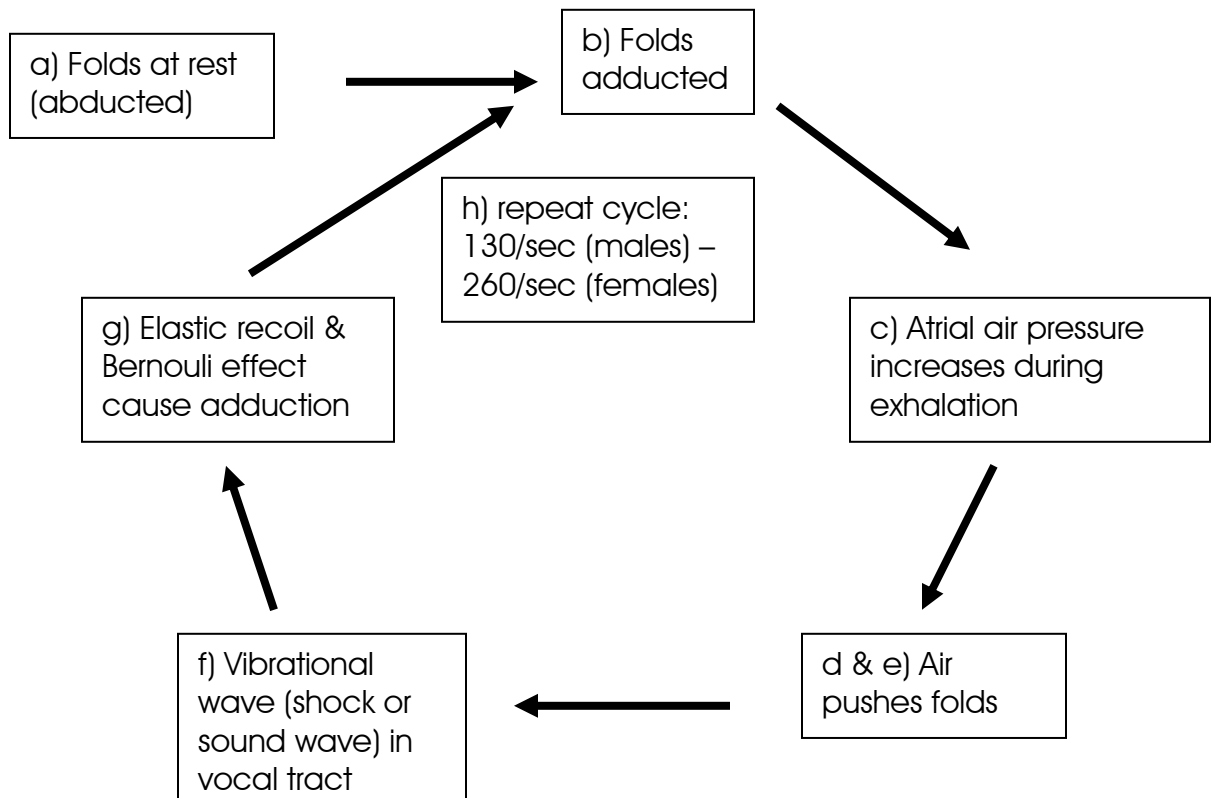
B. Glottal Cycle –

1) Vocal Frequencies –

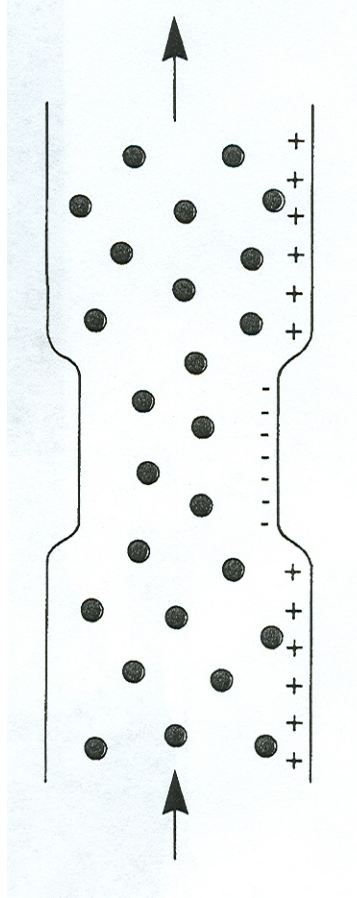
Male –

Female –

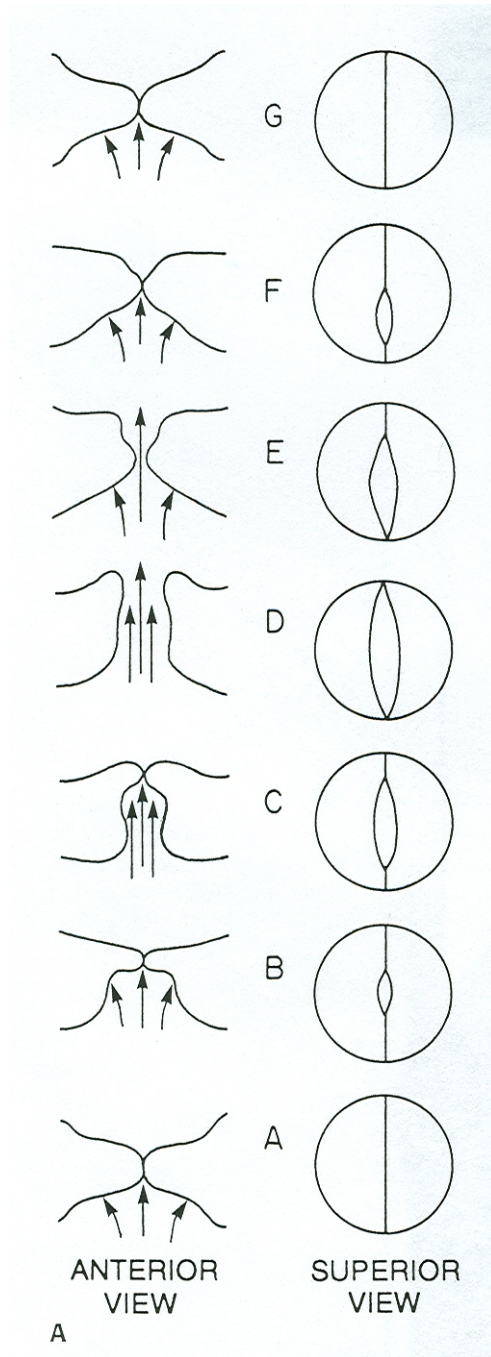
2) Stages of the Glottal Cycle (also see lecture notes)



3) Bernouli Effect –



4) Bernoulli effect and the glottal cycle (Figure 6-5 in Seikel et al., p. 233)



5) Frequency, Pitch and Pitch Change –

Definitions:

Pitch –

Average Fundamental Frequency –

Optimal Pitch –

Pitch Range –

Intensity –

b) Changing Pitch: Two Methods to Modify Pitch –

Tension, Length, and Mass Relationships:

6) Muscles involved in pitch change

Table 3.1 Muscles That Change Pitch During Phonation

INTRINSIC MUSCLES

Cricothyroid (recta and oblique). Both increase the distance between arytenoid and thyroid cartilages. Raise pitch.

Thyroarytenoid (thyrovocalis portion). Increases vocal fold tension. Raises pitch.

Posterior cricoarytenoid. Prevents anterior sliding of the arytenoids. Aids above two to raise pitch.

EXTRINSIC MUSCLES

Laryngeal elevators. Raise larynx. Raise pitch.

Laryngeal depressors. Lower larynx. Lower pitch.

Pharyngeal constrictors. Decrease laryngeal cross sectional diameter. Raise pitch.

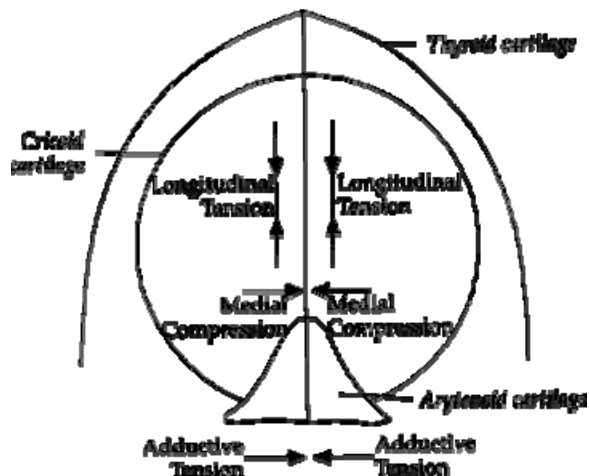
Sternothyroid. Rocks thyroid forward and down, increasing tension on vocal fold. Raise pitch.

Geniohyoid, Anterior Digastric, Thyrohyoid. Tilt thyroid upward, relaxing tension on vocal folds. Lowers pitch.

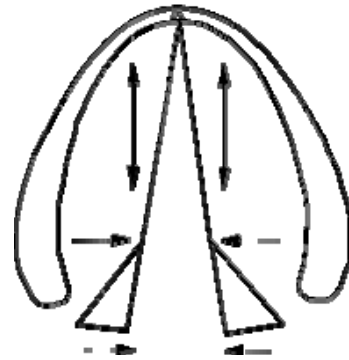
7) Phonation Types –

(from <http://www.ims.uni-stuttgart.de/phonetik/EGG/page10.htm>)

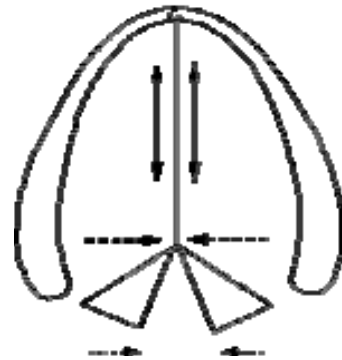
Listen to wave files, observe vocal fold positions, and take notes!



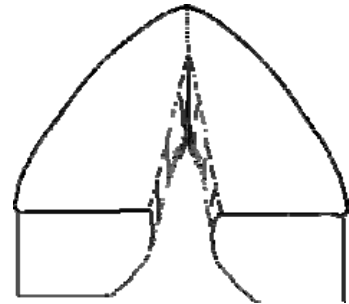
a) voiceless (nil phonation) –



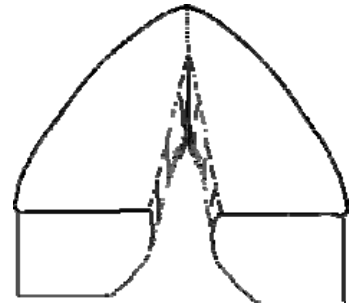
b) whisper –



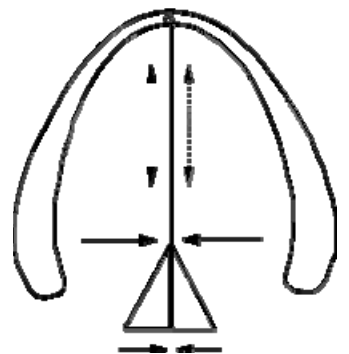
c) breathy –



d) normal (modal) voiced –

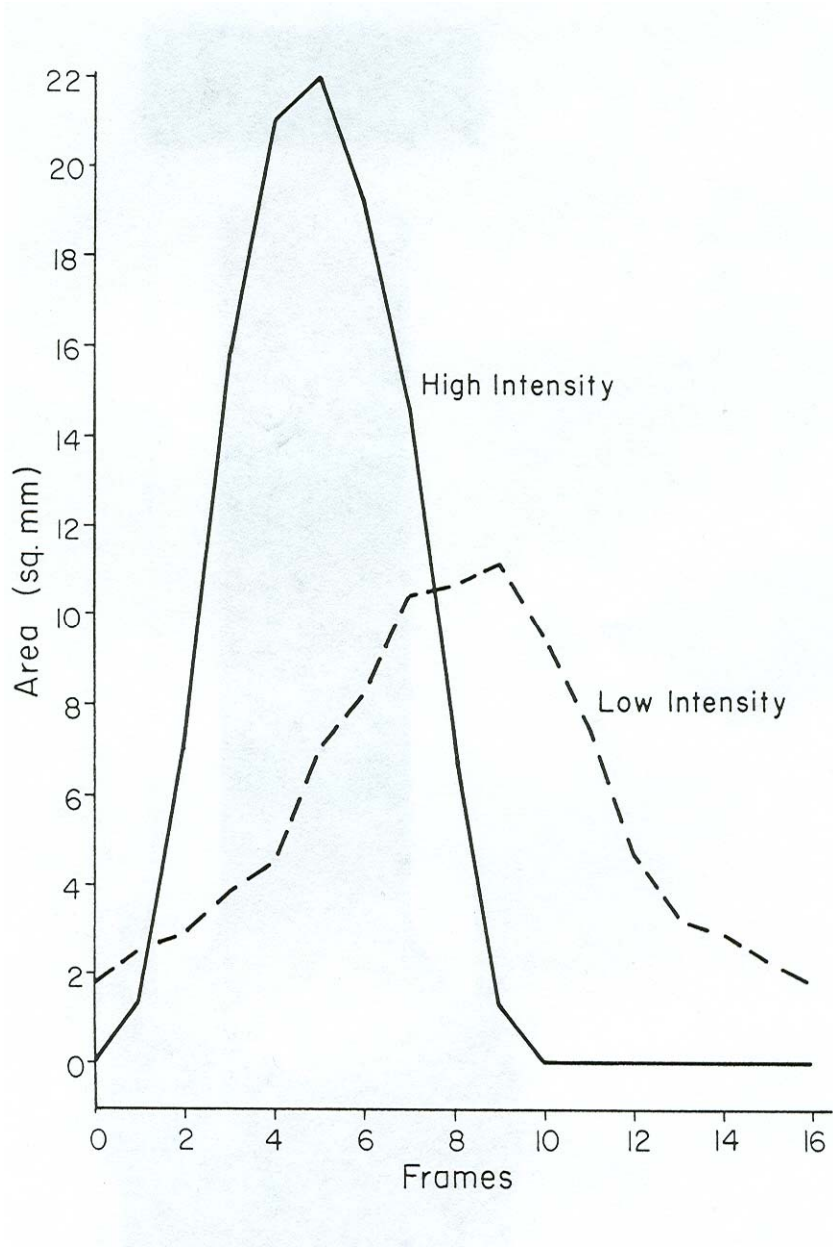


e) creaky (vocal fry) voice –



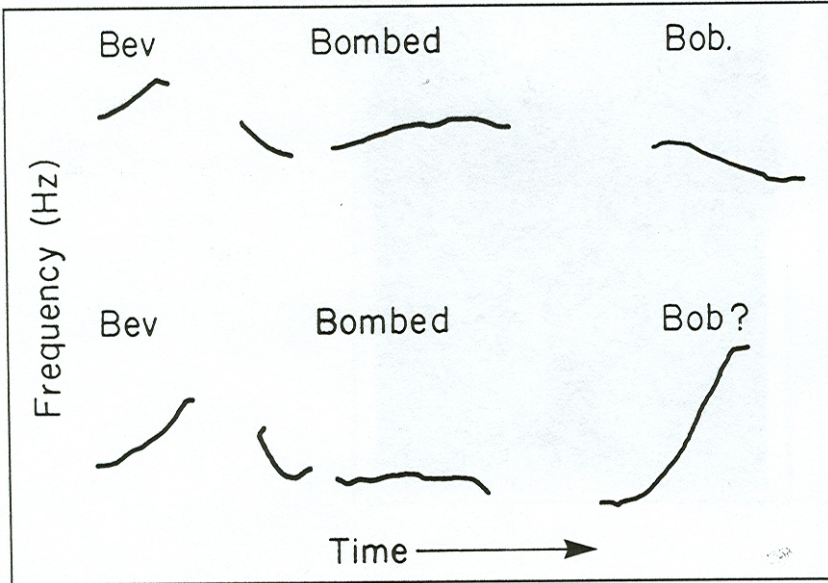
f) glottal stop –

C. The effect of intensity on glottal cycle:

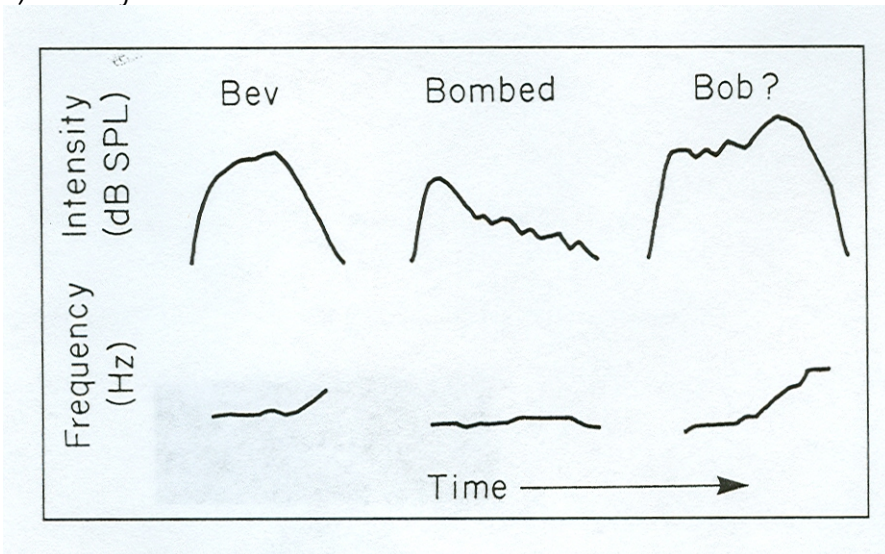


D. Linguistic Aspects of Pitch and Intensity

1) Frequency



2) Intensity



HOMEWORK ASSIGNMENT: Use your text book to define the following clinical terms and read the clinical information boxes to answer the questions below.

Sustained and Maximum Phonation (p. 234)

Why do clinicians ask patients to perform a maximal output for a particular examination?

Give examples of maximal output respiratory tests.

What does a sustained vowel phonation reveal about a patient?

What does a sustained sibilant (/z/ or /s/) reveal about a patient?

Puberphonia (p. 238)

Define puberphonia –

Describe a treatment for puberphonia:

Laryngeal stridor (p 253) –

Elasticity (p. 255) –

Stiffness (p. 255) –

Inertia (p. 255) –

Lecture Guide Questions

- 1) Compare the actions of the intrinsic laryngeal muscles individually and in interactions among muscles. Why is it important to consider interactions among the intrinsic laryngeal muscles? (Hint: think of the wooden model in lab... is it accurate?)
- 2) What is phonation? Articulation? Describe the difference between vocal pitch and vibrational frequency. What are the typical vocal frequencies of males and females? What is the glottal cycle? Define: optimal pitch, fundamental vibrational frequency.
- 3) True or False, if false then correct the statement: The intrinsic laryngeal muscles vibrate the vocal folds during phonation.
- 4) What are the major vocal modalities? Can you perform each modality and describe the position of the vocal folds quality of the voice during each performance?
- 5) What are the functions of the pharynx? Briefly describe the nerves, blood vessels and lymph vessels of the pharynx.
- 6) What is a laryngectomy? Laryngitis? Abdominal fixation?

End of Chapter Chapter 6 Questions (p. 258)

Topics covered in lecture: 1-15

Topics covered in laboratory: 10, 11

CD-ROM Reviews and Practice Tests

Lecture topics: Lessons 06-01 through Lesson 06-02

Laboratory Topics: Lessons 06-01 through Lesson 06-02