

## Key Concepts: Module: Aging of the Respiratory System

Welcome to the Module, Aging of the Respiratory System! This module will help us to learn about the respiratory system and age-related changes and disorders of the respiratory system (Saxon, et al, 2025).

**Key Concept 1: The structure of the respiratory system** include (Saxon, et al, 2025):

- **Air passageways:**
  - Nose and nasal cavities
  - Mouth
  - Pharynx
  - Larynx
  - Trachea
  - Bronchi and bronchioles
- **Lungs:**
  - Alveoli or air sacs where oxygen and carbon dioxide are exchanged
  - Pleura: a double layered membrane which lines the chest and surrounds the lungs.
  - Pleural fluid: liquid which is located between the layers of the pleura

**Key Concept 2: Functions of the respiratory** include (Saxon, et al, 2025):

- Breathing which includes inhalation and expiration or exhalation

**Key Concept 3: Two types of respiration** include (Saxon, et al, 2025):

- **External respiration** which there is exchange of oxygen from air breathed in from the environment for carbon dioxide
- **Internal respiration** in which there is an exchange *in the body cells* of oxygen from the blood for carbon dioxide from the tissues.

**Key Concept 4: Age-related changes in the respiratory system** include the following:

- Decrease in size and elasticity of lungs
- Calcification of cartilage in the larynx and trachea
- Decrease in number and action of cilia which line the airways and move mucus and debris.
- Less mucus production

- Less efficient gag reflex and cough reflex
- Less surface area on alveoli for oxygen and carbon dioxide exchange
- Calcification of thoracic bones
- Weakening of respiratory muscle

**Key Concept 5: Age-related disorders of the respiratory system** include: (Saxon, et al, 2025):

- Chronic obstructive pulmonary disease (COPD): chronic lung condition which makes air flow into and out of the lungs more difficult
  - Chronic bronchitis: inflammation and irritation of the bronchi, includes coughing and is often caused by smoking.
  - Emphysema: damage to air sacs/alveoli often caused by smoking which impairs the ability of the alveoli to exchange oxygen and carbon dioxide, includes shortness of breath.
- Pneumonia: infection in the alveoli/air sacs which leads to inflammation and fluid in the alveoli/air sacs.
- Lung cancer: uncontrolled, malignant growth of cells or tumor in the lungs.

**Key Concept 6: Prevention of Respiratory Disease** (Saxon, et al, 2025):

- Adequate hydration
- Healthy diet
- Smoking cessation
- Annual physical exam
- Annual pneumonia and influenza vaccinations
- Regular exercise

## **Reference**

Saxon, et al (2025). *Physical change and aging*. New York, NY: Springer Publishing.