

HUMAN ANATOMY & PHYSIOLOGY-II- BP201T**UNIT: 3****CLASS: 2****TOPIC: MECHANISM OF RESPIRATION**

- The process by which the respiration organs allow the air to move in and out of the lungs – Breathing

- Oxygen rich air is taken in from the atmosphere and in exchange carbon dioxide rich air is given out to the atmosphere

- The entire process of breathing is made up of two processes

INHALATION/ INSPIRATION: air flowing into lungs

EXHALATION/ EXPIRATION: air leaving lungs

- A single breath comprises of one inhalation and one exhalation

- Breathing rate: number of times an individual breathes in a minute

- Breathing rate increases while walking fast, running or after heavy exercise / decreases when in a relaxed state

- Average breathing rate of an adult is 15-18 times per minute

INHALATION: It is also known as inspiration, the various steps involved in inspiration are as follows:

Contraction of diaphragm – becomes depressed down and becomes flat



Increase in the size and height of thoracic cavity



Contraction of external intercostal muscle



Lift the rib cage and push the sternum forward



Increases the anterior and posterior dimensions of the thoracic cavity



Increase in the size of the lungs



Increase in the intrapulmonary volume



Decrease in the gas pressure with in the lungs, the pressure become less than the atmospheric pressure



Air moves in to the lungs till the intrapulmonary and the atmospheric pressure attains equilibrium

EXHALATION: also known expiration

- It is passive process

relaxation of diaphragm – moves upward



Decrease in the size and height of thoracic cavity



relaxation of external intercostal muscle



Lift the rib cage and pulls the sternum backward decreases the anterior and posterior dimensions of the thoracic cavity



decrease in the size of the lungs



decrease in the intrapulmonary volume



increase in the gas pressure with in the lungs, the pressure become greater than the atmospheric pressure



Air moves out from the lungs till the intrapulmonary and the atmospheric pressure attains equilibrium

Inspiration vs. expiration

Inspiration vs. expiration



Inspiration: • Diaphragm contracts & flattens • External intercostals lifts rib cage • Lungs stretched to larger size • Air pressure inside lungs decrease • Air sucked into lungs

Expiration: • Inspiratory muscles relax • Rib cage descends, lungs recoil • Gases forced out