

Respiratory Block



Physiology Team 430

1st Lecture

Simple or Student
Spirometry

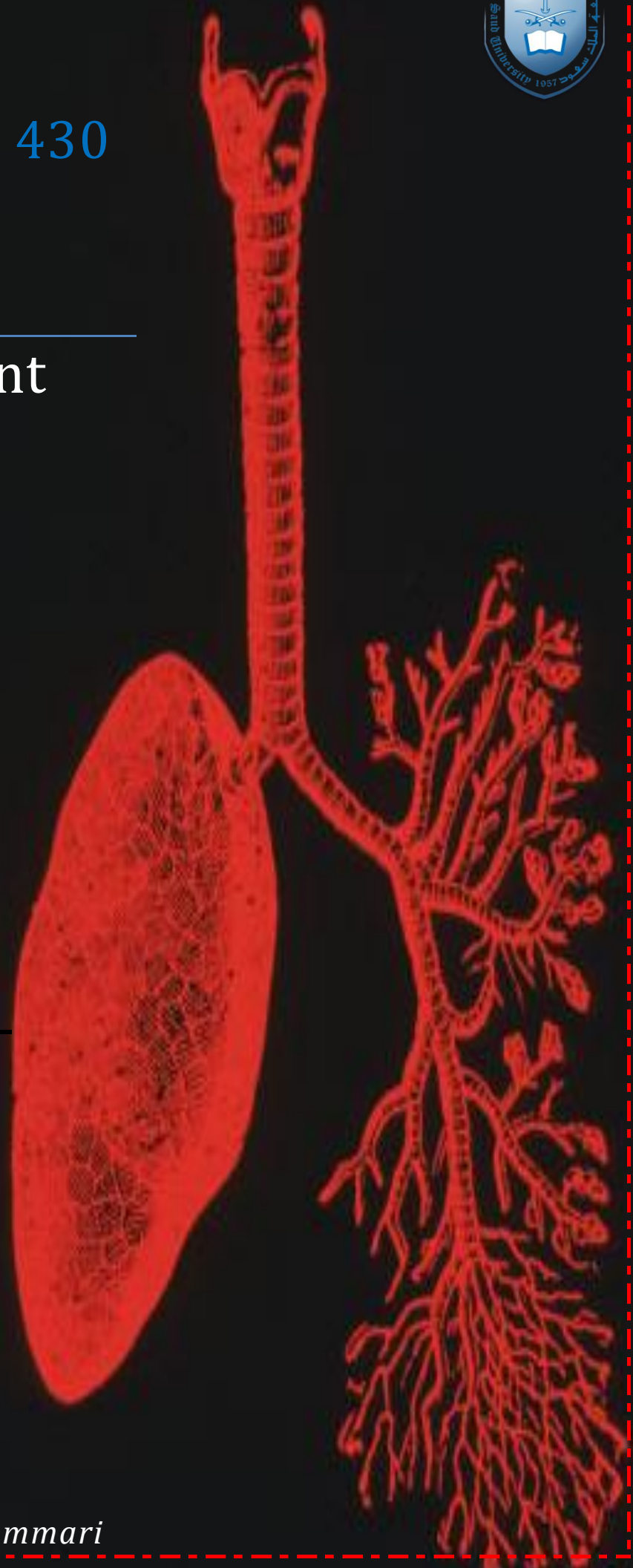
Practical

This Lecture is Done By :

Hanoof AL-Khalaf

Suliman AL-Shammari

Organized By : Suliman AL-Shammari



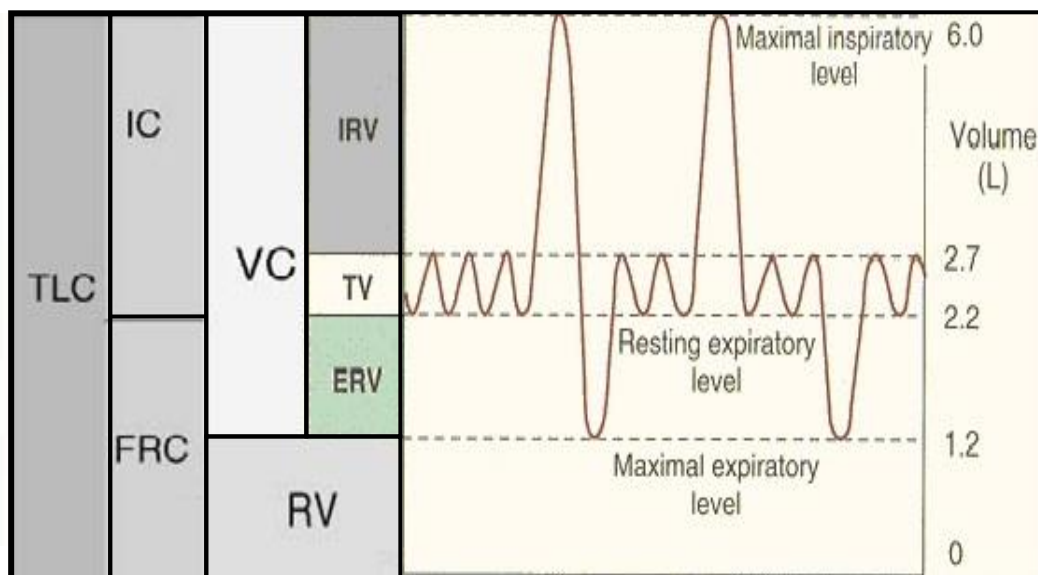
Spirometry: means the measuring of breath.

.....

■ **Lung Volumes :** There are **four** lung volumes:

- 1- **Tidal volume (TV) :** = 500 ml (male and female)
Volume of air inspired or expired with each normal breath
- 2- **Inspiratory reserve volume (IRV):** = 3.3 L male, 1.9 L (female)
The volume of air inspired by maximum inspiration after normal inspiration
- 3- **Expiratory reserve volume (ERV):** = 1 L (male), 700 ml (female)
The volume of air expired by maximum expiration after normal expiration
- 4- **Residual volume (RV):** = 1.2 L (average)
The volume of air remaining in the lungs after maximum expiration

.....



■ **Lung capacities** : There are **four** lung capacities:

1- **Inspiratory Capacity (IC)**: $(TV + IRV) = 3.8 \text{ L (male), } 2.4 \text{ L (female)}$

The maximum amount of air that can be inspired after a normal tidal expiration

2- **Functional Residual Capacity**: $(ERV + RV) = 2.3 \text{ L (average)}$

The amount of air remaining in the lungs after a normal tidal expiration

3- **Vital Capacity (VC)**: $(IRV + TV + ERV) = 4.8 \text{ L (male), } 3.1 \text{ L (female)}$
(It used in clinical diagnosis.)

The maximum amount of air that can be expired after a maximum inspiration

4- **Total Lung Capacity (TLC)**: $(TV + IRV + ERV + RV) = 5.8 \text{ L}$

The total amount of air in the lungs after a maximum inspiration

■ **Physiological factors that influence lung volumes and capacities :**

1- **Age** : Increase (RV, FRC)
Decrease (VC)

2- **Sex**: Females have 20 – 25% less values in all pulmonary volume and capacities than males

3- **Weight (\uparrow weight)** \rightarrow \downarrow lung volume

4- **Height (\uparrow height)** \rightarrow \uparrow lung volume (especially vital capacity)

5- **Athletes** \rightarrow \uparrow lung volumes

6- **Posture** (standing will \uparrow lung volume)

■ **Which of the volume and capacities cannot be measured by student spirometry?**

♣ Residual Volume

♣ Functional Residual Capacity

♣ Total lung Capacity