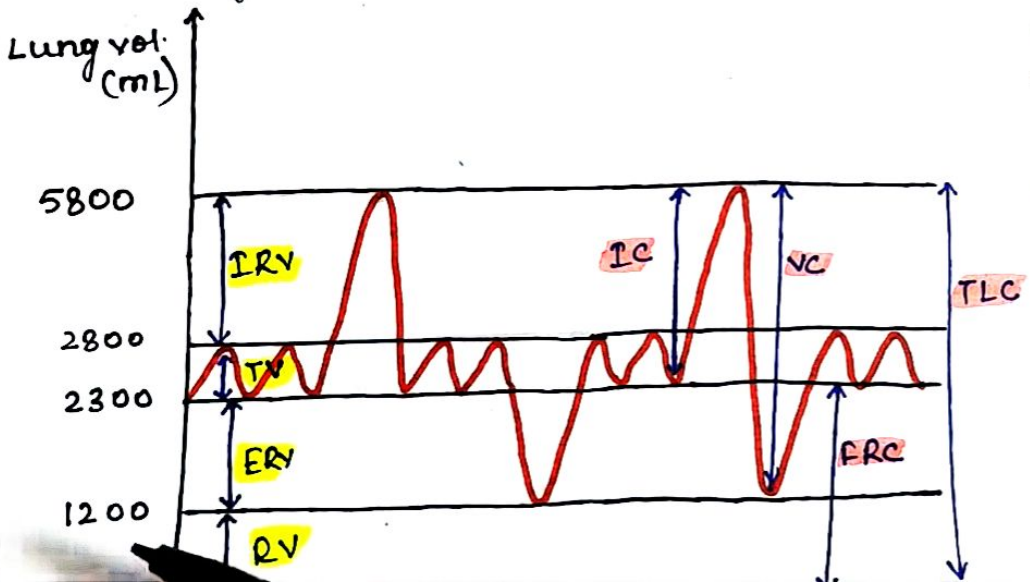
LUNG VOLUMES AND CAPACITIES

- **"STATIC" Lung volumes & capacities** → Time independent (mL or L)
- **"DYNAMIC" Lung volumes & capacities** → Time dependent. (mL/min or L/min)

STATIC Lung volumes & Capacities :-



Volumes

- RV ~ 1200 mL
- ERV ~ 1100 mL
- TV ~ 500 mL
- IRV ~ 3000 mL

Capacities

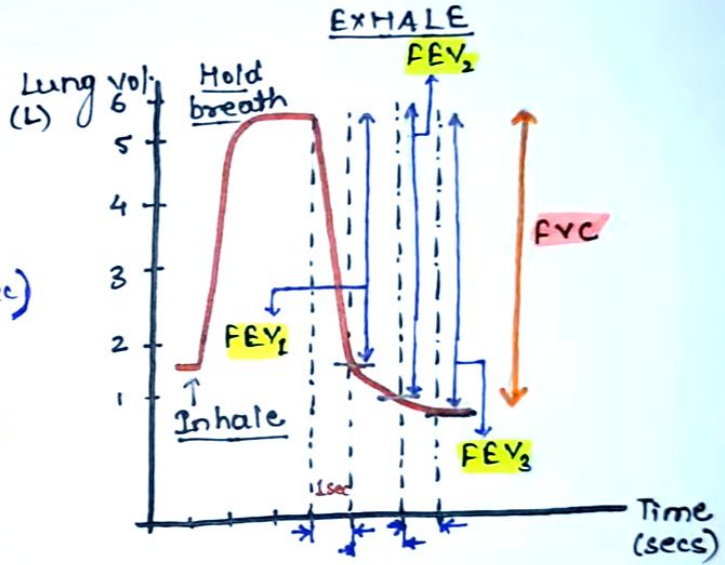
- IC ~ 3500 mL
- VC ~ 4600 mL
- FRC ~ 2300 mL
- TLC ~ 5800 mL ≈ 6L

DYNAMIC Lung Volumes & Capacity :-

1) Forced Vital Capacity (FVC) :-

Maximum vol. of air which can be breathed out "forcefully" & "rapidly" as possible following a maximum inspiration.

FVC ≈ VC



Components :-

i.) **FEV_1** (Forced Expiratory Volume in 1sec)

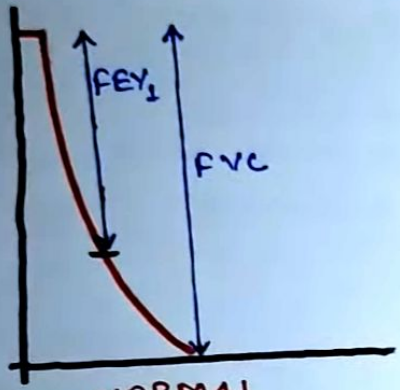
= 80% of FVC

ii.) **FEV_2** (Forced Expiratory Volume in 2sec)

= 95% of FVC

iii.) **FEV_3** (Forced Expiratory Vol. in 3secs)

= 98-100% of FVC

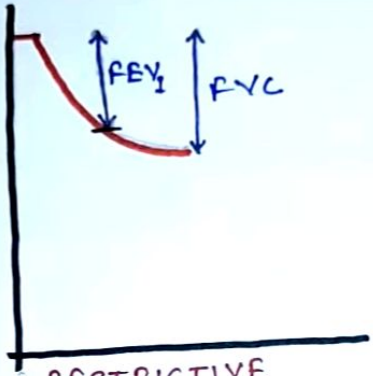


NORMAL

FVC = 5L

FEV_1 = 4L

$\frac{FEV_1}{FVC}$ = 80%



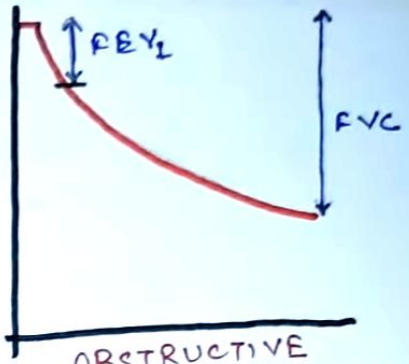
RESTRICTIVE

FVC = 2.5L ↓

FEV_1 = 2L

$\frac{FEV_1}{FVC}$ = 80% N

- Emphysema
- Kyphosis
- Kyphoscoliosis
- Ankylosing spondylitis



OBSTRUCTIVE

FVC = 3L ~N

FEV_1 = 1.2L

$\frac{FEV_1}{FVC}$ = 40% ↓

- Bronchial Asthma

2.) **Peak Expiratory Flow Rate (PEFR)**

- Maximum flow rate that is attained during a forceful expiration.

PEFR = 400 L/min

3.) **Flow rates during expiration**

i.) FEF_{25} (Forced Expiratory Flow 25%.)

- Flow rate at which time point the vital capacity that has been exhaled is 25%.

ii.) FEF_{50} (Forced Expiratory Flow 50%.)

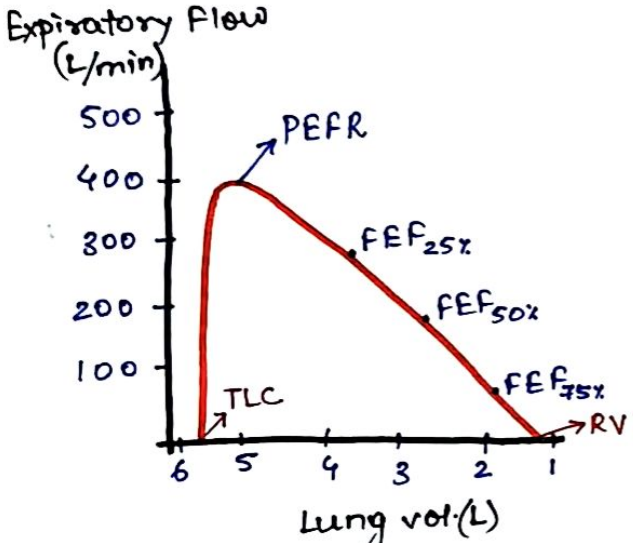
- Flow rate at which time point the vital capacity that has been exhaled is 50%.

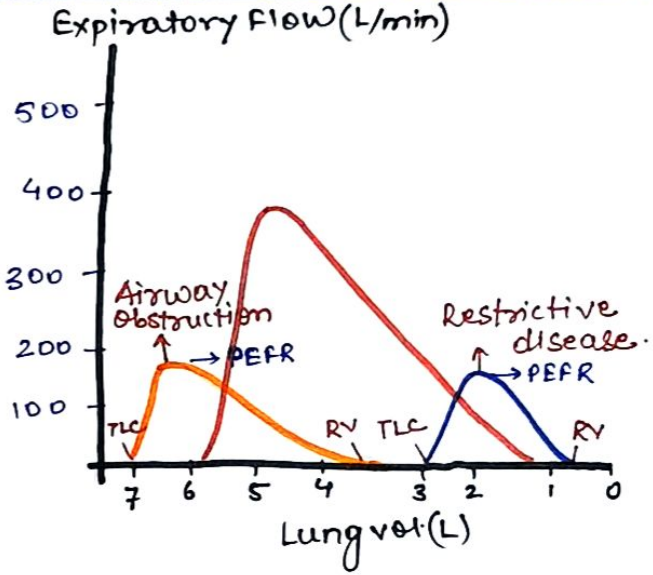
iii.) FEF_{75} (Forced Expiratory Flow 75%.)

- Flow rate at which time point the vital capacity that has been exhaled is 75%.

2.) **Peak Expiratory Flow Rate (PEFR)**

~~Max. flow rate that is attained during a~~ forceful expiration.





CLOSING VOLUME :-

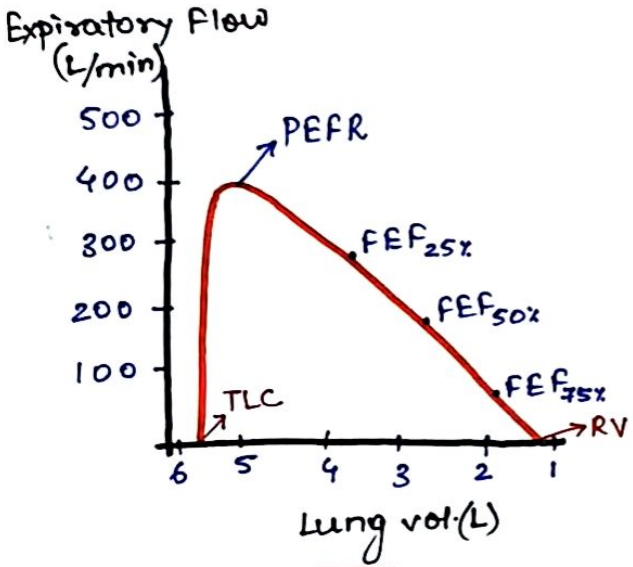
Lung volume that coincides with beginning of airway closure in the lower, dependent parts of lungs during expiration

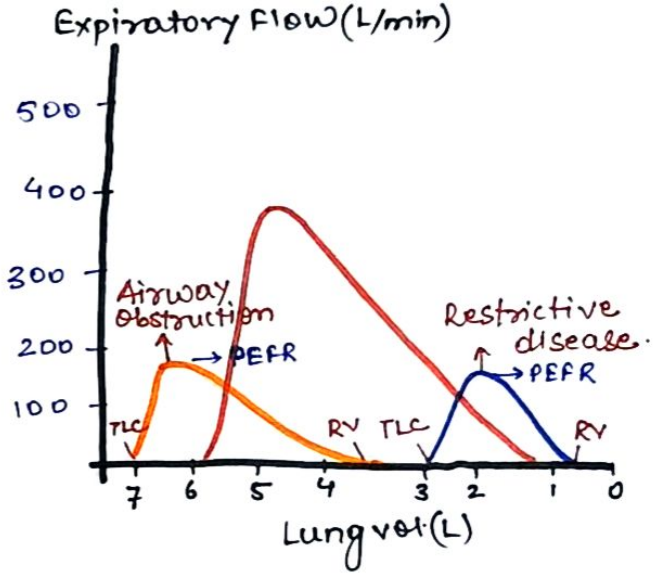
- Fowler Method
- FRC > CV > RV

MINUTE VENTILATION or ~~PULMONARY~~ PULMONARY VENTILATION

Vol. of air expired or inspired by lungs in one minute.

= TV x RR per min





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