Bl 121, Lab 6 Pulmonary Function Testing (PFT)

I. Attendance

II. Pulmonary Function Test/PFT

A. What? Measure of static & dynamic lung function
B. Why? Picture of lung health; absence, presence, progression of disease (eg asthma, emphysema); effectiveness of drugs
C. How? Complete PFT with computer or dinosaur spirometer

III. Crucial Clinical Measures

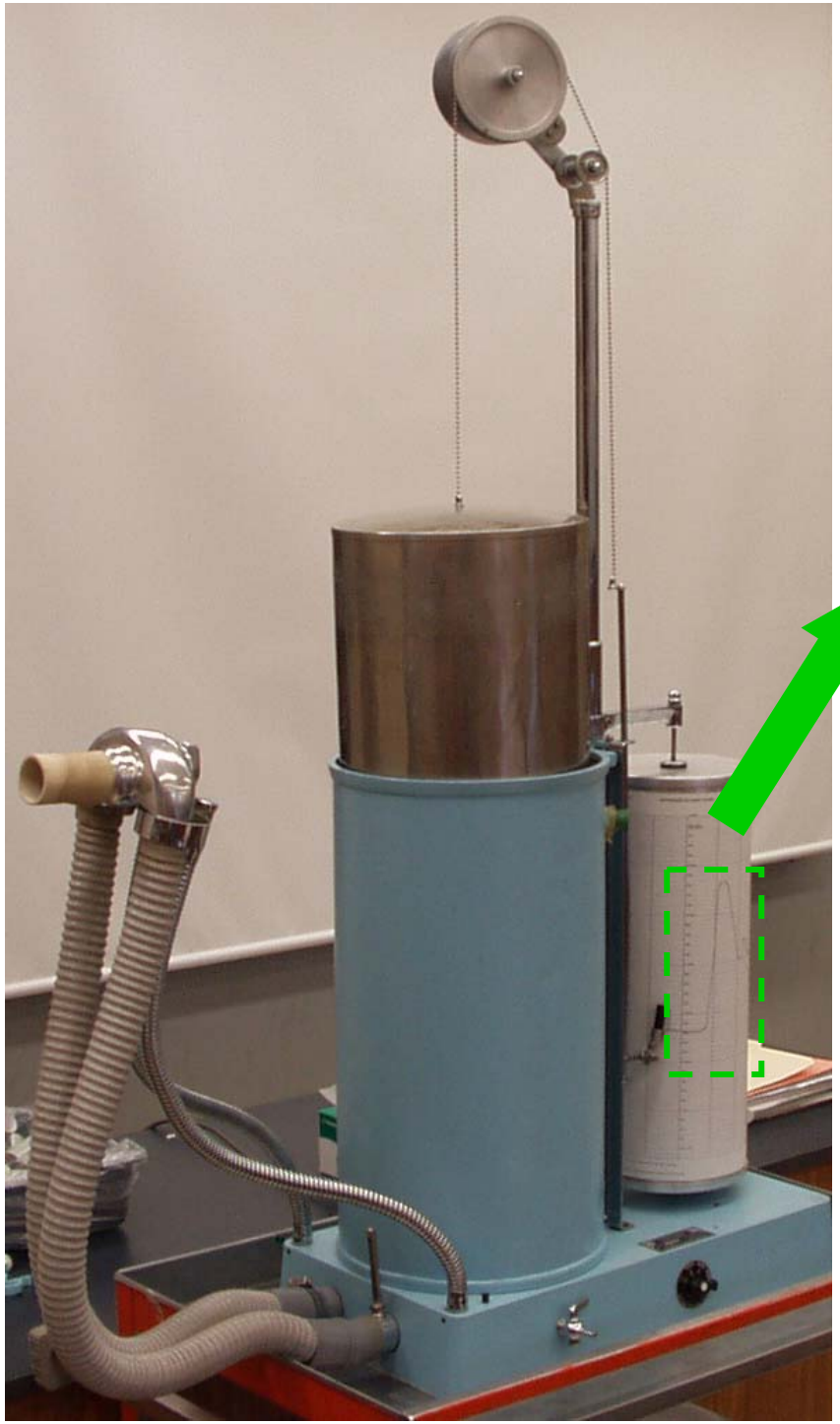
A. VC vital capacity = FVC forced vital capacity amount of air exhaled after maximal inhalation
B. $FEV_{1.0}$ = How much of VC in 1 second? $[FEV_{1.0}/FVC] \times 100$
   If $\geq$ 75-80% (0.75-0.80) –> clinically normal
   If $\leq$ 40-50% –>obstructive disease (eg, asthma)

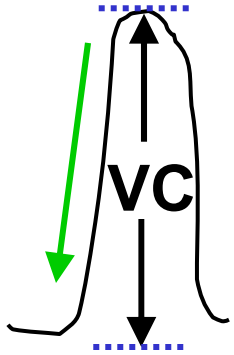
IV. Your Goals

A. Estimate your VC & $FEV_{1.0}$ from Nomogram pp 6-6 or 6-7 LLM
B. Measure these values accurately w/computer PFT LabChart
C. Compare *estimated* with actually *assessed* values to determine whether you're within a healthy range.

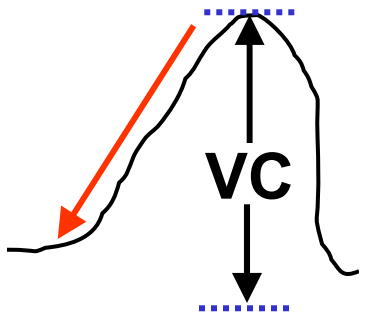
Respirometer → measures ***complete*** ***Pulmonary Function Test*** ***or PFT***!

NB: Should be able to blow out ≥ 75 - 85% of VC/FVC in 1 second! That's $FEV_{1.0}$/FVC ≥ 0.75 – 0.85. If less, may indicate asthma or other lung disease.

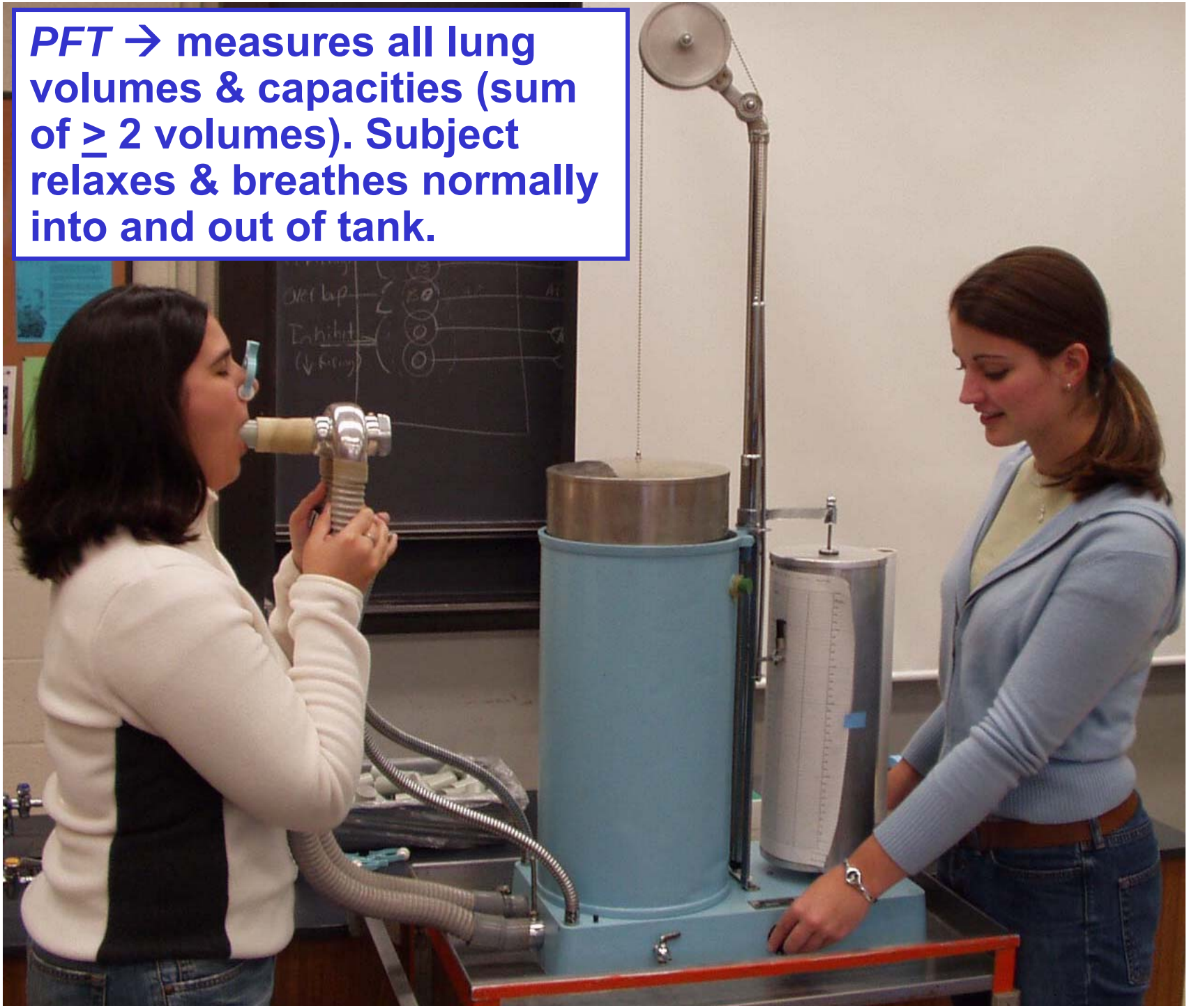




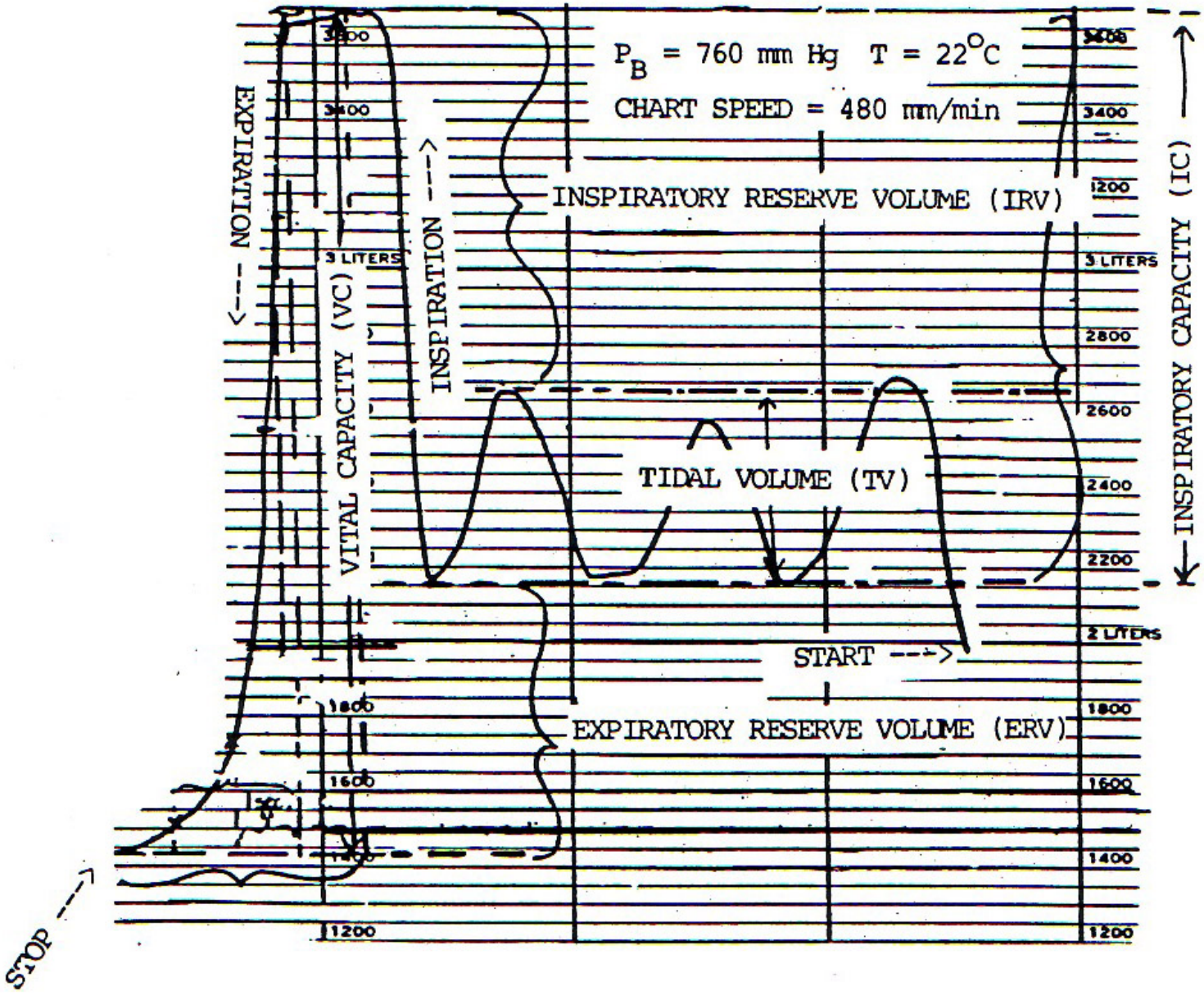
Normal = Steep

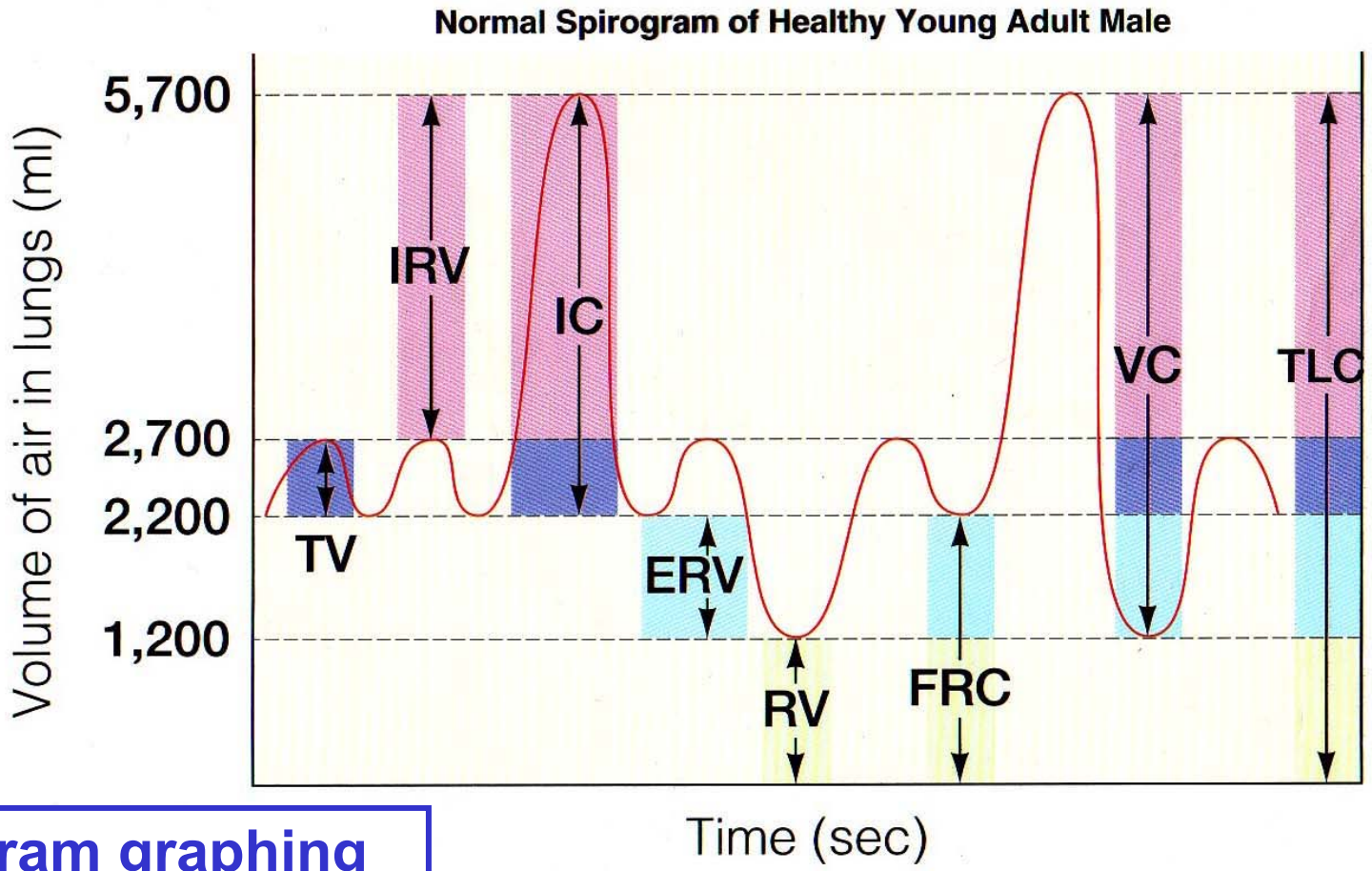


Abnormal = Flatter Downslope (eg, Asthma)


PFT → measures all lung volumes & capacities (sum of ≥ 2 volumes). Subject relaxes & breathes normally into and out of tank.

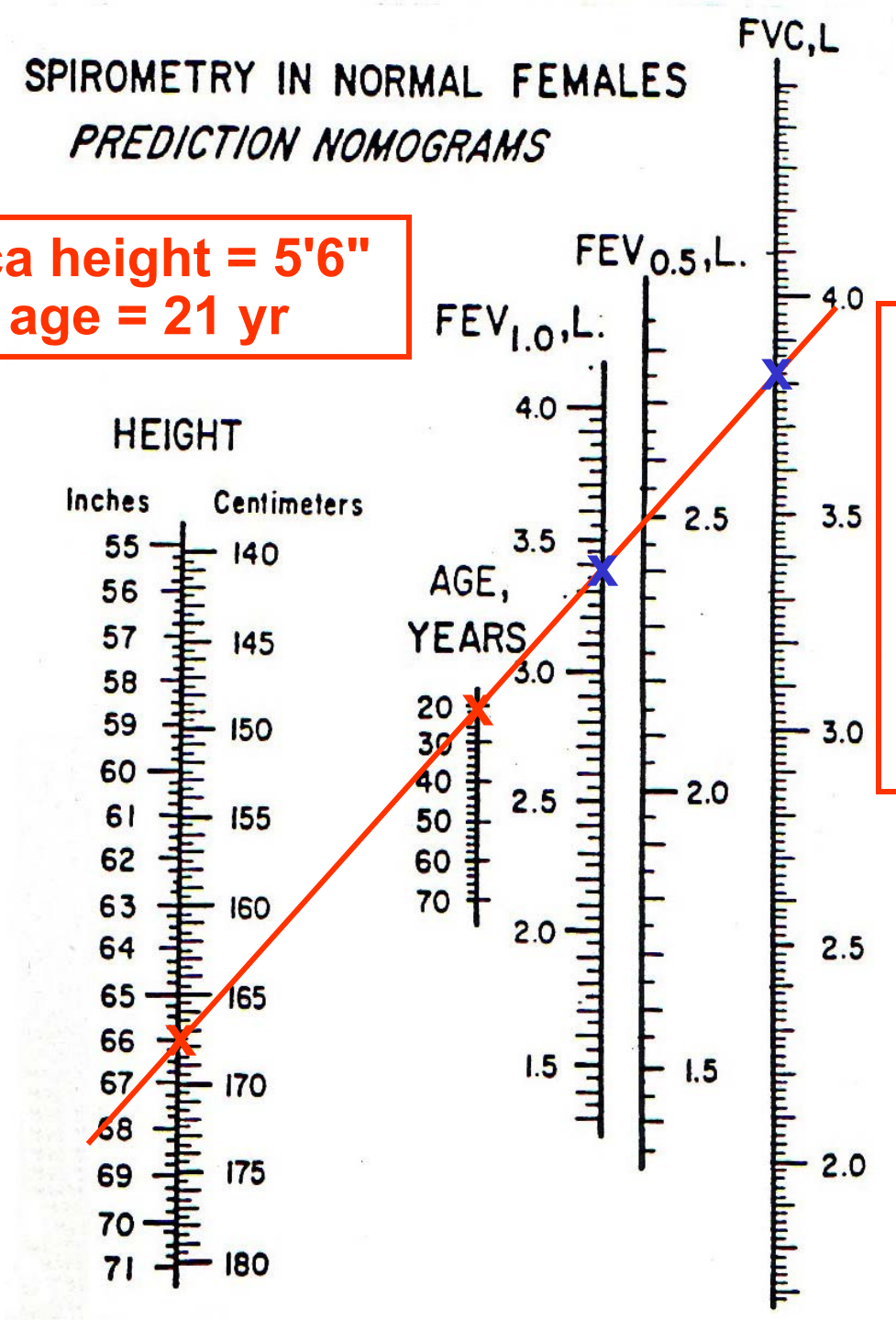
Sample PFT from Collins 13.5 L Respirometer





Spirogram graphing complete *PFT* from computer simulation.

TV = Tidal volume (500 ml)
IRV = Inspiratory reserve volume (3,000 ml)
IC = Inspiratory capacity (3,500 ml)
ERV = Expiratory reserve volume (1,000 ml)
RV = Residual volume (1,200 ml)
FRC = Functional residual capacity (2,200 ml)
VC = Vital capacity (4,500 ml)
TLC = Total lung capacity (5,700 ml)



e.g., Monica height = 5'6" = 66", age = 21 yr

FEV1.0 = 3.35 L

FVC 3.82 L

FEV1.0/FVC = 3.35/3.82 = 0.8769 ≡ 87.7 %

①Estimate, ②Setup, ③Assess, ④Compare