

Official PFT Guides

Official Guides
ATS Rapid Interpretation Guide
2010 GOLD Spirometry Guide
2022 ERS/ATS Interpretive Strategies for PFTs

Step-by-Step to Interpreting PFTs

Assess Flow-Volume Loops

- Are the loops similar between attempts?
 - YES: Skip to next
 - NO: See first page's comment if ATS reproducibility criteria was met
- Roughly speaking, do the loops appear obstructive or restrictive?

Assess Spirometry

Spirometric Severity

ATS Criteria

[Source](#)

Grade	FEV1 z score	Severity
NA	-1.65 to -2.5	Mild
NA	-2.51 to -4.0	Moderate
NA	<-4.1	Severe

GOLD Criteria

Grade	FEV1 Percent Predicted	Severity
1	≥80%	Mild
2	50% – 79%	Moderate
3	30% – 49%	Severe
4	<30%	Very Severe

Bronchodilator Response

ERS/ATS Definition

- Required:

1. BDR >10%

1. Calculation

$$1. \$ BDR = \frac{FEV1_{\text{postBD}} - FEV1_{\text{preBD}}}{FEV1_{\text{predicted}}}$$

Important NOTE:

1. Calculation is not

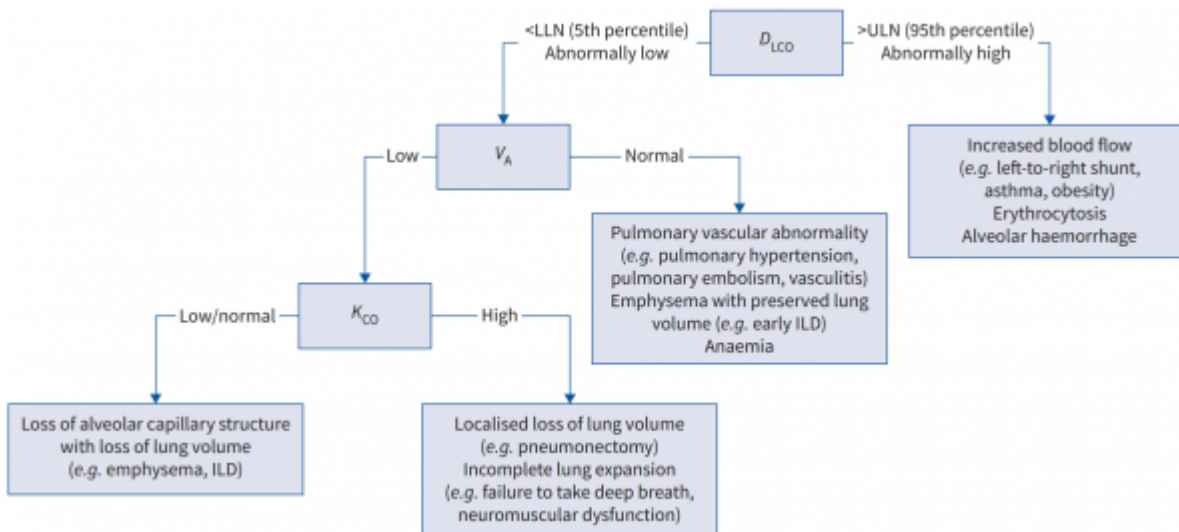
$$1. \$ BDR = \frac{FEV1_{\text{postBD}} - FEV1_{\text{preBD}}}{FEV1_{\text{preBD}}}$$

2. Does NOT require

$$1. \$ \Delta FEV1_{\text{volume}} > 200 \text{ mL}$$

DLCO Severity

ERS / ATS Definition



Source

Grade	FEV1 z score	Severity
NA	-1.65 to -2.5	Mild
NA	-2.51 to -4.0	Moderate
NA	<-4.1	

Gold Definition

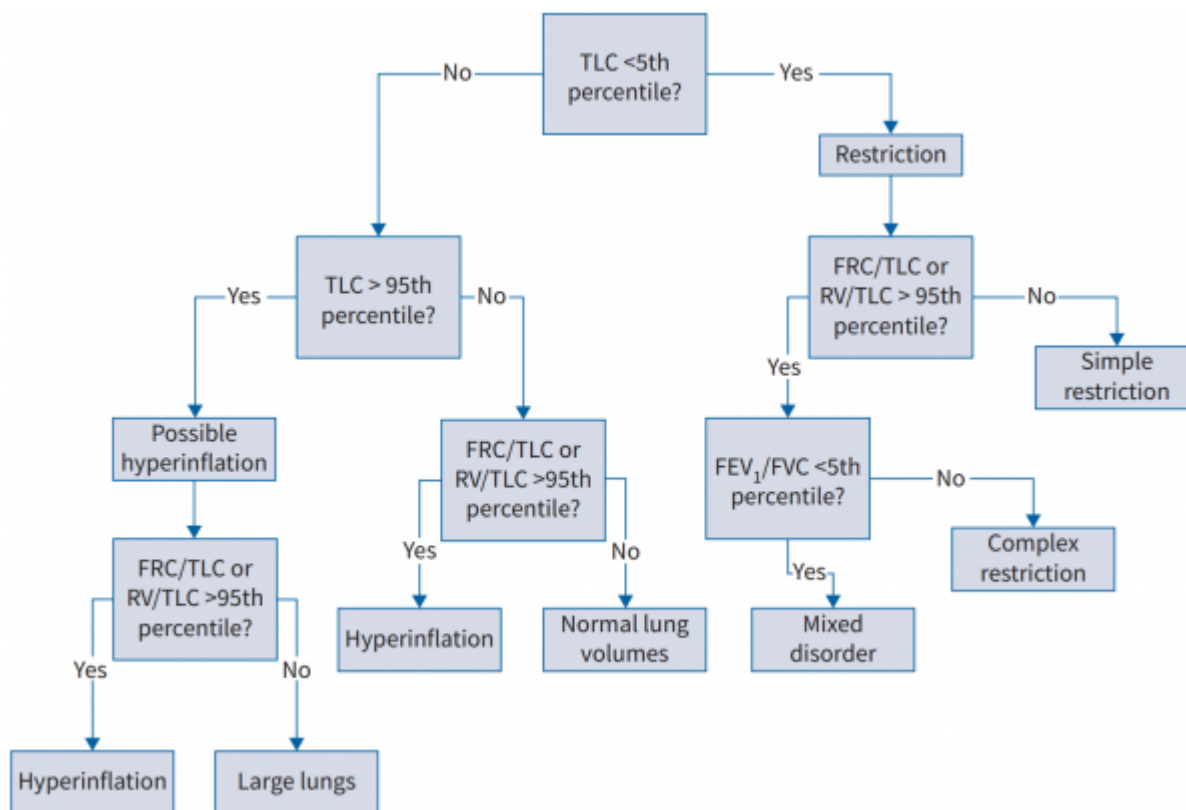
DLCO Percent Predicted	Severity
>140%	Abnormally High
76%-140%	Normal
61-75%	Mild
41-60%	Moderate
<40%	Severe

Assessing Restriction

ATS Criteria

Source, pg 17

1. Check spiro
 1. Is $FVC \cdot z_{\text{score}} \leq -1.65$ (e.g. < 5th percentile)?
 1. Yes: get lung volumes
 2. No: no restriction
2. Check lung volumes
 1. Is $TLC \cdot z_{\text{score}} \leq -1.65$ (e.g. < 5th percentile)?



TLC Percent Predicted	Severity
>70%	Mild
50%-69%	Moderate
<50%	Severe

Other Lung Volumes

VC: ↓ in restriction, ↓ in air trapping
 RV & FRC: ↑ with air trapping
 RV & FRC: ↓ with restriction
 ERV: ↓ in obesity

Lung Volume

FRC is the primary thing calculated in lung volume calculations.

Other

Plethysmography

Boyle's Law

- $P_1V_1 = P_2V_2$
- $\implies V_{\text{tg}} = V_1 \frac{P_1}{P_2 - P_1}$

$$\text{FRC} = \text{ERV} + \text{RV}$$

$$\text{TLC} = \text{VC} + \text{RV}$$

Helium

- Helium is used because He doesn't cross the alveolar-capillary membrane
 - $C_1V_1 = C_2(V_1 + V_2)$
 - $\implies V_2 = V_1 \left(\frac{C_1}{C_2} - 1 \right)$
 - **limitations** since inhalation done only for a few minutes, would get into poorly ventilated lungs, so will underestimate FRC

Nitrogen

Method for calculation is similar to [Helium](#) method.

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