

Pulmonology and Critical Care

PFT Pattern Boundaries

**FEV₁/FVC below LLN +
scooped expiratory limb**

INTERPRET: Obstructive ventilatory defect

GRADE: Severity comes from FEV₁ % predicted—mild ≥ 80 , moderate 50-79, severe 30-49, very severe < 30

NEXT: Repeat after bronchodilator, then add DLCO and lung volumes to identify the cause

TRAP: A fixed 0.70 ratio overcalls obstruction in older adults and misses it in the young

**Low FVC with preserved
FEV₁/FVC**

NEXT: Measure TLC before diagnosing restriction—spirometry alone cannot confirm it

INTERPRET: TLC below LLN (roughly $< 80\%$ predicted) = true restriction

CONTRAST: Normal TLC with low FVC = nonspecific pattern—obesity, submaximal effort, or air trapping

Low FEV₁/FVC + low TLC

INTERPRET: Mixed defect—COPD with obesity or heart failure, sarcoidosis, or combined fibrosis-emphysema

TRAP: Gas-dilution TLC underreads in air trapping; confirm with body plethysmography before calling it mixed

**High RV and RV/TLC $\pm$ high
TLC**

INTERPRET: Air trapping; a high TLC adds hyperinflation

CLUES: COPD/emphysema or severe asthma—obstruction is present even when FEV₁ looks preserved

WHY IT MATTERS: Bronchodilators cut hyperinflation and dyspnea even when FEV₁ barely changes

Restriction + low DLCO

INTERPRET: Intrinsic parenchymal restriction—ILD, pneumoconiosis, or drug/radiation lung injury

NEXT: HRCT, then serial FVC and DLCO to grade severity and track progression

FLAG: DLCO fall out of proportion to the restriction, or exertional desaturation—evaluate for pulmonary hypertension

Restriction + normal DLCO

INTERPRET: Extrapulmonary restriction—obesity, chest-wall disease, or neuromuscular weakness

TEST: MIP/MEP plus upright and supine FVC; a supine drop $\geq 20\%$ means diaphragm weakness

CONTRAST: Obesity mainly lowers ERV and FRC with a near-normal TLC

**Smoking exposure +
obstruction + low DLCO**

Dx: Emphysema-predominant COPD

NEXT: Check ambulatory oximetry—a low DLCO predicts exertional desaturation

TRAP: Asthma and chronic bronchitis preserve DLCO; a low DLCO in “asthma” means another diagnosis