

Pulmonology and Critical Care

PFT Pattern Boundaries

FEV1/FVC <70% with scooped-out flow-volume loop

ANSWER: Obstructive physiology

CONTRAST: Restriction has low TLC with preserved or high FEV1/FVC

NEXT: Use bronchodilator response and DLCO to separate asthma, COPD, and emphysema; LLN can refine clinical interpretation

Obstruction improves by >12% and >200 mL FEV1 after bronchodilator

Dx: Asthma

CONTRAST: Persistent post-bronchodilator obstruction in a smoker → COPD

RULE: Reversibility supports asthma, but fixed obstruction can occur in long-standing asthma

Restrictive spirometry and low TLC

ANSWER: True restriction

RULE: TLC confirms restriction; low FVC alone can be pseudo-restriction from air trapping

CONTRAST: Obstruction lowers FEV1/FVC and often has normal or high TLC

Restriction + low DLCO

ANSWER: Intrinsic parenchymal lung disease such as ILD or sarcoidosis

CONTRAST: Restriction with normal DLCO → obesity, neuromuscular weakness, or chest wall disease

Obstructive PFT + low DLCO

Dx: Low DLCO in obstructive disease favors emphysema-predominant COPD

CONTRAST: Asthma classically has normal or elevated DLCO; chronic bronchitis often has normal DLCO

TRAP: Low DLCO in presumed asthma should prompt another diagnosis such as COPD overlap, ILD, or remodeling

Asthma versus COPD on PFTs — key contrast

ASTHMA: Episodic obstruction; often large bronchodilator response; normal or high DLCO; may fully reverse between attacks

COPD: Persistent post-bronchodilator FEV1/FVC <0.70; incomplete reversibility; emphysema → low DLCO + hyperinflation (↑ TLC/RV)

CONTRAST: ACO (asthma-COPD overlap) can show mixed features — treat for both phenotypes when both are present

TRAP: Never use LABA alone in asthma; COPD can start with long-acting bronchodilators without ICS

Obstruction + high TLC / high RV

Dx: COPD/emphysema, severe asthma with air trapping

ANSWER: Hyperinflation / air trapping

CONTRAST: True restriction lowers TLC; pure restriction does not raise RV/TLC the way obstruction with trapping does

Low FVC + low FEV1 with normal or high FEV1/FVC — next step

NEXT: Measure TLC (and often DLCO) before calling restriction

RULE: Low FVC alone is not restriction — can be air trapping (pseudo-restriction) or poor effort

CONTRAST: If TLC is low → restriction; if TLC normal/high with low FEV1/FVC → obstruction