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**Title:** Determining why patients with idiopathic pulmonary fibrosis (IPF) have difficulty performing gas transfer

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**Body:** Forced Vital Capacity (FVC) and Transfer Factor of Carbon monoxide (TLCO) are important indicators of disease progression and severity and may be predictive of mortality in IPF. However not all patients are able to perform these measurements. We wanted to identify factors that may affect the ability to perform these tests. A cohort retrospective data analysis was undertaken using the data from 189 subjects from a single centre IPF database. The most recent Pulmonary Function Test (PFT) data was used for the analysis. 170 had performed gas transfer on their most recent PFTs. 19 patients had never performed full PFTs, therefore were excluded from further analysis as were 8 subjects with poor comprehension and low lung volumes. 17 patients with co-existing emphysema characterised by FEV1/FVC ratio <70% were also excluded. 129 subjects provided complete PFT data sets which were used for subsequent analysis.

## Table of Results

	Criteria Met (n=99) Mean (SE)	Criteria Not Met (n=30) Mean (SE)	p value
M:F	71:28	22:8	
AGE, years	72.4 (0.79)	77.2 (1.40)	0.004
TLCO, Litres	3.21 (0.14)	N/A	
TLCO, % predicted	39.62 (1.49)	N/A	
FVC, Litres	2.39 (0.08)	2.21 (0.15)	0.317
FVC, % predicted	71.17 (1.94)	72.67 (4.40)	0.727
IC, Litres	1.66 (0.66)	1.37 (0.07)	0.032
TLC, Litres	3.88 (0.12)	3.72 (0.20)	0.501
RV, Litres	1.46 (0.05)	1.45 (0.08)	0.957

SE- Standard Error, FVC- Forced Vital Capacity, IC- Inspiratory Capacity, TLCO - Transfer Factor of Carbon

Monoxie, RV- Residual Volume.

These findings show that those who were unable to perform gas transfer were older and had a lower IC. However the remaining lung function was comparable. The underlying cause for the reduced IC is now being investigated further.