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**Title:** Comparison of pre and post-bronchodilator single-breath and re-breathe DLCO values amongst healthy, asthmatic and COPD subjects

Nitin 33502 Vanjare vanjarenitin@crfindia.com <sup>1</sup>, Rahul 33503 Kodgule drrahul@crfindia.com MD <sup>1</sup>, Shweta 33504 Rasam shweta@crfindia.com <sup>1</sup>, Satish 33505 Bhosale satish@crfindia.com <sup>1</sup>, Yogesh 33506 Gupta dryogi.gupta@gmail.com MD <sup>2</sup> and Sundeep 33509 Salvi ssalvi@crfindia.com MD <sup>1</sup>. <sup>1</sup> Academics, Chest Research Foundation, Pune, Maharashtra, India, 411014 and <sup>2</sup> Physiology, BJ Medical, Pune, India .

**Body:** Background: DLCO differentiates asthma & chronic bronchitis from COPD. There is lack of clarity about DLCO measured by single breath (SB) or by rebreathe (RB) technique is better & the effects of bronchodilation on DLCO values are not known. Aim: To compare SB & RB techniques for measuring DLCO & to study the effect of bronchodilation in healthy, asthmatics & COPD subjects. Methods: In this ongoing study 3 healthy, 6 asthma & 4 COPD subjects underwent DLCO measurements by & RB methods, body plethysmography (BP) & spirometry before & after bronchodilation with 400 mcg of inhaled salbutamol. Results: The mean DLCO in healthy, asthmatics & COPD subjects were 8.88, 5.54 & 3.4 units by SB method & 2.42, 1.44 & 1.44 units by RB method respectively.

Table 1

Parameters	Healthy Mean(SD)	Asthma Mean(SD)	COPD Mean(SD)
DLCO- SB	8.88 (2.4)	5.54(0.92)	4.23(1.57)
DLCO-RB	2.42(0.32)	1.44(0.23)	1.44(0.56)
DLCO-SB Post BD	8.70(2.18)	5.61(0.87)	4.51(1.25)
DLCO-RB Post BD	2.50(.17)	1.46(.21)	1.49(.56)

Similarly, total lung capacity (TLC) measured were 4.79, 3.27 & 4.41 L by SB & 4.68, 3.43 & 3.8 L by RB & 5.66, 4.48 & 7.15 L by BP respectively. Bronchodilation increased DLCO by -3.57%, 2.98% & 5.12% by SB & by 0.88%, 1.97 & -4.51% in healthy, asthmatics & COPD subjects respectively. Similarly, the TLC reduced by -6.93%, 0% and 0% by SB method & by 2.35%, 4.05% & 0% by RB method & by 1%, 9.37% and 6.15% respectively after bronchodilation. All changes due to bronchodilation were not significant (paired t-test, p > 0.05). Conclusion: SB measured higher DLCO values than RB. Bronchodilation did not increase DLCO. Body Plethysmography measure higher TLC than He-dilution techniques.

