**Additional file 1**

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| --- | --- | --- | --- | --- | --- |
|  | All | Asthma | COPD | Neuro-muscular Disease | Healthy/ Non-respiratory Condition |
| Number | 85 | 27 | 27 | 8 | 23 |
| Age(years) | 51.8±17.8(18-80) | 52.6±15.9(18-76) | 66.0±8.4(44-80) | 41.9±19.6(18-78) | 37.8 ± 14.6(20-65) |
| Gender(M:F%) | 42:58 | 30:70 | 37:63 | 75:25 | 52:48 |
| BMI(kg/m2) | 27.6±6.8(16.7-49.2) | 27.0±6.0(16.7-37.8) | 26.2±5.3(18.0-38.0) | 29.0±8.6(21.3-48.2) | 29.5±8.6(19.5-49.2) |
| FEV1(L) | 2.02±1.04(0.24-5.07) | 1.74±0.70(0.93-3.38) | 1.56±0.75(0.24-3.05) | 1.29±1.21(0.33-3.06) | 3.13±0.90(1.58-5.07) |
| FVC(L) | 2.75±1.12(0.38-5.66) | 2.45±0.78(1.23-3.99) | 2.41±0.79(0.63-3.60) | 1.69±1.69(0.38-4.18) | 3.83±1.02(1.89-5.66) |
| FEV1/FVC | 0.72±0.16(0.35-0.99) | 0.71±0.16(0.44-0.94) | 0.62±0.16(0.35-0.85) | 0.80±0.09(0.71-0.90) | 0.83±0.08(0.70-0.99) |

*Table S1: Demographics and baseline lung function tests for patients by disease category.*

*Table S2: Number of patients in each disease group with a DiskusTM PIFR greater than or equal to 60 L/min and less than 60 L/min. Results from Chi-squared test are shown.The null hypothesis is that the proportions of patients with a DiskusTM PIF value less than or equal to sixty is independent of their diagnosis.As the test statistic is greater than the critical value, we can reject the null hypothesis*.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PIFR (L/min) | Healthy/ Non-respiratory condition | Asthma | COPD | Neuromuscular Disease | Totals |
| ≥ 60 | 14 | 15 | 8 | 1 | 38 |
| <60 | 9 | 12 | 19 | 7 | 47 |
| Totals | 23 | 27 | 27 | 8 | 85 |

*Chi-squared Statistic= 8.04; Critical Value= 7.815; df= 3*

*Figure S1: Receiver Operating Characteristic Curve for spirometric PIFR versus binary DiskusTM PIFR based on threshold of 60 L/min. The solid line represents an AUC of 0.5.*



*Figure S2: Receiver Operating Characteristic Curve for spirometric PIFR versus binary DiskusTM PIFR based on threshold of 30 L/min. The solid line represents an AUC of 0.5.*

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