Inter-device agreement in respiratory resistance values by oscillometry in asthmatic children

Supplemental material

Table e1
Table e2

Table e1. Within-test reproducibility of impedance obtained on the Tremoflo and IOS devices.

Parameters ∫	N	Coefficient of variation (%)					
		Tremoflo® at 5-35 Hz			IOS at 5-35HZ		
		Mean ± SD †	Median (25%, 75%)	Min, Max ‡	Mean ± SD †	Median (25%, 75%)	Min, Max ‡
R_5	38	8.12 ± 3.42	8.81 (5.33, 10.80)	0.79, 14.71	8.41 ± 4.55	9.29 (4.17, 11.97)	0.71, 15.11
Z_5	38	8.11 ± 3.67	8.50 (5.31, 10.48)	2.50, 19.27	7.62 ± 4.03	9.15 (3.90, 11.04)	0.83, 14.14
Z_{10}	38	8.00 ± 3.74	7.56 (4.74, 10.21)	0.95, 15.22	6.34 ± 4.05	5.03 (3.14, 9.30)	1.25, 17.53
Z_{15}	38	8.29 ± 4.10	7.16 (4.43, 11.58)	2.83, 17.18	6.88 ± 3.70	6.15 (3.96, 10.00)	0.38, 15.09
Z_{20}	38	9.02 ± 5.04	8.27 (5.13, 12.21)	2.09, 23.05	7.29 ± 4.45	6.51 (3.82, 10.57)	0.59, 18.30
Z_{25}	38	8.76 ± 4.48	7.69 (4.88, 12.48)	2.43, 19.57	7.50 ± 3.76	7.84 (4.55, 10.53)	1.33, 15.08

† SD, Standard deviation

Table e2. Within-patient agreement between parameters measured at 5 Hz and 7 Hz on the Tremoflo

Parameters	N	5 Hz		7 Hz		5 Hz vs. 7 Hz		
		Mean (SD) †	Median (IQR) †	Mean (SD) †	Median (IQR) †	ICC ‡	Absolute mean difference ∫ (kPa/L/s)	Linear regression Coefficient
		(kPa/L/s)	(kPa/L/s)	(kPa/L/s)	(kPa/L/s)	(95% CI)	(95% CI)	(95% CI)
Resistance §								
R	44	0.83 (0.36)	0.72 (0.36)	0.80 (0.33)	0.71 (0.41)	0.97 (0.94, 0.98)	0.02 (-0.01, 0.06)	0.12 (0.03, 0.22)
R_{insp}	42	0.80 (0.33)	0.71 (0.35)	0.76 (0.30)	0.68 (0.40)	0.97 (0.95, 0.99)	0.04 (0.01, 0.08)	0.13 (0.03, 0.23)
R_{exp}	42	0.87 (0.43)	0.74 (44)	0.85 (0.38)	0.76 (0.44)	0.98 (0.95, 0.99)	0.02 (-0.02, 0.06)	0.15 (0.06, 0.24)
Δ R	42	-0.06 (0.21)	-0.03 (0.10)	-0.09 (0.16)	-0.04 (0.07)	0.94 (0.89, 0.97)	0.02 (-0.01, 0.05)	0.29 (0.17, 0.41)
Reactance §								
X	44	-0.36 (0.20)	-0.31 (0.17)	-0.30 (0.25)	-0.22 (0.21)	0.94 (0.89, 0.96)	-0.07 (-0.10, -0.03)	-0.21 (-0.34, -0.07)
X_{insp}	42	-0.38 (0.18)	-0.34 (0.17)	-0.30 (0.19)	-0.25 (0.18)	0.94 (0.90, 0.97)	-0.09 (-0.12, -0.06)	-0.004 (-0.16, 0.15)
X_{exp}	42	-0.36 (0, 24)	-0.30 (0.21)	-0.31 (0.32)	-0.21 (0.18)	0.95 (0.90, 0.97)	-0.05 (-0.09, -0.01)	-0.29 (-0.41, -0.17)
Δ X	42	-0.03 (0.10)	-0.05 (-0.08)	0.01 (0.20)	-0.03 (0.05)	0.79 (0.62, 0.89)	-0.04 (-0.08, 0.00)	-0.71 (-0.89, -0.53)

† SD, Standard deviation; IQR, Interquartile range

‡ ICC, Intraclass correlation coefficient

∫ Represents the mean within-patient absolute difference between parameters measured at 5 minus those obtained at 7 HZ.

¶ Linear regression coefficient representing the proportional bias of 7Hz vs. 5Hz parameters

§ R represents resistance; Rinsp, mean inspiratory resistance; Rexp, mean expiratory resistance; Δ R, absolute difference betwen mean inspiratory minus mean expiratory resistance; X, reactance; Xinsp, mean inspiratory reactance; Xexp, mean expiratory reactance; Δ X, absolute difference between mean inspiratory and mean expiratory reactance. Of note, within-breath parameters were not available in two patients.