

ONLINE SUPPLEMENT

Table S1. Comparison of tidal breathing parameters assessed by FloRight® and VSP

	FloRight®	VSP	p-value
N	33	19	
Male ratio	11/33	7/19	0.97
BW z-score	-0.30 (0.96)	0.04 (0.99)	0.23
GA at birth (weeks)	25.9 (1.2)	26.2 (1.5)	0.50
Ratio with BPD	21/33	11/19	0.91
Vt (ml)/kg	5.8 (2.1)	6.3 (1.5)	0.39
RR (min^{-1})	66.5 (15.6)	70.0 (16.1)	0.45
V'E (ml)/kg	375.9 (134.5)	425.5 (114.7)	0.18
PTEF (ml/s)/kg	27.2 (11.3)	28.1 (9.6)	0.76
TEF ₅₀ /PTEF (%)	78.0 (8.2)	78.6 (7.9)	0.80
TEF ₇₅ /PTEF (%)	54.3 (17.5)	51.0 (12.2)	0.46
Tptef/Te (%)	32.1 (15.4)	26.5 (7.9)	0.14
FVg	0.448 (0.043)	0.433 (0.030)	0.19

Data are presented as means with standard deviations. p-values are by independent samples t-tests or comparison of proportions, whatever appropriate.

Prediction of later respiratory morbidity – regression analyses

To assess which perinatal variables that may be associated with lung function at term-equivalent age, we performed univariable linear regression analyses with the following lung function parameters as outcomes: Vt/kg, RR, V'E/kg, PTEF/kg, TEF₅₀/PTEF and Tptef/Te. We first entered the following clinical variables as explanatory variables into the univariable model: GA, gender, BW z-score, SGA, antenatal steroids, chorioamnionitis, latency (i.e. time from fetal membrane rupture to delivery), surfactant, days of mechanical ventilation, days of CPAP/HFNC, days of oxygen, sepsis, PDA-treatment and postnatal steroids.

The following explanatory variables were significantly associated with one or more of the tidal breathing outcome parameters in the univariable linear regression analyses: male gender, BW z-score, antenatal steroids, days of CPAP/HFNC and days of oxygen. Please see Table S2.

We then performed multivariable linear regression analyses using a backward stepwise exclusion strategy for each of the outcome parameters and included all explanatory variables that were significantly associated ($p < 0.10$) in the univariable analyses. The results are shown in Table 3 in the main text of the article, including all variables that were significantly associated with any of the lung function parameters.

Table S2. Association between perinatal variables and lung function parameters at term in extremely preterm born infants (n = 52).

	Coefficient	95% CI	p-value	R²
Vt (ml)/kg				
GA (weeks)	0.22	-0.19, 0.62	0.29	0.023
Male gender	0.23	-0.89, 1.34	0.60	0.003
BW z-score	-0.17	-0.72, 0.38	0.54	0.008
Antenatal steroids	-2.4	-4.3, -0.5	0.014	0.114
Chorioamnionitis	0.52	-0.57, 1.61	0.34	0.02

Latency (days)	0.000	-0.06, 0.06	0.99	0.000
Surfactant	0.05	-1.9, 2.1	0.96	0.000
Days of mechanical ventilation	0.02	-0.05, 0.08	0.64	0.004
Days of CPAP/HFNC	0.02	-0.02, 0.05	0.34	0.018
Days of oxygen	0.002	-0.02, 0.02	0.82	0.001
Sepsis	-0.10	-1.2, 1.0	0.86	0.001
PDA-treatment	0.21	-0.9, 1.3	0.71	0.003
Postnatal steroids	0.28	-0.9, 1.5	0.65	0.004
RR (min⁻¹)				
GA (weeks)	1.6	-1.7, 5.0	0.34	0.019
Male gender	-6.4	-15.5, 2.6	0.16	0.039
BW z-score	3.0	-1.4, 7.5	0.18	0.036
Antenatal steroids	10.2	-6.1, 26.5	0.21	0.031
Chorioamnionitis	-1.1	-10.1, 8.0	0.81	0.001
Latency (days)	-0.10	-0.60, 0.39	0.68	0.004
Surfactant	-12.7	-28.9, 3.4	0.12	0.048
Days of mechanical ventilation	-0.004	-0.57, 0.56	0.99	0.000
Days of CPAP/HFNC	-0.43	-0.70, -0.16	0.002	0.169
Days of oxygen	-0.19	-0.35, -0.028	0.022	0.100
Sepsis	-5.1	-13.9, 3.7	0.25	0.027
PDA-treatment	2.7	-6.9, 12.1	0.57	0.007
Postnatal steroids	-3.0	-12.9, 6.8	0.54	0.008
PTEF/kg (ml/s)				
GA (weeks)	0.92	-1.36, 3.20	0.42	-0.007
Male gender	-0.92	-7.2, 5.4	0.77	0.002
BW z-score	-0.96	-4.04, 2.12	0.54	0.008
Antenatal steroids	-7.5	-18.5, 3.6	0.18	0.036
Chorioamnionitis	0.84	-5.4, 7.1	0.79	0.002
Latency (days)	0.09	-0.25, 0.43	0.60	0.005
Surfactant	-1.3	-12.5, 9.9	0.82	0.001
Days of mechanical ventilation	0.28	-0.09, 0.66	0.13	0.045
Days of CPAP/HFNC	0.01	-0.19, 0.22	0.90	0.000
Days of oxygen	0.03	-0.08, 0.15	0.56	0.007
Sepsis	-1.3	-7.3, 4.8	0.68	0.004
PDA-treatment	2.8	-3.6, 9.1	0.38	0.015
Postnatal steroids	3.7	-2.9, 10.4	0.27	0.024
TEF₅₀/PTEF (%) /kg				
GA (weeks)	-0.11	-1.30, 1.08	0.85	0.001
Male gender	-4.7	-7.8, -1.8	0.002	0.170
BW z-score	-1.54	-3.08, 0.002	0.05	0.056
Antenatal steroids	3.8	-1.9, 9.5	0.19	0.035
Chorioamnionitis	-2.1	-5.4, 1.1	0.19	0.037
Latency (days)	0.04	-0.14, 0.21	0.65	0.004
Surfactant	-1.5	-7.3, 4.3	0.60	0.006

Days of mechanical ventilation	0.08	-0.12, 0.27	0.43	0.013
Days of CPAP/HFNC	-0.03	-0.14, 0.07	0.51	0.009
Days of oxygen	-0.02	-0.08, 0.04	0.55	0.007
Sepsis	-1.5	-4.6, 1.6	0.33	0.019
PDA-treatment	2.3	-0.9, 5.6	0.15	0.041
Postnatal steroids	-0.1	-3.6, 3.4	0.94	0.000
Tptef/Te (%)				
GA (weeks)	-0.66	-3.53, 2.22	0.65	-0.016
Male gender	-7.1	-14.7, 0.5	0.068	0.065
BW z-score	-0.12	-4.01, 3.76	0.95	0.000
Antenatal steroids	-2.8	-16.9, 11.2	0.69	0.003
Chorioamnionitis	1.4	-6.8, 9.5	0.73	0.003
Latency (days)	0.03	-0.4, 0.5	0.90	0.000
Surfactant	-6.0	-20.0, 8.0	0.39	0.015
Days of mechanical ventilation	-0.17	-0.65, 0.30	0.47	0.011
Days of CPAP/HFNC	-0.01	-0.26, 0.25	0.95	0.000
Days of oxygen	-0.09	-0.23, 0.05	0.21	0.032
Sepsis	0.6	.7.0, 8.2	0.88	0.000
PDA-treatment	4.6	-3.3, 12.5	0.24	0.027
Postnatal steroids	-2.7	-11.1, 5.8	0.53	0.008

Table S3. Comparison of tidal breathing parameters in infants small for gestational age (SGA) and infants appropriate for gestational age (AGA)

	SGA	AGA	p-value
N	12	40	
GA at birth (weeks)	26.1 (1.2)	26.0 (1.4)	0.69
Ratio with BPD	12/12	20/40	0.005
Vt (ml)/kg	6.1 (2.5)	5.9 (1.1)	0.78
RR (min^{-1})	65.3 (14.6)	68.5 (16.1)	0.54
V'E (ml/kg)	394.6 (155.5)	393.8 (121.9)	0.99
PTEF (ml/s)/kg	29.5 (14.3)	27.0 (9.4)	0.48
TEF ₅₀ /PTEF (%)	76.3 (6.6)	78.8 (8.4)	0.35
TEF ₇₅ /PTEF (%)	50.7 (12.7)	53.8 (16.6)	0.56
Tptef/Te (%)	30.1 (13.3)	30.0 (13.5)	0.98
FVg	0.442 (0.036)	0.443 (0.040)	0.91
Phase angle (ϕ)	11.8 (16.6)	21.1 (26.0)	0.25

Data are presented as means with standard deviations. p-values are by independent samples t-tests or comparison of proportions.

Table S4. Results of receiver-operator characteristic (ROC) analyses used to predict development of respiratory distress requiring readmission or treatment with asthma medication during the first year of life of extremely preterm-born individuals (n = 35).

Parameters	AUC with 95% CI
Tptef/Te	0.621 (0.442, 0.779)
FVg	0.616 (0.436, 0.774)
TEF ₇₅ /PTEF	0.614 (0.434, 0.773)
BW z-score	0.530 (0.294, 0.767)
PTEF/kg	0.515 (0.341, 0.687)
Gender	0.515 (0.306, 0.725)
Vt/kg	0.473 (0.267, 0.680)
GA at birth	0.455 (0.234, 0.675)

AUC; area under the ROC curve.