

SUPPLEMENTARY TABLES

	Mode of respiratory support	Mean (95% CI) [AU/kg]	p-value	Comparison nHFOV vs nCPAP *
ΔEELI (baseline to 1 st breath after apnea)	nHFOV	-3.4 (-6.5 to -0.3)	0.03	4.7 (-2.8 to 12.1)
	nCPAP	-8.0 (-11.9 to -4.1)	<0.001	F=1.5, p=0.23
ΔEELI (baseline to 2 nd breath after apnea)	nHFOV	-0.4 (-3.4 to 2.5)	0.76	0.7 (-6.1 to 7.6)
	nCPAP	-1.2 (-4.7 to 2.3)	0.50	F=0.0, p=0.84
ΔEELI (baseline to 3 rd breath after apnea)	nHFOV	-0.1 (-3.1 to 2.8)	0.94	2.0 (-2.7 to 6.6)
	nCPAP	-2.1 (-5.8 to 1.6)	0.26	F=0.7, p=0.42
ΔEELI (baseline to 4 th breath after apnea)	nHFOV	0.4 (-2.5 to 3.4)	0.76	1.6 (-3.1 to 6.2)
	nCPAP	-1.1 (-4.8 to 2.6)	0.56	F=0.4, p=0.53
ΔEELI (baseline to 5 th breath after apnea)	nHFOV	1.6 (-1.4 to 4.5)	0.29	1.9 (-2.4 to 6.3)
	nCPAP	-0.4 (-3.7 to 2.9)	0.81	F=0.7, p=0.40
ΔEELI (1 st to 5 th breath after apnea)	nHFOV	4.9 (2.9 to 7.0)	<0.001	-2.7 (-7.8 to 2.3)
	nCPAP	7.6 (4.8 to 10.4)	<0.001	F=1.1, p=0.30

Supplementary Table 1. Changes in end-expiratory lung impedance (ΔEELI) from baseline before the start of the apnea. *The F value is the test statistic of the analysis of variance and corresponds to the variation between subjects divided by the variation within subjects. P-values of the mixed model analysis of variance are shown. *Abbreviations:* ΔEELI = Change in end-expiratory lung volume, nHFOV = non-invasive high-frequency oscillatory ventilation, nCPAP = nasal continuous positive airway pressure, AU/kg = arbitrary units per kilogram bodyweight.

	Mode of respiratory support	Mean (SD) V _T [AU/kg]	Mean (95% CI) ΔV _T from baseline [AU/kg]	p-value	Comparison nHFOV vs nCPAP *
Before apnea	nHFOV	18.4 (12.6)	-	-	-
	nCPAP	17.7 (10.3)	-	-	-
1 st breath after apnea	nHFOV	19.5 (16.5)	1.1 (-2.5 to 4.7)	0.56	-7.0 (-12.7 to -1.4)
	nCPAP	25.1 (18.6)	7.5 (3.1 to 11.2)	0.001	F=5.8, p=0.017
2 nd breath after apnea	nHFOV	15.4 (13.4)	-2.9 (-5.9 to 0.0)	0.05	-1.7 (-6.2 to 2.8)
	nCPAP	16.5 (12.8)	-1.2 (-4.6 to 2.2)	0.49	F=0.8, p=0.47
3 rd breath after apnea	nHFOV	15.9 (14.1)	-2.5 (-5.6 to 0.6)	0.11	-2.6 (-7.2 to 2.1)
	nCPAP	17.7 (13.1)	0.0 (-3.4 to 3.4)	0.98	F=1.1, p=0.29
4 th breath after apnea	nHFOV	15.7 (14.6)	-2.7 (-5.9 to 0.5)	0.10	-2.0 (-6.7 to 2.8)
	nCPAP	17.0 (14.6)	-0.7 (-4.2 to 2.8)	0.69	F=0.6, p=0.43
5 th breath after apnea	nHFOV	15.0 (13.4)	-3.4 (-6.4 to -0.3)	0.03	-2.2 (-6.7 to 2.4)
	nCPAP	16.5 (14.4)	-1.2 (-4.5 to 2.1)	0.48	F=0.8, p=0.364

Supplementary Table 2. Changes in tidal volumes from baseline before the start of the apnea. *The F value is the test statistic of the analysis of variance and corresponds to the variation between subjects divided by the variation within subjects. P-values of the mixed model analysis of variance are shown. *Abbreviations:* V_T = Tidal volume as measured using EIT, nHFOV = non-invasive high-frequency oscillatory ventilation, nCPAP = nasal continuous positive airway pressure, AU/kg = arbitrary units per kilogram bodyweight.