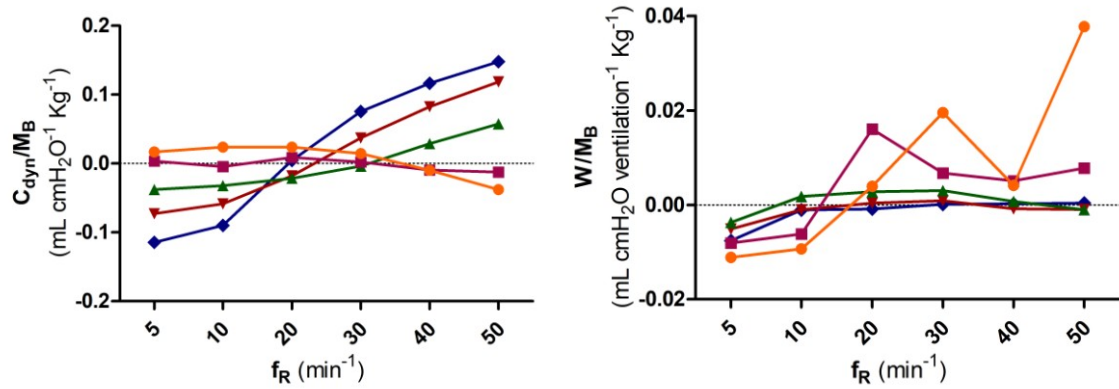


**Figure S1.** Schematic drawing of the respiratory system (trachea, bronchi, lungs) and the attached post-pulmonary septum (PPS) in *Trachemys scripta*. The drawing is based on a dissected juvenile animal after removal of the plastron, the integument, the legs, and all the viscera except for the respiratory system and the PPS. The lungs were in the collapsed state and are pictured in red. The approximate extension of the PPS, which covers the ventral side of the lungs, is represented by the striped area enclosed within the green line. The caudal-most parts of both lungs are not covered by the PPS and are in direct contact with the organs in the abdominal cavity. The blue line marks the caudal end of the body cavity and caudally to this line, one finds the pelvic girdle, muscles, tail and associated structures.



**Figure S2.** Residual plots for dynamic compliance ( $C_{dyn}$ ) and work of breathing ( $W$ ) for the ‘Intact’ treatment, used in the statistical analysis to be compared to the post-pulmonary septum groups (‘PPS+’ and ‘PPS-’).

**Table S1.** GEE results table with **static compliance** as the dependent variable, showing the values of the coefficients, the standard error, the value of Wald's  $\chi^2$  statistics, and p-value.

	Coefficients	Standard error	Wald's $\chi^2$	p-value
<i>Submerged GEE results, using the 'Intact' treatment as reference and an inverse link function</i>				
Intercept	0.08	0.01	40.60	< 0.001
Submerged	-0.01	0.003	8.10	< 0.05
<i>Post-pulmonary septum GEE results, using the 'Intact' treatment as reference and an inverse link function</i>				
Intercept	0.08	0.01	41.40	< 0.001
PPS-	-0.05	0.01	27.20	< 0.001
PPS+	-0.05	0.01	32.90	< 0.001
<i>Post-pulmonary septum GEE results, using the 'PPS+' treatment as reference and an inverse link function</i>				
Intercept	0.02	0.003	55.21	< 0.001
Intact	0.05	0.01	32.91	< 0.001
PPS-	0.000	0.001	0.01	0.94

**Table S2.** GEE results table for **dynamic compliance ( $C_{\text{dyn}}$ )** and **work per ventilation (W)**, showing the degrees of freedom, the value of Wald's  $\chi^2$  statistics, and the p-value of each independent variable.

		DF	Wald's $\chi^2$	p-value
<b>Dynamic compliance</b>				
<i>Submerged</i>				
	Treatment	1	6.00	0.01
	Volume	4	356.00	< 0.001
	Frequency	5	53.00	< 0.001
<i>Post-pulmonary septum</i>				
	Treatment	2	13.30	0.001
	Volume	4	42.20	< 0.001
	Frequency	5	41.60	< 0.001
<b>Work per ventilation</b>				
<i>Submerged</i>				
	Treatment	1	23.30	< 0.001
	Volume	4	49.60	< 0.001
	Frequency	5	11.80	0.03
<i>Post-pulmonary septum</i>				
	Treatment	2	8.90	0.01
	Volume	4	71.70	< 0.001
	Frequency	5	171.90	< 0.001

**Table S3.** GEE results table for **dynamic compliance ( $C_{dyn}$ )**, showing the coefficients, the standard error, the value of Wald's  $\chi^2$  statistics, and p-value.

	Coefficients	Standard error	Wald's $\chi^2$	p-value
<i>Submerged GEE results, using the 'Intact' treatment, the "1 mL" volume, and the "05 min<sup>-1</sup>" frequency as references</i>				
Intercept	0.09	0.02	13.60	< 0.001
Submerged	0.01	0.009	4.32	0.03
2 ml	-0.02	0.004	29.05	< 0.001
4 ml	-0.04	0.01	20.03	< 0.001
6 ml	-0.04	0.01	11.57	< 0.001
8 ml	-0.03	0.01	7.67	< 0.001
10 min <sup>-1</sup>	-0.001	0.001	0.80	0.37
20 min <sup>-1</sup>	0.01	0.005	6.44	< 0.05
30 min <sup>-1</sup>	0.02	0.009	5.25	< 0.05
40 min <sup>-1</sup>	0.04	0.01	10.79	< 0.05
50 min <sup>-1</sup>	0.05	0.01	9.75	< 0.05
<i>Post-pulmonary septum GEE results, adopting an inverse link function and the 'Intact' treatment, the "1 mL" volume, and the "05 min<sup>-1</sup>" frequency as references</i>				
Intercept	0.03	0.01	7.72	0.005
PPS-	-0.02	0.009	7.43	0.006
PPS+	-0.03	0.01	8.89	0.002
2 ml	0.002	0.0005	15.74	< 0.001
4 ml	0.01	0.002	27.14	< 0.001
6 ml	0.02	0.004	21.25	< 0.001
8 ml	0.03	0.006	32.58	< 0.001
10 min <sup>-1</sup>	0.002	0.002	1.24	0.26
20 min <sup>-1</sup>	0.008	0.007	1.23	0.26
30 min <sup>-1</sup>	0.02	0.01	3.55	0.05
40 min <sup>-1</sup>	0.04	0.01	4.87	< 0.05
50 min <sup>-1</sup>	0.05	0.02	5.86	< 0.05
<i>Post-pulmonary septum GEE results, adopting an inverse link function and the "PPS+" treatment, the "1 mL" volume, and the "05 min<sup>-1</sup>" frequency as references</i>				
Intercept	0.009	0.004	3.63	< 0.001
Intact	0.03	0.01	8.90	< 0.001
PPS-	0.005	0.001	11.08	< 0.001
2 ml	0.002	0.0005	15.74	< 0.001
4 ml	0.01	0.002	27.14	< 0.001
6 ml	0.02	0.004	21.25	< 0.001
8 ml	0.03	0.006	32.58	< 0.001
10 min <sup>-1</sup>	0.002	0.002	1.24	0.26
20 min <sup>-1</sup>	0.008	0.007	1.23	0.26
30 min <sup>-1</sup>	0.02	0.01	3.55	0.05
40 min <sup>-1</sup>	0.04	0.01	4.87	< 0.05
50 min <sup>-1</sup>	0.05	0.02	5.86	< 0.05

**Table S4.** GEE results table for **work per ventilation (W)**, showing the coefficients, the standard error, the value of Wald's  $\chi^2$  statistics, and p-values.

	Coefficients	Standard error	Wald's $\chi^2$	p-value
<i>Submerged GEE results, using the 'Intact' treatment, the "1 mL" volume, and the "05 min<sup>-1</sup>" frequency as references</i>				
Intercept	0.01	0.01	3.64	0.05
Submerged	0.0002	0.0008	0.04	0.83
2 ml	-0.0029	0.0029	0.98	0.32
4 ml	-0.01	0.01	1.87	0.17
6 ml	-0.01	0.01	2.68	0.1
8 ml	-0.01	0.01	2.85	0.09
10 min <sup>-1</sup>	-0.0001	0.0002	0.66	0.42
20 min <sup>-1</sup>	-0.0003	0.0001	4.99	< 0.05
30 min <sup>-1</sup>	-0.0001	0.0003	0.03	0.86
40 min <sup>-1</sup>	-0.0001	0.0005	0.04	0.85
50 min <sup>-1</sup>	-0.0004	0.0007	0.42	0.52
<i>Post-pulmonary septum GEE results, adopting an inverse link function and the 'Intact' treatment, the "1 mL" volume, and the "05 min<sup>-1</sup>" frequency as references</i>				
Intercept	0.096	0.03	10.32	0.001
PPS-	0.0004	0.0004	0.91	0.34
PPS+	0.0009	0.0009	1.09	0.30
2 ml	-0.05	0.02	10.14	0.001
4 ml	-0.08	0.03	9.12	< 0.005
6 ml	-0.08	0.03	9.08	< 0.005
8 ml	-0.09	0.03	9.39	< 0.005
10 min <sup>-1</sup>	-0.003	0.001	22.35	< 0.001
20 min <sup>-1</sup>	-0.005	0.001	23.51	< 0.001
30 min <sup>-1</sup>	-0.01	0.001	33.06	< 0.001
40 min <sup>-1</sup>	-0.01	0.001	30.28	< 0.001
50 min <sup>-1</sup>	-0.01	0.002	30.2	< 0.001
<i>Post-pulmonary septum GEE results, adopting an inverse link function and the "PPS+" treatment, the "1 mL" volume, and the "05 min<sup>-1</sup>" frequency as references</i>				
Intercept	0.09	0.03	11.07	< 0.001
Intact	-0.001	0.001	1.09	0.29
PPS-	-0.0005	0.001	0.35	0.55
2 ml	-0.05	0.02	10.14	0.001
4 ml	-0.08	0.03	9.12	< 0.005
6 ml	-0.08	0.03	9.08	< 0.005
8 ml	-0.09	0.03	9.39	< 0.005
10 min <sup>-1</sup>	-0.003	0.001	22.35	< 0.001
20 min <sup>-1</sup>	-0.005	0.001	23.51	< 0.001
30 min <sup>-1</sup>	-0.01	0.001	33.06	< 0.001
40 min <sup>-1</sup>	-0.01	0.001	30.28	< 0.001
50 min <sup>-1</sup>	-0.01	0.002	30.2	< 0.001