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**Online Supplement:**  
**Table S-1.** Data of individual subjects

<i>Subject No.</i>	<i>Sex</i>	<i>Age</i>	<i>P<sub>AO-Thr</sub></i>	<i>P<sub>Es-Rel</sub></i>	<i>C<sub>CW</sub></i>	<i>C<sub>L</sub></i>	<i>C<sub>RS</sub></i>	<i>P<sub>Ga-EE</sub></i>	<i>P<sub>Ga-EI</sub></i>	<i>P<sub>Es-EE</sub></i>	<i>P<sub>Es-EI</sub></i>	<i>BMI</i>	<i>V<sub>T</sub></i>
<b>OBESE</b>													
1	f	44.0	1.13	12.76	0.142	0.050	0.037	11.17	13.57	14.54	19.41	41.0	0.69
2	f	54.0	7.92	11.10	0.200	0.043	0.036			12.74	16.69	44.6	0.79
3	f	37.0	13.96	17.10	0.141	0.036	0.029	12.25	14.03	18.33	23.57	42.0	0.74
4	m	49.0	6.05	10.76	0.231	0.055	0.044			13.57	16.86	48.0	0.76
5	m	56.0	4.36	13.95	0.124	0.090	0.052	7.98	9.98	14.55	20.69	40.0	0.76
6	f	39.0	0.75	10.48	0.135	0.053	0.038			13.49	17.81	43.0	0.59
7	f	42.0	10.10	17.81	0.255	0.027	0.025	16.99	19.58	17.94	20.55	52.0	0.67
8	f	25.0	2.57	10.09	0.138	0.035	0.028	12.51	13.68	11.89	15.81	54.4	0.54
9	m	40.0	2.89	13.76	0.151	0.058	0.042	10.10	11.44	15.02	20.05	48.0	0.76
10	f	34.0	1.19	8.43	0.131	0.034	0.027	11.43	13.45	11.78	15.79	42.0	0.52
11	m	57.0	9.16	15.00	0.080	0.026	0.020	8.98	10.62	18.41	24.43	47.5	0.48
12	f	30.0	0.91	11.71	0.135	0.046	0.034			11.98	16.69	40.0	0.63
13	m	44.0	1.13	12.57	0.182	0.037	0.030	12.80	14.59	17.01	19.58	43.0	0.47
14	f	46.0	1.76	9.81	0.078	0.051	0.031	11.98	13.60	12.86	21.85	56.0	0.70
15	f	43.0	1.38	9.81	0.124	0.054	0.038	13.41	15.20	13.43	18.67	43.2	0.65
16	f	36.0	0.75	5.33	0.087	0.061	0.036			6.38	15.71	56.5	0.81
17	f	36.0	3.23	6.33	0.108	0.030	0.023			9.51	14.98	44.0	0.59
18	f	43.0	1.41	8.95	0.135	0.047	0.035	10.72	12.02	12.32	17.58	55.0	0.71
19	f	31.0	1.91	12.57	0.205	0.043	0.035	7.85	9.73	11.68	14.63	41.4	0.61
20	m	43.0	8.50	9.24	0.104	0.052	0.035	11.71	13.52	12.86	21.20	49.0	0.87
21	m	48.0	7.69	16.48	0.132	0.027	0.023			19.89	25.47	49.2	0.74
22	f	39.0	1.57	14.67	0.246	0.029	0.026			15.07	17.31	80.7	0.55
23	f	27.0	1.32	10.19	0.165	0.041	0.033	12.10	13.67	13.05	17.30	41.9	0.70
24	f	20.0	0.66	10.29	0.226	0.064	0.050	7.58	9.96	11.01	14.21	41.0	0.72
25	m	62.0	6.96	12.38	0.121	0.038	0.029			18.10	23.94	51.1	0.71

26	m	60.0	4.99	10.76	0.134	0.057	0.040			14.19	19.73	46.4	0.74
27	f	55.0	1.00	9.81	0.094	0.071	0.040			12.29	19.31	41.3	0.66
28	f	66.0	7.31	10.29	0.277	0.032	0.029	9.22	10.34	15.73	17.92	38.0	0.61
29	m	47.0	0.63	12.86	0.176	0.053	0.041			13.58	17.33	42.0	0.66
30	f	36.0	2.20	3.00	0.072	0.062	0.033	16.98	20.05	7.11	15.93	65.7	0.63
31	f	41.0	1.38	12.43	0.215	0.031	0.027	10.75	12.90	12.90	15.50	41.6	0.56
32	m	37.0	2.35	20.48	0.222	0.021	0.019	13.28	14.55	22.02	24.30	54.2	0.51
33	m	39.0	6.43	25.71	0.554	0.043	0.040			27.20	28.57	72.9	0.78
34	f	24.0	2.45	13.57	0.197	0.034	0.029			18.28	21.13	48.9	0.56
35	f	51.0	0.85	8.57	0.148	0.086	0.054	6.67	9.94	10.40	16.15	40.5	0.85
36	f	54.0	0.82	15.67	0.475	0.041	0.038			16.05	17.23	51.3	0.56
37	m	32.0	0.85	8.95	0.126	0.064	0.043	10.98	12.09	13.75	19.37	52.3	0.71
38	f	32.0	2.79	15.90	0.181	0.035	0.029	16.98	20.50	18.38	23.09	53.5	0.85
39	f	53.0	2.07	18.33	0.279	0.018	0.017	15.90	15.90	19.99	19.99	53.0	0.50
40	m	61.0	1.66	15.90	0.379	0.038	0.034	8.93	8.93	17.98	17.98	68.2	0.69
41	f	63.0	1.44	9.81	0.089	0.030	0.022			16.67	16.67	42.7	0.53
42	m	44.0	1.54	16.90	0.253	0.029	0.026	11.00	11.00	19.25	19.25	41.8	0.50
43	f	49.0	2.51	13.05	0.328	0.024	0.023	10.44	10.44	15.18	15.18	49.9	0.56
44	f	27.0	1.32	11.24	0.348	0.030	0.028	8.99	8.99	12.55	12.55	44.2	0.54
45	m	45.0	3.17	10.19	0.090	0.035	0.025	14.36	14.36	22.00	22.00	42.9	0.54
46	f	45.0	1.57	12.33	0.263	0.027	0.025			15.82	15.82	43.0	0.57
47	m	51.0	1.57	16.00	0.166	0.048	0.037			22.57	22.57	51.4	0.58
48	m	57.0	3.73	14.98	0.542	0.032	0.030			22.50	22.50	45.9	0.79
49	f	69.0	1.10	13.05	0.184	0.039	0.032			17.37	17.37	40.2	0.54
50	f	52.0	1.71	15.62	0.182	0.050	0.039			16.93	20.50	46.1	0.57
51	f	20.0	1.16	12.76	0.193	0.031	0.026	10.88	10.88	17.77	17.77	54.8	0.63
Mean		43.8	3.2	12.5	0.195	0.043	0.032	11.2	13.0	15.8		48.5	0.65
SD		11.9	3.0	3.9	0.113	0.016	0.008	2.8	3.1	4.0		8.9	0.11
Maximum		69.0	14.0	25.7	0.554	0.090	0.054	17.0	20.5	28.6		80.7	0.87
Minimum		20.0	0.6	3.0	0.072	0.018	0.017	6.7	8.9	6.4		38.0	0.47

<i>Subject No.</i>	<i>Sex</i>	<i>Age</i>	<i>P<sub>AO-Thr</sub></i>	<i>P<sub>Es-Rel</sub></i>	<i>C<sub>CW</sub></i>	<i>C<sub>L</sub></i>	<i>C<sub>RS</sub></i>	<i>P<sub>Ga-EE</sub></i>	<i>P<sub>Ga-EI</sub></i>	<i>P<sub>Es-EE</sub></i>	<i>P<sub>Es-EI</sub></i>	<i>BMI</i>	<i>V<sub>T</sub></i>
<b>CONTROLS</b>													
1	f	61.0	0.66	4.19	0.086	0.142	0.054			5.90	13.12	27.1	0.62
2	f	40.0	0.19	9.33	0.254	0.084	0.063			8.63	10.59	24.0	0.50
3	f	42.0	0.60	8.29	0.262	0.054	0.045	5.55	6.95	8.48	10.69	29.0	0.58
4	m	50.0	0.25	7.57	0.237	0.072	0.055	7.83	8.36	8.07	11.00	26.0	0.70
5	f	21.0	0.44	0.67	0.292	0.066	0.054	-1.50	-0.12	1.14	2.78	19.2	0.48
6	f	40.0	0.47	8.19	0.176	0.067	0.048	7.98	9.93	9.43	12.38	24.6	0.52
7	m	39.0	0.88	12.17	0.131	0.112	0.060	3.83	5.48	13.75	18.71	24.5	0.65
8	f	53.0	0.22	7.14	0.158	0.102	0.062	8.43	11.79	8.34	11.73	24.0	0.54
9	f	57.0	0.53	6.71	0.539	0.044	0.041			8.10	9.02	24.7	0.49
10	f	44.0	0.22	4.76	0.099	0.094	0.048			7.89	14.95	28.5	0.70
Mean		44.7	0.4	6.9	0.223	0.084	0.053	5.4	7.1	8.0	11.5	25.2	0.58
SD		11.4	0.2	3.1	0.132	0.029	0.007	3.8	4.2	3.1	4.1	2.8	0.08
Maximum		61.0	0.9	12.2	0.539	0.142	0.063	8.4	11.8	13.8	18.7	29.0	0.70
Minimum		21.0	0.2	0.7	0.086	0.044	0.041	-1.5	-0.1	1.1	2.8	19.2	0.48

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8 **Fig. S-1.** Computational simulation of  $V_L$  change as a function of  $P_{AO}$  with a given rate of  $P_{AO}$  increase,  
9 respiratory resistance and compliance:  $dt = 0.01$  s,  $dP_{AO}/dt = 4$  cmH<sub>2</sub>O/s,  $R=15$ ,  $C_{RS} = 0.02$ . (Higher rate of  
10 pressure increase and resistance would increase  $P_{AO-Thr}$ , and higher compliance would decrease  $P_{AO-Thr}$ .)

11 Note that at  $P_{AO} = 1.24$  cmH<sub>2</sub>O the lung volume has increased by 0.01 liter from FRC.

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