

Supplementary Information

**Table S1. Animal ID (ID), body mass, ( $M_b$ ), average interbreath interval (IBI) and average heart rate ( $f_H$ ) during fasted (F) and non-fasted trials (NF) at the surface where the dolphin breathes spontaneously, and during 2-minute breath-holds (BH).**

ID	$M_b$ (kg)	IBI <sub>F</sub> (s)	IBI <sub>NF</sub> (s)	IBI <sub>BH</sub> (s)	$f_{H, F}$ (beats min <sup>-1</sup> )	$f_{H, NF}$ (beats min <sup>-1</sup> )	$f_{H, BH}$ (beats min <sup>-1</sup> )
83H1	147.0	28.3±17.6	13.6±9.2	121.6	56.3±8.8	72.1±8.1	46.2±23.3
01L5	163.7	-	15.1±6.9	-	-	86.7±9.2	-
6JK5	200.9	14.6±9.6	13.6±9.3	117.1±8.1	73.1±8.5	78.5±5.5	59.1±1.5
9ON6	192.8	16.4±10.9	17.2±6.8	128.9	72.2±8.2	72.4±6.4	50.2±12.1
63H4	179.6	-	12.0±4.4	130.3±6.3	-	98.6±5.3	97.4±3.2
9FL3	251.7	26.5±17.0	15.6±8.4	135.8	58.6±12.4	61.7±9.8	42.7±6.3
<b>Average</b>	<b>189.3±36.3</b>	<b>19.7±14.3</b>	<b>14.6±8.0</b>	<b>125.9±8.4</b>	<b>67.2±11.8</b>	<b>78.0±13.1</b>	<b>64.6±23.3</b>

**Table S2. Characteristics of respiratory sinus arrhythmia (RSA) during surface, fasted trials and non-fasted trials, and submerged breath-hold trials.**

ID (n = # of breaths)	RSA (%)	RSA (s)	Maximum $\dot{f}_H$ (beats min <sup>-1</sup> )	Minimum $\dot{f}_H$ (beats min <sup>-1</sup> )
<b>83H1</b>				
Fasted (n = 41)	70.2±25.9	0.82±0.31	77.4±14.8	38.5±8.1
Non-fasted (n = 48)	37.2±17.1	0.36±0.20	83.6±7.6	57.5±11.5
Breath-hold (n = 1)	209.7	0.21	120.0	23.0
<b>01L5</b>				
Fasted	-	-	-	-
Non-fasted (n = 58)	49.5±14.1	0.41±0.16	105.4±8.6	63.3±12.5
Breath-hold	-	-	-	-
<b>6JK5</b>				
Fasted (n = 81)	25.5±13.1	0.24±0.22	82.0±9.2	63.7±10.1
Non-fasted (n = 46)	26.9±13.4	0.22±0.13	88.2±4.2	67.6±8.9
Breath-hold (n = 2)	107.4±53.2	0.76±0.13	108.6±34.9	44.8±1.9
<b>9ON6</b>				
Fasted (n = 74)	43.1±15.9	0.40±0.18	86.8±9.7	56.1±9.7
Non-fasted (n = 33)	42.6±11.7	0.39±0.13	86.8±7.9	56.1±7.0
Breath-hold (n = 1)	109.5	0.11	89.9	34.9
<b>63H4</b>				
Fasted	-	-	-	-
Non-fasted (n = 25)	32.8±15.2	0.23±0.15	111.7±4.3	79.9±12.0
Breath-hold (n = 2)	51.6±7.5	0.38±0.09	118.0±2.9	67.6±6.0
<b>9FL3</b>				
Fasted (n = 45)	72.2±24.6	0.84±0.35	80.4±13.4	39.7±10.8
Non-fasted (n = 36)	59.2±21.4	0.65±0.28	80.1±12.3	44.1±8.9
Breath-hold (n = 1)	82.2	0.90	69.2	34.0

**Table S3. Results of linear mixed effects models of the effect of the previous inter-breath interval (IBI) duration on the maximum  $if_H$  of the IBI and the difference between the maximum  $if_H$  of the IBI and the minimum  $if_H$  of the previous IBI during surface breathing trials.** Data were  $\log_{10}$ -transformed for analysis. Individual ID was included as a random effect and nutritional state (fasted vs. non-fasted) was included as a fixed effect.

<b>Response variable</b>	<b>Independent variables</b>	<b>Value</b>	<b>S.E.</b>	<b>P-value</b>
Maximum $if_H$ (beats $\text{min}^{-1}$ )	nutritional state	-0.07	0.02	<b>&lt;0.01</b>
	previous IBI	-0.07	0.01	<b>&lt;0.0001</b>
	nutritional state* previous IBI	0.05	0.02	<b>0.02</b>
Maximum $if_H$ – previous Minimum $if_H$ (beats $\text{min}^{-1}$ )	nutritional state	-0.12	0.07	0.09
	previous IBI	0.23	0.04	<b>&lt;0.0001</b>
	nutritional state* previous IBI	0.10	0.06	0.08

Figure S1. Effect of duration of the previous inter-breath interval (IBI) on A) maximum  $if_H$  and B) the difference between the maximum  $if_H$  of the IBI and the minimum  $if_H$  of the previous IBI during surface breathing trials. Data were  $\log_{10}$ -transformed for plotting.

Fasted data points are plotted in red and non-fasted data points are plotted in blue.

