

Table S1. ANOVA table for linear regression on CTmax data for all individuals

Response: data\$CTmax1

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
O2	1	286.55	286.55	69.5651	1.01e-13	***
Species	1	1115.40	1115.40	270.7805	< 2.2e-16	***
Expsetup	1	15.03	15.03	3.6481	0.05837	.
log10(DW)	1	0.28	0.28	0.0674	0.79560	
Stage	1	7.98	7.98	1.9382	0.16628	
O2:Species	1	71.06	71.06	17.2517	5.94e-05	***
O2:Expsetup	1	24.09	24.09	5.8477	0.01700	*
Species:Expsetup	1	15.20	15.20	3.6908	0.05694	.
O2:Species:Expsetup	1	19.02	19.02	4.6165	0.03355	*
Residuals	128	527.26	4.12			

Table S2. Summary of linear regression on CTmax data for *Ilyocoris* adults

```
lm(formula = CTmax1 ~ oxygen + Expsetup + log10(DW) + Expsetup:oxygen,
    data = subset(ilyo, ilyo$Stage != "juv"))
```

Residuals:

Min	1Q	Median	3Q	Max
-5.0109	-0.4133	0.1690	0.5986	2.5541

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	47.23300	5.57956	8.465	6.15e-11	***
oxygen0.05	-1.06163	0.54952	-1.932	0.059541	.
oxygen0.6	-0.23786	0.55757	-0.427	0.671654	
Expsetupnoair	0.05135	0.70832	0.072	0.942520	
log10(DW)	-2.32237	2.22779	-1.042	0.302648	
oxygen0.05:Expsetupnoair	-3.59189	0.93629	-3.836	0.000379	***
oxygen0.6:Expsetupnoair	0.78553	1.06128	0.740	0.462956	

 signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table S3. Summary of linear regression on CTmax data for *Aphelocheirus* adults

```
lm(formula = CTmax1 ~ O2 + Expsetup + log10(DW) + Stage + O2:Expsetup +
  Expsetup:O2, data = aphe)
```

Residuals:

Min	1Q	Median	3Q	Max
-4.9723	-0.6602	0.0136	0.7151	4.4284

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	29.1112	4.2081	6.918	2.42e-09	***
O20.2	4.9774	0.9341	5.328	1.33e-06	***
O20.6	6.4267	0.9416	6.825	3.53e-09	***
Expsetupnoair	-0.4826	0.7525	-0.641	0.524	
log10(DW)	0.9482	1.8867	0.503	0.617	
Stagejuv	0.3786	0.9576	0.395	0.694	
O20.2:Expsetupnoair	1.0179	1.0413	0.977	0.332	
O20.6:Expsetupnoair	0.3254	1.0648	0.306	0.761	

Signif.

Table S4. ANOVA table of linear regression on CTmax data for adults and juveniles of both the permanently submerged plastron breather *Aphelocheirus* (assessed without access to air) and the bimodal breather *Ilyocoris* (assessed with access to air)

Response: CTmax1

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
oxygen	2	340.14	170.07	95.4400	< 2.2e-16	***
Species	1	978.04	978.04	548.8599	< 2.2e-16	***
Stage	1	2.53	2.53	1.4186	0.2365	
oxygen:species	2	160.85	80.42	45.1327	1.077e-14	***
Residuals	100	178.20	1.78			

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1