Table S1. Absolute CORTend concentrations (ng/ml, log transformed) in relation to sampling variables. Sampling order (2): individual sampled second; First trial (yes): first respirometer session for that individual. Round (afternoon): individual was sampled in the afternoon.

	Estimate	Std. error	df	F	p
Intercept	2.075	0.151	41.18		
Sampling order (2)	0.305	0..180	35.76	2.892	0.098
First Trial (yes)	0.234	0.187	53.69	1.565	0.216
Round (afternoon)	0.098	0.184	42.26	0.294	0.591
Random factors					
		Variance			
Bird ID		0.089			
Plate		0.039			
Residual		0.367			

Table S2. Between-individual analyses: AIC values for models with CORTend as the dependent variable (as in Table 1). Models always include MR and body mass, but vary in their including of treatment and its interactions.

Terms	AICc	$\triangle$AICc
MR, MR^2, Mass (main model)	**138.93**	**0.00**
MR, MR^2, Treatment, Mass	142.66	3.73
MR, Treatment, Mass, MR x Treatment	144.25	5.32
MR, Mass	146.56	7.63

Table S3. Between-individual analyses. Absolute CORT concentrations (CORTend, Ln transformed) in relation to MR (MRend). The main model differs from the model shown in the main paper in that it includes CORTstart, i.e. the CORT concentration at the beginning of the trial.

	Estimate	s.e.	D.f.	F	p
Intercept	6.187	1.501	66.76		
Body mass	**-0.192**	**0.054**	**38.45**	**12.612**	**0.001**
CORTbeg	**0.022**	**0.009**	**58.01**	**6.201**	**0.016**
MR	-6.438	4.199	65.11	2.351	0.130
MR^2	**6.655**	**3.112**	**65.47**	**4.571**	**0.036**
		Variance			
Bird ID		0.015			
Plate		0.018			
Residual		0.292			

Table S4. Repeatabilities and variance components in both the sexes for (a) MRstart (the average of MR measured during the first 10 min after going into the respirometer), (b) CORTstart and (c) Resting MR (as measured after 1.5h into the respirometer and before treatment, i.e. after the acclimation time). Shown are variances and individual repeatabilities as extracted from the null model. Note that the sample sizes correspond to number of individuals, each being measured two times.

a	Females (N=18)		Males (N=18)		Total (N=36)	
	Variance	Repeat.	Variance	Repeat.	Variance	Repeat.
Bird ID	0.0031	**47.7%**	0.0061	**70.9%**	0.0045	**61.6%**
Residual	0.0034	-	0.0025	-	0.0028	-

b	Females (N=18)		Males (N=18)		Total (N=36)	
	Variance	Repeat.	Variance	Repeat.	Variance	Repeat.
Bird ID	0.1242	**30.9%**	0.1325	**48.3%**	0.1236	**36.9%**
Residual	0.2774	-	0.1420	-	0.2111	-

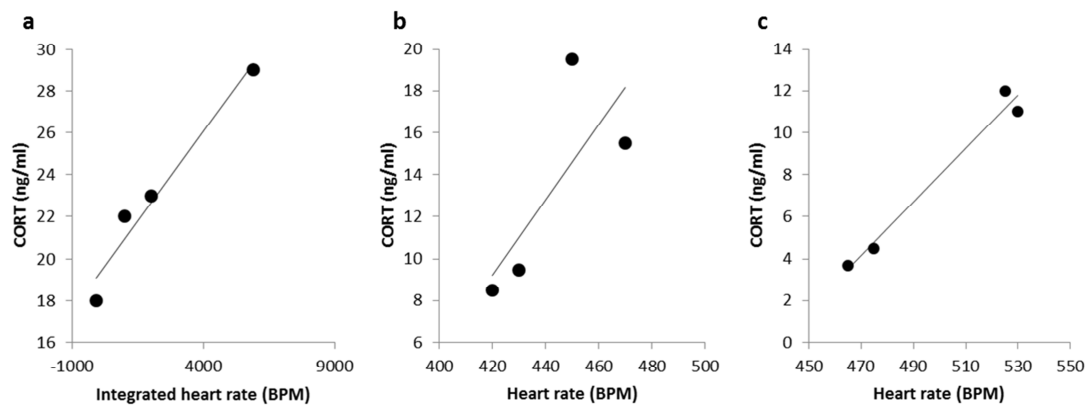| c	Females (N=18)		Males (N=18)		Total (N=36)	
	Variance	Repeat.	Variance	Repeat.	Variance	Repeat.
Bird ID	0.0021	**39.6%**	0.0044	**53.01%**	0.0033	**48.5%**
Residual	0.0032	-	0.0039	-	0.0035	-

Figure S1. Corticosterone (ng/ml) in relation to heart rates (x-axis) in European starlings (data from de Bruijn & Romero 2011, 2013). Each data point represents the average of the response to experimental manipulation of climatic conditions. Heart rate is closely correlated to energy expenditure in starlings (Cyr et al., 2008) and can therefore be interpreted as proxy of MR. Because each panel shows values for the same individuals across all treatments, the linear relationship shown in these graphs corresponds to the average within-individual variation, which makes it comparable to Fig. 5 in the present paper. Treatment groups from left to right on the x-axis: (a) control, control+noise, control+air, cooling (de Bruijn & Romero, 2011); (b) rain+wind, rain, cold+wind, rain+cold+wind (non-molting birds; de Bruijn & Romero, 2013); (c) cold+wind, rain, rain+cold+wind, rain+wind (molting birds; de Bruijn & Romero, 2013). Note that graph scales are shown at different levels to make graphs comparable. For further details see de Bruijn & Romero (2011, 2013).