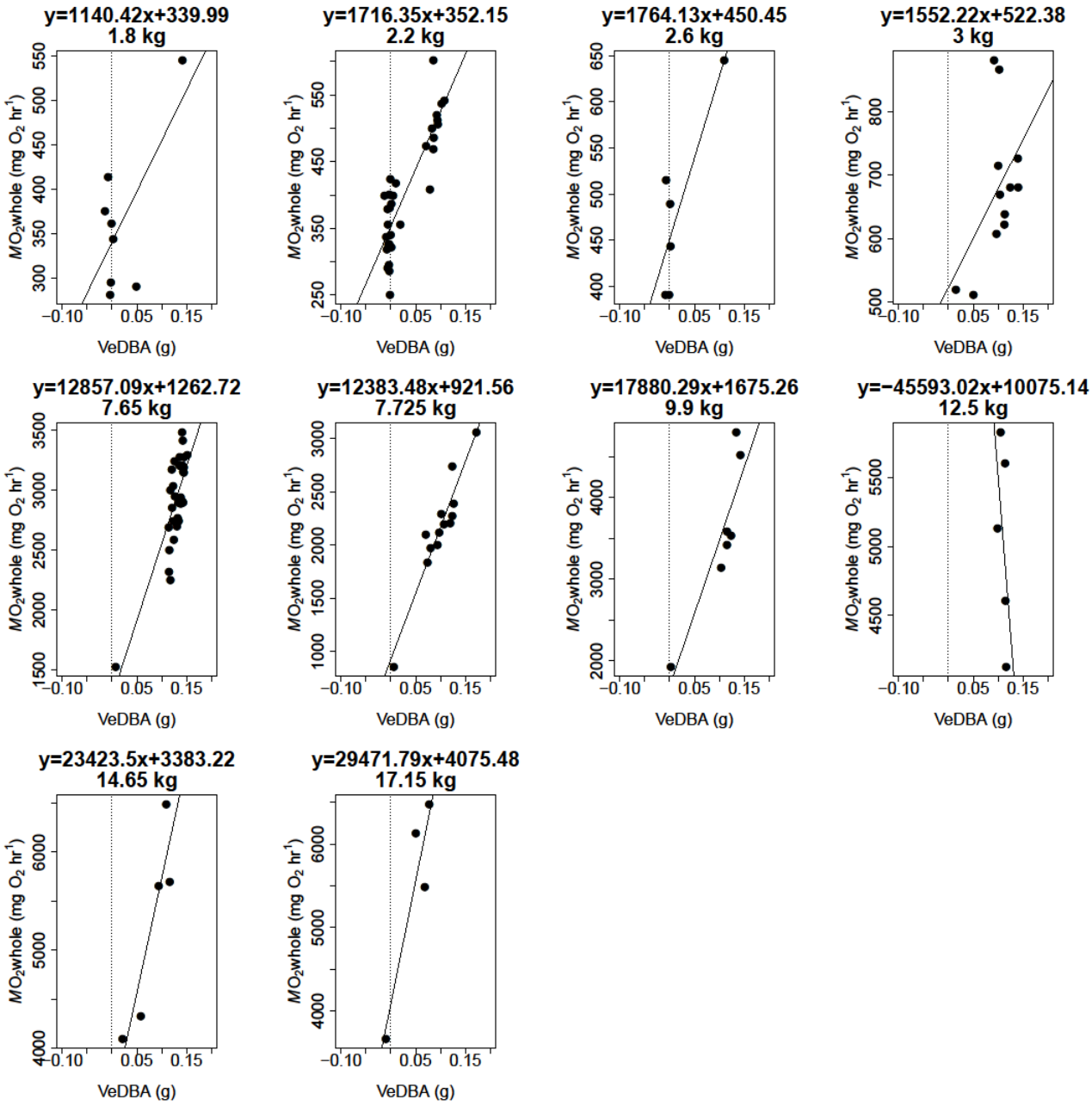

Fig. S1. Linear fits of the $\dot{M}O_{2whole}$-VeDBA relationship for each mass class, predicted by the best-fit linear effects model. The mass and equation for each mass class are shown above the respective plot. Horizontal dotted lines represent the point of zero activity (y-axis).

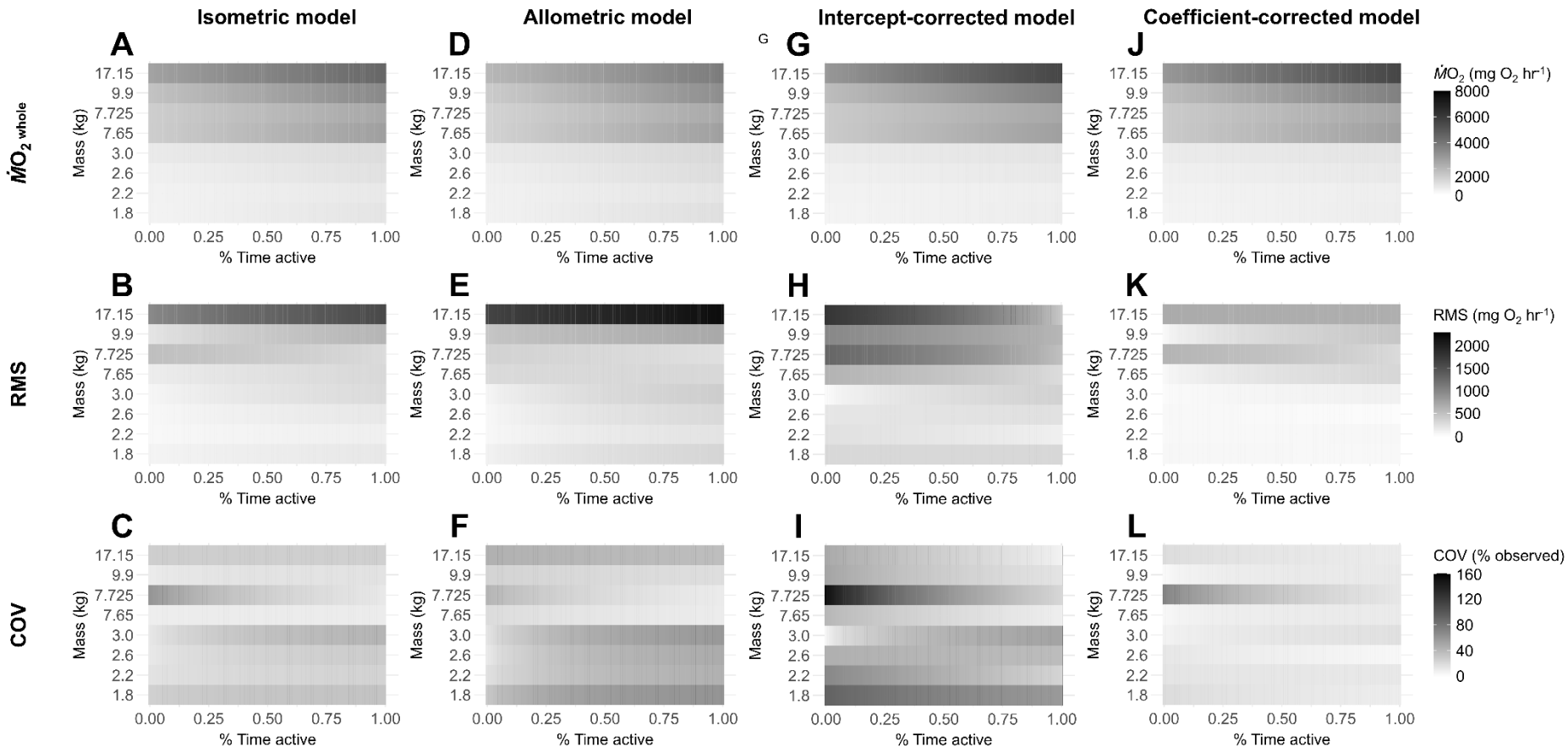

Fig. S2. Results of a simulation conducted to show how estimation error of different whole animal respiration rate ($\dot{M}O_{2whole}$) modelling techniques changes across a range of activity levels and all available mass classes. A day in the life of 100 sharks for all available mass classes (1.8 – 17.15 kg) was repeatedly simulated, where the proportion of time spent active was varied. $\dot{M}O_{2whole}$, root-mean squared error (RMS),

and coefficient of variation (COV) were calculated over the full range of activity for each body mass using the *isometric response-corrected* (A-C), *allometric response-corrected* (D-F), *intercept-corrected* (G-I), and *coefficient-corrected* (J-K) modelling approaches. Resultant values $\dot{M}O_{2whole}$, RMS, COV are colour-coded with low to high values represented by a light to dark gradient, respectively.