S4 Table. Ranked generalized additive mixed models of effects on overall dynamic body acceleration. Phase corresponds to swimming phase (ascent, descent, level). s() denotes a smooth term and t2() denotes a tensor product smooth (interaction). Values in bold indicate the best-fit model. n = 15890.

Model	df	logLik	r2 (adj.)	AIC_c	ΔAIC_c	*w*	%DE
Phase + s(Time of Day) + s(PC1)	**9**	**-2428.5**	**0.206**	**4875.0**	**0.0**	**1.00**	**20.7**
Phase + s(Time of Day) + s(Depth, m)	9	-2438.5	0.153	4895.0	20.0	4.50×10^{-5}	15.4
Phase + s(Time of Day) + s(Water Temperature, °C)	9	-2438.9	0.178	4895.8	20.8	2.99×10^{-5}	17.9
Phase + s(PC1)	8	-2441.0	0.178	4897.9	23.0	1.02×10^{-5}	17.8
Phase + s(Water Temperature, °C)	8	-2454.7	0.153	4925.4	50.4	1.14×10^{-11}	15.4
Phase + s(Time of Day) + s(Intramuscular Temperature, °C)	9	-2454.3	0.157	4926.6	51.6	6.26×10^{-12}	15.7
Phase + t2(Time of Day × Water Temperature, °C)	11	-2456.4	0.146	4934.7	59.8	1.05×10^{-13}	14.7
Phase + t2(Time of Day × PC1)	11	-2462.0	0.150	4946.0	71.0	3.73×10^{-16}	15.0
Phase + t2(Time of Day × Depth, m)	11	-2473.3	0.108	4968.6	93.6	4.72×10^{-21}	10.9
Phase + t2(Time of Day × Intramuscular Temperature, °C)	11	-2474.5	0.148	4971.0	96.0	1.40×10^{-21}	14.9
Phase + t2(Time of Day × % Oxygen Saturation)	11	-2475.1	0.106	4972.2	97.2	7.67×10^{-22}	10.6
Phase + s(Time of Day) + s(% Oxygen Saturation)	9	-2477.9	0.095	4973.8	98.9	3.41×10^{-22}	9.6
Phase + s(Time of Day)	7	-2481.2	0.092	4976.4	101.5	9.31×10^{-23}	9.3
Phase + s(Intramuscular Temperature, °C)	8	-2482.9	0.122	4981.7	106.8	6.51×10^{-24}	12.3
Phase + s(Depth, m)	8	-2492.7	0.076	5001.4	126.4	3.51×10^{-28}	7.5
Phase + s(% Oxygen Saturation)	8	-2506.1	0.086	5028.2	153.2	5.38×10^{-34}	8.5
Phase	6	-2521.5	0.042	5055.0	180.1	7.87×10^{-40}	4.2
s(Time of Day) + s(PC1)	7	-2916.6	0.150	5847.2	972.3	7.47×10^{-212}	15.1
t2(Time of Day × Depth, m)	9	-2920.5	0.095	5859.0	984.1	2.05×10^{-214}	9.5
s(Time of Day) + s(Depth, m)	7	-2923.8	0.098	5861.7	986.7	5.50×10^{-215}	9.9
s(Time of Day) + s(Water Temperature, °C)	7	-2930.2	0.120	5874.4	999.4	9.52×10^{-218}	12.1
s(PC1)	6	-2934.2	0.118	5880.4	1005.4	4.70×10^{-219}	11.8
s(Time of Day) + s(Intramuscular Temperature, °C)	7	-2940.8	0.103	5895.5	1020.6	2.46×10^{-222}	10.4
t2(Time of Day × Water Temperature, °C)	9	-2941.4	0.089	5900.8	1025.8	1.79×10^{-223}	8.9
s(Water Temperature, °C)	6	-2944.9	0.093	5901.7	1026.8	1.10×10^{-223}	9.3
t2(Time of Day × % Oxygen Saturation)	9	-2942.6	0.054	5903.2	1028.3	5.21×10^{-224}	5.4
s(Time of Day)	5	-2947.8	0.046	5905.5	1030.6	1.66×10^{-224}	4.6

Model	**df**	**logLik**	**r2 (adj.)**	**AIC$_c$**	**ΔAIC$_c$**	***w***	**%DE**
t2(Time of Day × Intramuscular Temperature, °C)	9	-2947.1	0.098	5912.3	1037.3	5.60×10^{-226}	9.8
s(Time of Day) + s(% Oxygen Saturation)	7	-2949.7	0.048	5913.4	1038.4	3.23×10^{-226}	4.8
t2(Time of Day × PC1)	9	-2949.8	0.097	5917.7	1042.7	3.82×10^{-227}	9.7
s(Depth, m)	6	-2968.0	0.027	5948.1	1073.1	9.43×10^{-234}	2.6
s(Intramuscular Temperature, °C)	6	-2969.5	0.069	5951.1	1076.1	2.11×10^{-234}	6.9
Intercept only	4	-2976.9		5961.8	1086.9	9.72×10^{-237}	
s(% Oxygen Saturation)	6	-2976.8	0.039	5965.6	1090.6	1.52×10^{-237}	3.8

df, degrees of freedom; logLik, maximum log-likelihood; %DE, percent deviance explained