



B. Comparison of model fits for basic stride parameters

Y ~ fixed terms + (rt = random terms)	Y											
	stride length (mm)			swing velocity (m/s)			cadence (s ⁻¹)			stance duration (ms)		
	p-value	r ² _m	r ² _c	p-value	r ² _m	r ² _c	p-value	r ² _m	r ² _c	p-value	r ² _m	r ² _c
Y ~ speed + (rt) ^a	-	0.68	0.88	-	0.94	0.97	-	0.81	0.87	-	0.84	0.90
Y ~ speed + gender + (rt) ^b	0.04	0.70	0.88	0.45	0.94	0.97	0.17	0.81	0.87	0.38	0.84	0.90
Y ~ speed + age + (rt) ^c	6.38e-09	0.82	0.87	1.3e-4	0.95	0.97	1.03e-05	0.83	0.87	3.99e-05	0.85	0.90
Y ~ speed + body length + (rt) ^d	8.46e-13	0.83	0.87	5.95e-5	0.95	0.97	9.55e-09	0.84	0.87	1.66e-08	0.87	0.90
Y ~ speed + weight + (rt) ^e	1.41e-12	0.83	0.87	4.08e-5	0.95	0.97	1.57e-07	0.83	0.87	3.26e-07	0.86	0.90
Y ~ speed + weight + age + (rt) ^f	0.72	0.83	0.87	0.61	0.95	0.97	0.99	0.83	0.87	0.70	0.86	0.90
Y ~ speed + weight + gender + (rt) ^g	0.57	0.83	0.87	0.35	0.95	0.97	0.87	0.83	0.97	0.55	0.86	0.90

Random terms = 1+speed | individuals

Equations were compared using a likelihood ratio test; statistical significance is represented in p-values. They were compared in the following order [a – b],

[a – c], [a – d], [a – e], [e – f] and [e – g]

r²_m: marginal ; r²_c: conditional were obtained from generalized linear mixed-effects models (Nakagawa 2013).

C. Coefficients of speed and weight for basic stride parameters.

Y ~ fixed terms + (rt = random terms)	coefficients		equations
	speed (m/s)	weight (g)	fixed terms
stride length (mm) ~ speed + weight + (rt)	0.964	0.011	exp(-0.263 + 0.303*log(speed) + 0.011*weight)*101.9
swing velocity (m/s) ~ speed + weight + (rt)	1.294	0.003	0.179 + 1.294*speed + 0.003*weight
cadence (s ⁻¹) ~ speed + weight + (rt)	0.948	-0.010	exp(0.169 + 0.598*log(speed) - 0.010*weight)*0.0098
stance duration (ms) ~ speed + weight + (rt)	1.006	0.013	exp(-0.322 - 0.882*log(speed) + 0.013*weight)*39.36

Random terms = 1+speed | individuals