

**Table S1. Means, standard deviation (SD), and Pearson correlation matrix for anthropometric variables (N=15).**

	Mean±SD	Heel (cm)	Hallux (cm)	Height (cm)	Mass (kg)
Heel (cm)	4.07±0.63	1.00			
Hallux (cm)	6.34±0.67	0.45	1.00		
Height (cm)	176±7.3	0.42	0.40	1.00	
Mass (kg)	76.43±12.43	-0.06	0.31	0.35	1.00

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table S2. Regressions between normalized foot anthropometric measurements (% height) and dependent variables (N=15).**

Definitions:

- **Heel:** The horizontal distance between the lateral malleolus and the most posterior point of the Achilles tendon.
- **Hallux:** The horizontal distance from the first metatarsal head to the most anterior aspect of the toe.
- **Heel<sub>Average</sub>:** The average of 1) horizontal distance between the lateral malleolus and posterior point of the Achilles tendon and 2) horizontal distance between the medial malleolus and the most posterior point of the Achilles tendon.
- **Mid-foot:** The horizontal distance between the medial malleolus and the first metatarsal head.

**A** Soleus average shortening velocity (mms<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.003	0.398	0.846	<0.001	-0.086	0.961	0.001	0.209	0.925
Hallux	<0.001	-0.117	0.952	0.010	-0.570	0.728	<0.001	0.135	0.948
Heel <sub>Average</sub>	0.017	1.561	0.642	0.084	2.936	0.294	<0.001	0.174	0.962
Mid-foot	0.037	-0.817	0.492	0.011	0.382	0.707	0.005	0.335	0.795

\*. Correlation is significant at the 0.05 level (2-tailed).

**B** Soleus shortening velocity at peak/maximum ankle plantar flexion moment (mms<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.132	14.273	0.183	0.320	20.493	0.028*†	0.003	1.193	0.858
Hallux	0.060	-9.094	0.377	0.033	6.228	0.515	0.090	-6.710	0.276
Heel <sub>Average</sub>	0.080	18.198	0.308	0.271	30.682	0.046*	<0.001	-0.442	0.968
Mid-foot	0.096	7.104	0.261	0.095	6.508	0.265	0.015	1.703	0.662

\*. Correlation is significant at the 0.05 level (2-tailed).

†. Cook's distance values indicated a possible significant outlier. We removed the outlier, and we rerun the analysis (N=14). The output was: R<sup>2</sup> = 0.153, Slope = 9.831 and P-value = 0.166.

**C** Peak/maximum ankle plantar flexion (Nmkg<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.107	0.136	0.234	0.044	0.106	0.454	0.056	0.138	0.397
Hallux	0.131	0.142	0.185	0.080	0.135	0.307	0.115	0.186	0.217
Heel <sub>Average</sub>	0.001	0.019	0.923	0.015	-0.102	0.664	0.001	-0.033	0.902
Mid-foot	0.204	-0.109	0.091	0.091	-0.089	0.274	0.095	-0.105	0.263

\*. Correlation is significant at the 0.05 level (2-tailed).

**D** Cost of transport (Jkg<sup>-1</sup>m<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.012	-0.081	0.701	0.171	-0.357	0.126	0.305	-0.980	0.033*
Hallux	0.038	0.138	0.487	0.005	-0.059	0.798	0.048	-0.367	0.432
Heel <sub>Average</sub>	<0.001	-0.027	0.939	0.063	-0.355	0.368	0.073	-0.785	0.330
Mid-foot	0.173	0.182	0.123	0.292	0.273	0.037*	0.240	0.507	0.064

\*. Correlation is significant at the 0.05 level (2-tailed).

**E** Ground reaction moment arm at peak/maximum ankle plantar flexion (cm)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.117	-0.010	0.212	0.113	-0.010	0.220	0.198	-0.012	0.096
Hallux	0.093	-0.009	0.269	0.096	-0.009	0.261	0.193	-0.012	0.102
Heel <sub>Average</sub>	0.025	-0.008	0.575	0.033	-0.009	0.515	0.117	-0.016	0.212
Mid-foot	0.475	0.012	0.005*	0.510	0.013	0.003*	0.510	0.012	0.003*

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table S3. Regressions between unnormalized foot anthropometric measurements (cm) and dependent variables (N=15).**

Definitions:

- **Heel:** The horizontal distance between the lateral malleolus and the most posterior point of the Achilles tendon.
- **Hallux:** The horizontal distance from the first metatarsal head to the most anterior aspect of the toe.
- **Heel<sub>Average</sub>:** The average of 1) horizontal distance between the lateral malleolus and posterior point of the Achilles tendon and 2) horizontal distance between the medial malleolus and the most posterior point of the Achilles tendon.
- **Mid-foot:** The horizontal distance between the medial malleolus and the first metatarsal head.
- **Hallux/Heel:** Ratio of hallux length over lateral heel length.
- **Mid-foot/Heel:** Ratio of mid-foot length over lateral heel length.

**A** Soleus average shortening velocity (mms<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.003	0.212	0.844	0.011	-0.336	0.713	<0.001	-0.056	0.962
Hallux	<0.001	-0.010	0.992	0.049	-0.678	0.430 <sup>†</sup>	<0.001	-0.077	0.944
Heel <sub>Average</sub>	0.018	0.811	0.633	0.010	0.519	0.719	0.002	-0.309	0.867
Mid-foot	<0.001	-0.010	0.991	0.166	-1.131	0.131	0.049	-0.781	0.427
Hallux/Heel	0.003	-0.652	0.836	0.006	-0.729	0.786	0.001	-0.428	0.900
Mid-foot/Heel	0.002	-0.216	0.879	0.013	-0.481	0.689	0.020	-0.770	0.613

\*. Correlation is significant at the 0.05 level (2-tailed).

†. Cook's distance values indicated a possible significant outlier. We removed the outlier, and we reran the analysis (N=14). The output was: R<sup>2</sup> = 0.305, Slope = -1.967 and P-value = 0.041.

**B** Soleus shortening velocity at peak/maximum ankle plantar flexion moment (mms<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.127	7.331	0.193	0.240	9.306	0.064 <sup>†</sup>	<0.001	0.238	0.946
Hallux	0.039	-3.862	0.481	0.013	2.079	0.683	0.100	-3.737	0.250
Heel <sub>Average</sub>	0.081	9.262	0.305	0.160	12.037	0.139	0.003	-1.127	0.839
Mid-foot	0.027	-2.880	0.561	0.127	-5.808	0.192	0.246	-5.273	0.060
Hallux/ Heel	0.388	-37.657	0.013*	0.287	-29.864	0.040*	0.101	-11.562	0.249
Mid-foot/ Heel	0.220	-12.729	0.078	0.494	-17.594	0.003*	0.094	-5.023	0.266

\*. Correlation is significant at the 0.05 level (2-tailed).

†. Cook's distance values indicated a possible significant outlier. We removed the outlier, and we reran the analysis (N=14). The output: R<sup>2</sup> = 0.088, Slope = 3.842 and P-value = 0.302.

**C** Peak/maximum ankle plantar flexion (Nmkg<sup>-1</sup>)

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.220	0.102	0.078	0.124	0.094	0.198	0.135	0.112	0.178
Hallux	0.346	0.121	0.021*	0.249	0.126	0.058	0.287	0.156	0.039*
Heel <sub>Average</sub>	0.113	0.116	0.220	0.035	0.079	0.503	0.062	0.120	0.372
Mid-foot	0.439	0.123	0.007*	0.517	0.164	0.003*	0.569	0.198	0.001*
Hallux/ Heel	0.013	-0.074	0.682	0.001	-0.024	0.913	<0.001	-0.001	0.996
Mid-foot/ Heel	0.068	-0.075	0.347	0.007	-0.030	0.759	0.003	-0.023	0.839

\*. Correlation is significant at the 0.05 level (2-tailed).

**D** Cost of transport ( $\text{Jkg}^{-1}\text{m}^{-1}$ )

Speed	1.25 $\text{ms}^{-1}$			1.75 $\text{ms}^{-1}$			2.00 $\text{ms}^{-1}$		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.020	-0.056	0.615	0.251	-0.227	0.057	0.440	-0.616	0.007*
Hallux	0.012	0.040	0.702	0.064	-0.109	0.361	0.191	-0.386	0.103
Heel <sub>Average</sub>	0.010	-0.062	0.722	0.206	-0.326	0.089	0.285	-0.786	0.040*
Mid-foot	0.072	-0.091	0.333	0.184	-0.167	0.110	0.359	-0.478	0.018*
Hallux/ Heel	0.027	0.190	0.558	0.131	0.481	0.186	0.160	1.091	0.140
Mid-foot/ Heel	<0.001	-0.011	0.940	0.155	0.235	0.146	0.229	0.587	0.071

\*. Correlation is significant at the 0.05 level (2-tailed).

**E** Ground reaction moment arm at peak/maximum ankle plantar flexion (cm)

Speed	1.25 $\text{ms}^{-1}$			1.75 $\text{ms}^{-1}$			2.00 $\text{ms}^{-1}$		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	0.243	-0.008	0.062	0.234	-0.008	0.068	0.342	-0.009	0.022*
Hallux	0.303	-0.008	0.033*	0.300	-0.008	0.035*	0.448	-0.009	0.006*
Heel <sub>Average</sub>	0.224	-0.012	0.075	0.237	-0.012	0.066	0.400	-0.015	0.011*
Mid-foot	0.506	-0.009	0.003*	0.519	-0.010	0.002*	0.525	-0.009	0.002*

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table S4. Regressions between normalized foot anthropometric measurements (%height) and normalized stance-integrated electromyography (EMG) data (N=14).** The integrated EMG data for the 1.25 ms<sup>-1</sup> was used as the reference value, and thus no statistical analysis was applied (i.e., NaN).

**A** Lateral Gastrocnemius

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.187	-0.299	0.122	0.205	-0.434	0.104
Hallux	NaN	NaN	NaN	0.014	-0.079	0.684	0.035	-0.171	0.523

\*. Correlation is significant at the 0.05 level (2-tailed).

**B** Medial Gastrocnemius

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.676	-0.270	<0.001*	0.376	-0.331	0.020*
Hallux	NaN	NaN	NaN	0.144	-0.119	0.181	0.065	-0.132	0.378

\*. Correlation is significant at the 0.05 level (2-tailed).

**C** Soleus

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.306	-0.203	0.040*	0.263	-0.249	0.061
Hallux	NaN	NaN	NaN	0.005	0.024	0.819	0.074	0.126	0.345

\*. Correlation is significant at the 0.05 level (2-tailed).

**D** Tibialis Anterior

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.039	0.110	0.498	0.038	0.117	0.503
Hallux	NaN	NaN	NaN	0.010	-0.052	0.740	<0.001	-0.004	0.983

\*. Correlation is significant at the 0.05 level (2-tailed).



**Table S5. Regressions between unnormalized foot anthropometric measurements (cm) and normalized stance-integrated electromyography (EMG) data (N=14).** The integrated EMG data for the 1.25 ms<sup>-1</sup> was used as the reference value, and thus no statistical analysis was applied (i.e., NaN).

**A** Lateral Gastrocnemius

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.153	-0.140	0.167	0.176	-0.208	0.135
Hallux	NaN	NaN	NaN	0.008	-0.031	0.757	0.028	-0.078	0.570

\*. Correlation is significant at the 0.05 level (2-tailed).

**B** Medial Gastrocnemius

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.710	-0.143	<0.001*	0.422	-0.182	0.012*
Hallux	NaN	NaN	NaN	0.232	-0.078	0.081	0.134	-0.097	0.198

\*. Correlation is significant at the 0.05 level (2-tailed).

**C** Soleus

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.323	-0.108	0.034*	0.298	-0.138	0.043*
Hallux	NaN	NaN	NaN	0.001	-0.006	0.911	0.017	0.031	0.655

\*. Correlation is significant at the 0.05 level (2-tailed).

**D** Tibialis Anterior

Speed	1.25 ms <sup>-1</sup>			1.75 ms <sup>-1</sup>			2.00 ms <sup>-1</sup>		
	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value	R <sup>2</sup>	Slope	P-value
Heel	NaN	NaN	NaN	0.010	0.028	0.738	0.025	0.050	0.587
Hallux	NaN	NaN	NaN	0.047	-0.059	0.459	0.001	-0.010	0.912

\*. Correlation is significant at the 0.05 level (2-tailed).