

Fig S1. Schematic representation of animals walking above and below an instrumented runway.

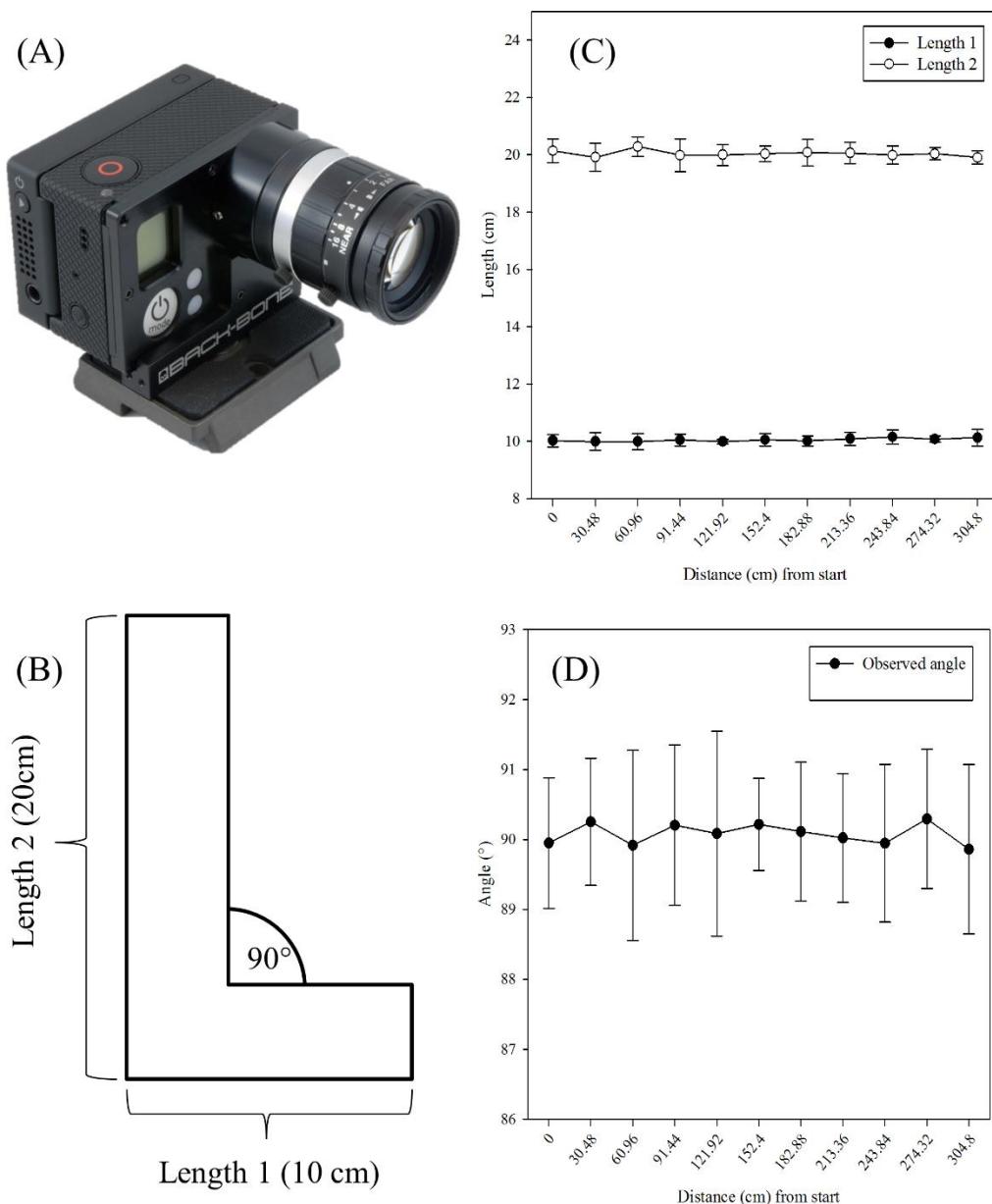


Fig S2. Description and results of camera verification. All trials were filmed from lateral view using a (A) GoPro camera (Hero 3+ Black Edition; GoPro, San Mateo, CA) modified with a Back-Bone Ribcage (Ribcage v1.0; Back-Bone, Ottawa, ON), which allows the GoPro cameras to be outfitted with interchangeable lenses and eliminates image distortion inherent to the camera. In order to validate that no camera distortion was present during filming, we constructed a 3.048 m runway with intervals marked every 30.48 cm. The camera was placed 3.048 m from the runway. We then had a participant (MCG) walk an object (B) with markers attached at specific points representing a known angle and lengths. This was repeated 10 times. These points were digitized using ImageJ (Schneider et al., 2012; <http://rsbweb.nih.gov/ij/download.html>) at each interval along the runway for each of the 10 passes across the runway. The result of this validation indicates only minor fluctuations in (C) length and (D) angular measurements. These fluctuations are most likely a result of digitization error rather than distortion from the camera.

Table S1. Documentation of the primate species that have been observed using below branch quadrupedal locomotion, and its relative proportion in the locomotor repertoire.

Family	Species	Study	Proportion (%)
Galagidae	<i>Galago demidovii</i>	(Gebo, 1987)	6
	<i>Galago senegalensis</i>	(Gebo, 1987)	2
Lorisidae	<i>Loris tardigradus</i>	(Gebo, 1987)	29.5
	<i>Nycticebus coucang</i>	(Gebo, 1987)	29
Cheirogaleidae	<i>Nycticebus coucang</i>	(Glassman and Wells, 1984)	0.5
	<i>Perodicticus potto</i>	(Gebo, 1987)	22
Lemuridae	<i>Cheirogaleus major</i>	(Gebo, 1987)	7
	<i>Cheirogaleus medius</i>	(Gebo, 1987)	11
Indriidae	<i>Microcebus murinus</i>	(Gebo, 1987)	5
	<i>Mirza coquerelii</i>	(Gebo, 1987)	23
Daubentoniiidae	<i>Eulemur coronatus</i>	(Gebo, 1987)	2
	<i>Eulemur fulvus</i>	(Gebo, 1987)	9
Tarsiidae	<i>Eulemur macaco</i>	(Gebo, 1987)	6
	<i>Eulemur mongoz</i>	(Gebo, 1987)	8
Callitrichidae	<i>Eulemur rubriventer</i>	(Tilden, 1990)	0.9
	<i>Hapalemur griseus</i>	(Gebo, 1987)	3
Cebidae	<i>Lemur catta</i>	(Gebo, 1987)	4
	<i>Varecia variegata rubra</i>	(Gebo, 1987)	14
Atelidae	<i>Varecia variegata variegata</i>	(Gebo, 1987)	11
	<i>Propithecus verreauxi</i>	(Gebo, 1987)	5
Cercopithecidae	<i>Daubentonia madagascariensis</i>	(Curtis and Feistner, 1994)	2
	<i>Tarsius syrichta</i>	(Gebo, 1987)	8
Hominidae	<i>Leontopithecus rosalia</i>	(Rosenberger and Stafford, 1994)	9
	<i>Cebus apella</i>	(Fleagle and Mittermeier, 1980)	1
Hominidae	<i>Cebus capucinus</i>	(Gebo, 1992)	0.5
	<i>Alouatta palliata</i>	(Gebo, 1992)	2
Hominidae	<i>Alouatta pigra</i>	(Cant, 1986)	0.5
	<i>Alouatta seniculus</i>	(Yousatos, 1998)	1.3
Hominidae	<i>Ateles belzebuth</i>	(Cant et al., 2001)	3.1
	<i>Ateles geoffroyi</i>	(Fontaine, 1990)	0.52
Hominidae	<i>Ateles paniscus</i>	(Yousatos, 2002)	3.1
	<i>Lagothrix lagothricha</i>	(Cant et al., 2001)	0.1
Hominidae	<i>Cercopithecus mitis</i>	(Gebo and Chapman, 1995)	0.33
	<i>Colobus badius</i>	(Gebo and Chapman, 1995)	0.5
Hominidae	<i>Colobus guereza</i>	(Gebo and Chapman, 1995)	0.5
	<i>Pongo abelii</i>	(Thorpe and Crompton, 2006)	26
Hominidae	<i>Pongo pygmaeus</i>	(Cant, 1987)	1
	<i>Pongo pygmaeus</i>	(Manduell et al., 2011)	1.1

- Cant, J. G. H.** (1986). Locomotion and Feeding Postures of Spider and Howling Monkeys: Field Study and Evolutionary Interpretation. *Folia Primatol.* **46**, 1–14.
- Cant, J. G. H.** (1987). Positional behavior of female bornean orangutans (*Pongo pygmaeus*). *Am. J. Primatol.* **12**, 71–90.
- Cant, J. G., Youlatos, D. and Rose, M. D.** (2001). Locomotor behavior of *Lagothrix lagothricha* and *Ateles belzebuth* in Yasuní National Park, Ecuador: general patterns and nonsuspensory modes. *J. Hum. Evol.* **41**, 141–166.
- Curtis, D. J. and Feistner, A. T. C.** (1994). Positional Behaviour in Captive Aye-Ayes (*Daubentonia madagascariensis*). *Folia Primatol.* **62**, 155–159.
- Fleagle, J. G. and Mittermeier, R. A.** (1980). Locomotor behavior, body size, and comparative ecology of seven Surinam monkeys. *Am. J. Phys. Anthropol.* **52**, 301–314.
- Fontaine, R.** (1990). Positional behavior in *Saimiri boliviensis* and *Ateles geoffroyi*. *Am. J. Phys. Anthropol.* **82**, 485–508.
- Gebo, D. L.** (1987). Locomotor diversity in prosimian primates. *Am. J. Primatol.* **13**, 271–281.
- Gebo, D. L.** (1992). Locomotor and postural behavior in *Alouatta palliata* and *Cebus capucinus*. *Am. J. Primatol.* **26**, 277–290.
- Gebo, D. L. and Chapman, C. A.** (1995). Positional behavior in five sympatric Old World monkeys. *Am. J. Phys. Anthropol.* **97**, 49–76.
- Glassman, D. and Wells, J.** (1984). Positional and activity behavior in a captive slow loris: a quantitative assessment. *Am. J. Primatol.* **7**, 121–132.
- Manduell, K. L., Morrogh-Bernard, H. C. and Thorpe, S. K. S.** (2011). Locomotor behavior of wild orangutans (*Pongo pygmaeus wurmbii*) in disturbed peat swamp forest, Sabangau, Central Kalimantan, Indonesia. *Am. J. Phys. Anthropol.* **145**, 348–359.
- Rosenberger, A. L. and Stafford, B. J.** (1994). Locomotion in captive *Leontopithecus* and *Callimico*: a multimedia study. *Am. J. Phys. Anthropol.* **94**, 379–394.
- Thorpe, S. K. S. and Crompton, R. H.** (2006). Orangutan positional behavior and the nature of arboreal locomotion in Hominoidea. *Am. J. Phys. Anthropol.* **131**, 384–401.
- Tilden, C. D.** (1990). A study of locomotor behavior in a captive colony of red-bellied lemurs (*Eulemur rubriventer*). *Am. J. Primatol.* **22**, 87–100.
- Youlatos, D.** (1998). Seasonal variation in the positional behavior of red howling monkeys (*Alouatta seniculus*). *Primates* **39**, 449–457.
- Youlatos, D.** (2002). Positional behavior of black spider monkeys (*Ateles paniscus*) in French Guiana. *Int. J. Primatol.* **23**, 1071–1093.