

Elephants move like 4x4s: scientists

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African Bush Elephant in Mikumi National Park, Tanzania. Taken by Oliver Wright, via Wikipedia.

Elephants' legs work like a four-wheel drive vehicle, making them probably unique in the animal kingdom, scientists said Tuesday.

Their "four-leg-drive" system means power is applied independently to each limb.

All other four-legged animals are thought to have "rear-leg-drive", in which the hind [legs](#) are used for acceleration while the front legs are used more for braking.

"We have developed some new techniques for looking at animal movement that may change the way that we view the locomotion of other animals," said study leader John Hutchinson, from the Royal

Veterinary College in London.

"We have shown that elephant legs function in very strange and probably unique ways. We even overturned some of our own previous ideas about elephants.

"Our measurements have also provided basic data that will be useful in clinical studies of elephants, such as common lameness problems."

The researchers studied the movements of six young Asian elephants, using three-dimensional motion-capture technology.

The elephants were ridden at different speeds along a walkway rigged with force-sensitive platforms.

The scientists found that each limb was used for both braking and accelerating.

Their legs were shown to be slightly "bouncy", especially when running fast, which made their legs two to three times less mechanically efficient than expected -- and therefore slower than many other animals.

"Surprisingly, [elephants](#) use their forelimbs and hindlimbs in similar braking and propulsive roles, not dividing these functions among limbs as was previously assumed or as in other quadrupeds," the scientists wrote in the journal [Proceedings of the National Academy of Sciences](#).

"Thus, their limb function is analogous to four-wheel-drive vehicles."

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