

A bit of gibbon take is all a super-ape needs

August 10 2011



A white-handed gibbon sits in his enclosure at the Tierpark Friedrichsfelde zoo in Berlin in 2010. Scientists said they had uncovered the secret behind the extraordinary jumping ability of the white-handed gibbon, capable in the wild of leaping across more than 10 metres (33 feet) in gaps in the forest canopy.

Scientists on Wednesday said they had uncovered the secret behind the extraordinary jumping ability of the white-handed gibbon, capable in the wild of leaping across more than 10 metres (33 feet) in gaps in the forest canopy.

Using high-speed cameras and laser measurement, researchers recorded two captive gibbons -- one an adult male, the other a juvenile female -- as they jumped between trunks at a wildlife park in Belgium.

They found the apes were able, in a single movement, to accelerate their

bodies to a stunning 8.3 metres per second -- nearly 30 kilometres (19 miles) an hour -- in order to make a vertical jump of 3.5 metres (11.4 feet).

To achieve this performance, the gibbon (*Hylobates lar*) needs to muster a reserve of pent-up energy and release it efficiently in a jolt through its muscles, tendons and skeletons.

But the gibbon's biomechanics are not those of specialised leapers, like the locust, the flea and bushbaby, whose anatomies have been sculpted by evolution to make them super-jumpers.

The ape, a native of tropical forests in Southeast Asia, does the trick through a mixture of resources, the investigators believe.

One is to use its long and heavy arms, which account for 17 percent of body mass compared to 11 percent of humans.

The ape crouches and then swings its hook-handed arms forward during takeoff. This causes its centre of mass to shift forwards at the moment of lift, providing it with a huge onward push.

The swinging movement is not unique. In fact, pentathletes in ancient Greece used to artificially add mass to their forelimbs by holding weights, called halteres, to increase their distance when they did standing jumps.

Where the gibbon particularly scores, though, is combining the arm swing with a large counter-movement in the trunk and hind limbs before the jump-off, stretching the muscles and tendons so that they give it a spring-like lift.

The study, headed by Anthony Channon of the Royal Veterinary College

in Hatfield, north of London, appears in the British journal *Biology Letters*.

"The gibbons' unusual morphology facilitates a division of labour among the hind limbs, forelimbs and trunk, resulting in modest power requirements compared with more specialised leapers," it says.

(c) 2011 AFP

Citation: A bit of gibbon take is all a super-ape needs (2011, August 10) retrieved 19 April 2024 from <https://phys.org/news/2011-08-bit-gibbon-super-ape.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--