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Ancestors Walked on Knuckles

Hand and wrist of *Australopithecus* found last year. Humanity's early ancestors did not walk fully upright, but probably scooted along on their knuckles, much like chimpanzees and gorillas do today. That is the conclusion drawn by two scientists who studied the wrist bones of Lucy, a hominid known as *Australopithecus afarensis*, and found that she had stiff wrists. Brian Richmond and David Strait of George Washington University in the US made their discovery after stumbling across some old papers on primate physiology at the Smithsonian Institution in Washington DC.



Eureka

"We saw something that talked about special knuckle walking adaptations in modern African apes," Dr Richmond said. "I could not remember ever seeing anything about wrists in fossil hominids. I thought 'Oh my god, I don't think anyone's looked at this.'" Across the hall was a cast of the famous fossil Lucy. We ran across and looked at it and bingo, it was clear as night and day. It was a eureka moment." Lucy's stiff wrists suggest that her ancestors - and ours - walked on their knuckles. "We have found evidence in the wrist joint that sheds new light on arguably the most fundamental adaptation in humans ... which is why did humans start walking upright?" Dr Richmond said.



Flexible wrists

"Walking upright is the hallmark of humanity. It is the feature that defines all of our ancestors to the exclusion of our ape relatives." Lucy, who lived in Africa between 4.1 and 3 million years ago, did walk upright. Her hip and leg bones make that clear. But she did not have the flexible wrists that allowed later humans to throw spears and make tools. Dr Richmond said it took a year of "tedious work" to prove that other pre-humans, notably *Australopithecus anamensis*, also had the stiff wrist.

The finding in no way suggests that humans descended from apes.

Long fingers

Experts say humans, chimps, gorillas and other apes descended from a common ancestor and evolved independently. Humans came to walk upright, leaving their hands free to gather and

carry things, while apes did not. "It is thought that knuckle walking is something that allows these animals to retain long fingers that allow them to climb in trees, but to also walk using their forearms," Dr Richmond said. "But for that you need a very stable wrist joint. Chimpanzees and gorillas have a special locking mechanism that prevents the wrists from cocking back very far." Lucy has it too. Dr Richmond said it was not until *Australopithecus africanus* emerged, about 2.5 million years ago, that the wrist became mobile like that of modern humans.

The research is published in Nature (1).

1. Richmond GB. Strait DS. Evidence that humans evolved from a knuckle-walking ancestor. Nature. 404:382-84. 2000.