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Arm swinging: A helping hand

29 Jul 2009

Ever wondered why we swing our arms when we walk? Or why we move the opposite arm and leg at the same time? It might seem like a costly habit, but according to scientists writing today in the journal *Proceedings of the Royal Society B*, swinging your arms can actually save you energy.

Previous claims have suggested that arm swinging is a waste of energy, or just 'an evolutionary relic' from days of walking on four limbs, ideas now proved wrong by Steven Collins from the University of Michigan and his team. Instead, they have demonstrated that humans swing their arms with minimal effort, and that it uses very little energy. What's more, not swinging your arms actually uses more energy than it does to swing them.

To test these ideas, Collins used a robotic model as well as 10 human subjects who walked with different arm positions - normal walking, walking with their arms at their sides, and even swinging the same arm as the stepping leg - something it took a little while to get used to. At the same time, the team measured how much energy and muscle power was required to swing the arms, and whether there was an effect on forces exerted by the ground.

"Arms are easily swung by exploiting natural dynamics, with significant benefits to gait economy due to reduced ground reaction moments," says Collins. "Passive dynamics appear to make arm swinging easy, while indirect benefits from reduced vertical moments make it worthwhile overall."

Even though arm swinging shows little benefit in step by step stability, the results have demonstrated an overall advantage. One the other hand, moving the same arm and leg simultaneously used up the most energy.

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