



What Happens When Cyborg Tech Goes Beyond Medicine?

Transhumans believe that science has advanced to the point where evolution can be accelerated in order to re-create humanity in their own image. This makes for interesting science fiction but in reality is full of risks and unintended consequences. □ TN Editor

The age of the cyborg may be closer than we think. Rapidly improving medical robotics, wearables, and implants means many humans are already part machine, and this trend is only likely to continue.

It is most noticeable in the field of medical prosthetics where high-performance titanium and carbon fiber replacements for limbs have become commonplace. The use of “blades” by Paralympians has even raised questions over whether they actually [offer an advantage over biological](#) limbs.

For decades, myoelectric prosthetics—powered artificial limbs that read electrical signals from the muscles to allow the user to control the

device—have provided patients with mechanical replacements for lost hands.

Now, advances in robotics are resulting in prosthetic hands that are getting close to matching the originals in terms of dexterity. The Michelangelo prosthetic hand is fully articulated and precise enough to carry out tasks like cooking and ironing.

Researchers have even demonstrated robotic hands that have a [sense of touch and can be controlled using the mind](#). And just last month another group showed that [fitting a standard myoelectric arm with a camera](#) and a computer vision system allowed it to “see” and grab objects without the user having to move a muscle.

Medical exoskeletons are already commercially available—most notably, ReWalk and Ekso Bionics devices designed to help those with spinal cord injuries stand and walk. Elsewhere, this technology is being used to [rehabilitate people after strokes or other traumatic injuries](#) by guiding their limbs through their full range of motion.

At present, these technologies are aimed solely at those who have been injured or incapacitated, but an [editorial in *Science Robotics*](#) last week warned that may not always be the case.

“There needs to be a debate on the future evolution of technologies as the pace of robotics and AI is accelerating,” the authors wrote.

“It seems certain that future assistive technologies will not only compensate for human disability but also drive human capacities beyond our innate physiological levels. The associated transformative influence will bring on broad social, political, and economic issues.”

This can already be seen with the [development of military exoskeletons](#) designed to boost soldiers’ endurance. More bizarrely, Japanese researchers have recently floated the idea of adding to our limbs rather than replacing them. [The MetaLimbs project](#) gives users two extra robotic arms that can be controlled using sensors on their legs and feet.

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