

Amputees can experience prosthetic hand as their own

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Scientists at Karolinska Institutet and Lund University in Sweden have succeeded in inducing people with an amputated arm to experience a prosthetic rubber hand as belonging to their own body. The results can lead to the development of a new type of touch-sensitive prosthetic hands.

The illusion of having a rubber hand was achieved by the scientists by touching the stump of the amputated arm out of sight of the subject while simultaneously touching the rubber hand in full view of the same subject. This created the illusion that the sensory input was coming from the prosthetic hand rather than from the stump, and that the hand belonged to the subject's own body.

The effect was confirmed by the subjects' own descriptions of the experience and by their tendency to point to the hand when asked to localise the point of stimulation. That they experienced the rubber hand as their own was also substantiated physiologically in that they started to sweat when the hand was pricked with a needle.

The study, which was carried out at the Red Cross hospital in Stockholm, opens up new opportunities for developing prosthetic hands that can be experienced by wearers as belonging to their own bodies, which would be a great benefit to patients and which is considered an important objective in applied neuroscience.

"We'll now be looking into the possibilities of developing a prosthetic hand that can register touch and stimulate the stump to which it's attached," says Henrik Ehrsson, one of the researchers involved in the study. "If this makes it possible to make a prosthetic sensitive by cheating the brain, it can prove an important step towards better and more practical prosthetic hands than those available today."

Source: Karolinska Institutet

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