Microchip transplant connecting brain to spinal cord helps paralyzed man for 12 years walk, climb stairs

Thanks to an electronic device implanted in the brain and spinal cord, a patient who has been paralyzed for 12 years is able to stand up, walk, and even climb stairs.

It was Gert-Jan Oskam, 40 years old, from the Netherlands. He was paralyzed in his legs after a tragic accident in 2011. He was selected to participate in a trial of scientists at the Swiss Federal Polytechnic University (École Polytechnique Fédérale de Lausanne - EPFL) on a new electronic device.

Picture 1 of Microchip transplant connecting brain to spinal cord helps paralyzed man for 12 years walk, climb stairs

Scientists implanted an electronic device into Gert-Jan Oskam's brain. It has the task of reading his thoughts, stimulating the nerves and "controlling" the movement of his legs.

Neuroscientist Gregoire Courtine, a member of the research team, describes the technology as a "digital regeneration" of the spinal cord.

Spinal cord injuries can disrupt communication between the brain and the spinal cord region that controls walking, leading to leg paralysis. The use of electronic implants will help create a "wireless digital bridge" between the brain and spinal cord.

Two implantable devices will be placed on the area that controls the movement of the leg: one is placed in the patient's brain and the other is placed on the spinal cord.

When the patient thinks about walking, the brain sends out electrical signals. These devices decode them and convert them into strings of electrical stimulation of the spinal cord, activating the leg muscles to achieve the desired movement.

A special thing is that this system works wirelessly so the patient can move independently.

The system took just a few minutes to calibrate after the implant was placed into Gert-Jan's brain and spinal cord. He has been able to use it to stand, walk and climb stairs on his own at home for over a year now.

Surprisingly, Gert-Jan's motor skills still made "significant improvements" even when the digital device was turned off. The reason is that new natural neural connections have been activated when using technology on the brain and spinal cord.

So far, this new device has only been successfully tested in a single person, Gert-Jan Oskam. However, the team hopes to roll it out to others and restore not only leg movement but also arms and hands, expanding the

opportunities for paralyzed patients worldwide.

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