

# Intensive training post-spinal cord injury can stimulate repair in brain and spinal cord

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Intensive rehabilitation training for patients with spinal cord injuries can stimulate new branches growing from severed nerve fibers, alongside compensatory changes in the brain, say Canadian researchers. Most importantly, it could lead to restoring hand function and the ability to walk.

A study recently published in the journal *Brain* highlights the remarkable benefits of rehabilitation training after a cervical spinal cord injury—something that has been overshadowed in recent years by the promise of cutting-edge stem cell research.

“It may be that it is neglected because it seems so simple,” says the study’s senior author Karim Fouad of the University of Alberta in Edmonton.

“Some people take very desperate steps when they are paraplegic. They go to other countries to receive treatments like stem cell transplantations, and most of these approaches are not really controlled trials. They undergo a lot of risk and spend a lot of money, when in fact they could see more benefits with fewer risks from sustained, intensive rehab training.”

The study led by Fouad shows that when animal models with incomplete spinal cord injuries received intensive training over many weeks on a reaching task which they were able to do before their injuries, they performed significantly better than their untrained counterparts. In fact,

the animals trained post-injury nearly doubled the success rate achieved by the untrained animals.

“Research has found that after incomplete spinal cord injury, there is a moderate amount of recovery based on a rewiring process, a response of the nervous system to the injury,” says Fouad. “This is a naturally occurring process. What we found is that intensive rehabilitation training actually promotes this naturally occurring process. It actually enables changes in the brain and spinal cord similar to a repair process.”

“The way the animals succeeded in the grasping task post-injury was not the way they did it before. They compensated. They adapted. They developed a new way to do it. What people with these injuries can take from this is that you don’t have to do things the way you used to do them before— what matters is that you attempt, practice hard and find your own adaptive strategy.”

Source: University of Alberta

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