New Insights to Restore Function After Spinal Cord Paralysis

Claudia Angeli, PhD

Real-Life Science Audio Summary Transcript

Listen to the podcast

ANNOUNCER: 00:04

Welcome to another episode of Real-Life Science, where we bring you the latest insights and breakthroughs in rehabilitation research. In today's episode, "New Insights to Restore Function After Spinal Cord Paralysis," we explore a revolutionary approach to spinal cord injury rehabilitation. Imagine standing tall and independent after a severe cervical spinal cord injury - once thought impossible, now a reality for some.

Stay tuned as we dive into the innovative research from Kessler Foundation and hear from lead author Claudia A. Angeli, PhD, about how spinal cord epidural stimulation is changing lives. Don't forget to subscribe and leave a review to stay updated on our latest episodes!

SERENA: 00:47

For people with severe cervical spinal cord injury, standing without help was once considered impossible. But some of the latest research from Kessler Foundation shows that targeted spinal cord epidural stimulation combined with focused rehabilitative training can make independent standing a reality for some.

"After several months of task-specific training and spinal cord epidural stimulation, many participants were able to stand with little or no manual support. Some could even sustain their full weight without any assistance." says lead author Claudia A. Angeli, PhD, assistant director, Tim and Caroline Reynolds Center for Spinal Stimulation.

"We're developing ways to help people with complete paralysis regain the ability to stand. Spinal stimulation and focused rehab training restore hope - and standing - for some.

Participants who completed more training sessions experienced greater improvements than those with fewer sessions. Research shows that weight-bearing exercises help people with spinal cord injury improve health, build muscle, and support better posture and circulation."

Participants who completed more training sessions experienced greater improvements than those with fewer sessions.

New Insights to Restore Function After Spinal Cord Paralysis

Claudia Angeli, PhD

Real-Life Science Audio Summary Transcript

SERENA: 02:06 How spinal cord stimulation works

Spinal cord epidural stimulation uses gentle electrical signals to "reawaken" the communication between the brain and the body. Electrodes placed near the spine help muscles respond to movement - even when signals from the brain can't travel normally past the injury. When combined with targeted, focused training, this stimulation helps the nervous system relearn how to support standing and posture.

SERENA: 02:32 How the study worked

The study followed 30 people with cervical spinal cord injury who were unable to stand independently at the start of the intervention. Each person was surgically implanted with a device to deliver spinal stimulation. Afterwards, they started a special program called activity-based recovery training.

SERENA: 02:52 During the intervention:

Participants were asked to stand for two hours a day, five days a week, for either 80 or 160 sessions, depending on which group they were placed in.

Stimulation was adjusted to help participants activate their muscles to extend their knees, hips, and trunk without help.

Different types of stimulation were tested during the study - some concentrated on blood pressure support, others on voluntary movement. All groups combined their training with standing-specific stimulation over time.

SERENA: 03:25 What were the study results?

- All 30 participants were able to stand unassisted with at least one leg

New Insights to Restore Function After Spinal Cord Paralysis

Claudia Angeli, PhD

Real-Life Science Audio Summary Transcript

- 16 people could keep their hips, knees, and upper body straight without external support
- People who trained for 160 sessions showed even more progress than those who trained for 80 sessions
- Participants who began with movement-focused stimulation made faster progress than those who started with cardiovascular-focused stimulation

ANNOUNCER: 05:55

Thank you for joining us on Real-Life Science: New Insights to Restore Function After Spinal Cord Paralysis. Today's episode highlighted how spinal stimulation and focused rehabilitation training are restoring hope - and even standing - for some individuals living with spinal cord injuries. We learned that participants who completed more training sessions experienced greater improvements than those with fewer, underscoring the power of persistence and innovation in neurorehabilitation.

If you'd like to dive deeper into the research, the full study is linked in the program notes. If this episode inspired you, please subscribe and leave a review. Your support helps us continue sharing stories that push the boundaries of what's possible in spinal cord injury recovery. Stay connected with us on Facebook, Instagram, YouTube, SoundCloud, and Spotify. Until next time - keep exploring, keep learning, and keep believing in breakthroughs.