Benefits of Exercise for Spinal Cord Repair Debated

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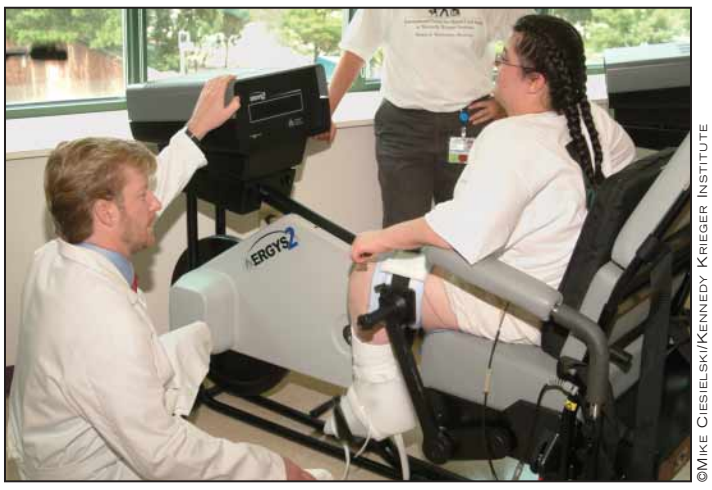
Contributing Writer

BALTIMORE — Exercise provides health benefits to patients with spinal cord injuries, but whether exercise increases patients' sensation and ability to move, perhaps by stimulating repair of damaged nerves, is still an open question.

A new spinal cord injury center at Baltimore's Kennedy Krieger Institute offers an activity-based therapy plan for both children and adults with congenital, viral, or trauma-related spinal cord injury that emphasizes repetitive motion intended to awaken dormant nerves.

The centerpiece of activity-based therapy, sometimes called "advanced restoration" therapy, is a recumbent stationary bicycle. Patients pedal aided by electrodes attached to specific muscle groups. Some in-house patients also use a robotic walking machine known as Lokomat that operates the legs as the patient's upper body is suspended in a harness over a treadmill. All the equipment is designed to be adaptable for children.

Children may respond especially well to activity-based therapy because their central nervous systems are developing and their smaller, lighter bodies may be more receptive to any restorative or regenerative effects of these exercises, according to the center's director, neurologist John W. McDonald, M.D.



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Dr. John McDonald is shown supervising a patient on a recumbent bike designed to prompt movement via electrical impulses.

Although he thinks the therapy stimulates remyelinization, no trials have tested the process in humans. That's because no noninvasive imaging method has the necessary resolution for measuring cellular events, he explained.

Exercise was shown to improve the physical condition of the body, including such indicators as bone density, blood glucose level, muscle mass, and cardiovascular fitness, in 60 adults with spinal cord injuries who participated in a 3-year cohort study. These patients' spinal cord injuries were of at least 18 months' duration at the time of enrollment in the study, past the point when therapy is traditionally considered effective.

Dr. McDonald said the patients also experienced "useful improvement in movement and sensation" as a result of the exercise program.

He will present details of the data at the annual meeting of the American Neurological Association in San Diego in September. A prospective randomized trial examining activity-based therapy in children is underway at Philadelphia Shriners Hospital and Kennedy Krieger Institute and is about half completed, Dr. McDonald noted. He is planning a larger-scale prospective study in adults at Philadelphia Shriners Hospital, Shepherd Center in Atlanta, and Kennedy Krieger Institute.

Other researchers are less enthusiastic about repetitive motion therapy.

Traditional physical therapy is usually just as good, said Bruce H. Dobkin, M.D., program director of the neurologic rehabilitation and research program at the University of California, Los Angeles. His recent study at six sites across the United States and in Canada showed regular therapy yielded results similar to those of an experimental regimen of treadmill walking assisted by physical therapists.

Newer therapies may prove to be useful, according to Steven Kirshblum, M.D., of the Kessler Institute for Rehabilitation in West Orange, N.J.

Future effective treatments for patients with spinal cord injuries will probably combine drugs, surgery, exercise, and possibly stem cells, Dr. Kirshblum predicted. ■