

A More Livable Life Now:

Rehabilitation research looks to high-touch

BY WINSTON DAVIS

D

r. George Kraft, MD, MS, and Alvord Professor of MS Research in the department of Rehabilitation Medicine at the University of Washington in Seattle, is on a mission. The lanky, once-upon-a-time redhead has focused his research career on helping people with MS live a better life **now**.

Today, treatments and therapies can delay additional damage, but so far they are helpless to fix what has been broken, Dr. Kraft explained. He and his colleagues at the University of Washington MS Rehabilitation Research and Training Center (which goes by the jaw-breaking initials UW MSRRTC) are devoted to changing that picture.

At the 2006 State of the Science Conference in MS Rehabilitation Research in Washington, DC, Dr. Kraft detailed the huge toll of possible MS losses: especially cognitive function, depression, and pain. Medical literature suggests all three are often inadequately treated, he noted. And they often feed each other in a vicious cycle.

"The cumulative effects of these impairments produce serious vocational disability," Dr. Kraft told the conference. "Moreover, because life is not dramatically shortened even as MS progresses, the MS population as a whole could theoretically require almost 9 billion days of personal care."

“Rehabilitation is a proven way to improve function for people with MS,” Dr. Kraft frequently repeats. Research will uncover more approaches—and, many hope, provide data showing the dollars-and-cents advantages. Currently on deck at UW MSRRTC are studies on such low-cost interventions as:

- “Motivational interviewing” by telephone. (The interviewing is conducted by nonprofessionals who receive short-term training and modest supervision.) Motivational interviewing has helped people make good choices about using compensatory technology—ranging from canes to computers to vehicle modifications. Now a team of MS rehab specialists—Drs. James Bowen, Kurt Johnson, and Charles

Bombardier—are collaborating on a series of studies to see if this low-tech, high-touch therapy will help people stick to exercise programs or increase their job retention.

- Exercise as a way to preserve function and treat depression in MS. Drs. Bombardier and Bowen are studying measures of the protective effects of activity on mood. Their earlier study suggested that aerobic exercise as a treatment for depression in people with MS has a more lasting impact and a lower incidence of side effects than a standard antidepressant medication.

- Cost-effective ways to distribute and teach the use of assistive technology. Dr. Kurt Johnson’s project focuses on money



The MSRRTC team: (front row, seated l-r) Kathryn Yorkston, Annette Wundes, George Kraft, Kendra Wight, Megan Morris; (back row, l-r) Rohini Wadhvani, Kurt Johnson, Jan Sorenson, Alyssa Bamer, Celeste Hunter, Robert Fraser, Charles Bombardier, Mark Jensen, James Bowen, Dawn Ehde, Maureen Manley

and time. “Unaffordable or unused technology does nothing to make life better for people with MS,” he pointed out.

■ Hypnosis for MS pain. Dr. Mark Jensen’s research suggests that hypnotherapy and behavior therapy can be literally life-changing for people with hard-to-treat MS pain.

The UW MSRRTC researchers are also seeking to improve rehab research design by developing “participation” as a standard outcome measure. “The degree of participation in activities indicates how MS can interfere with a person’s involvement in what they valued in life,” said Dr. Kathy Yorkston, who is taking the lead on this project. Social withdrawal is one of the more devastating effects of MS depression, fatigue, and cognitive problems, she explained. The research challenge lies in developing the verifiable

measurements of these symptoms that good science requires.

The 2006 conference ended with calls for more and better trained rehabilitation researchers, more fellowships and mentoring programs, and—importantly—more participation in rehabilitation by people with MS. The Society is now funding a mentor-based rehabilitation research training program. Individuals are urged to consult their health-care professionals and learn more about how rehab might keep them moving ahead with their lives.

For a full report on this conference, with the medical literature references, contact Alyssa DiGiacomo at the MS Rehabilitation Research & Training Center, University of Washington, 1959 NE Pacific Street, Box 356490, Seattle, WA 98195. For more information on the center, visit www.msrrtc.washington.edu. ■

A More Livable Life Now:

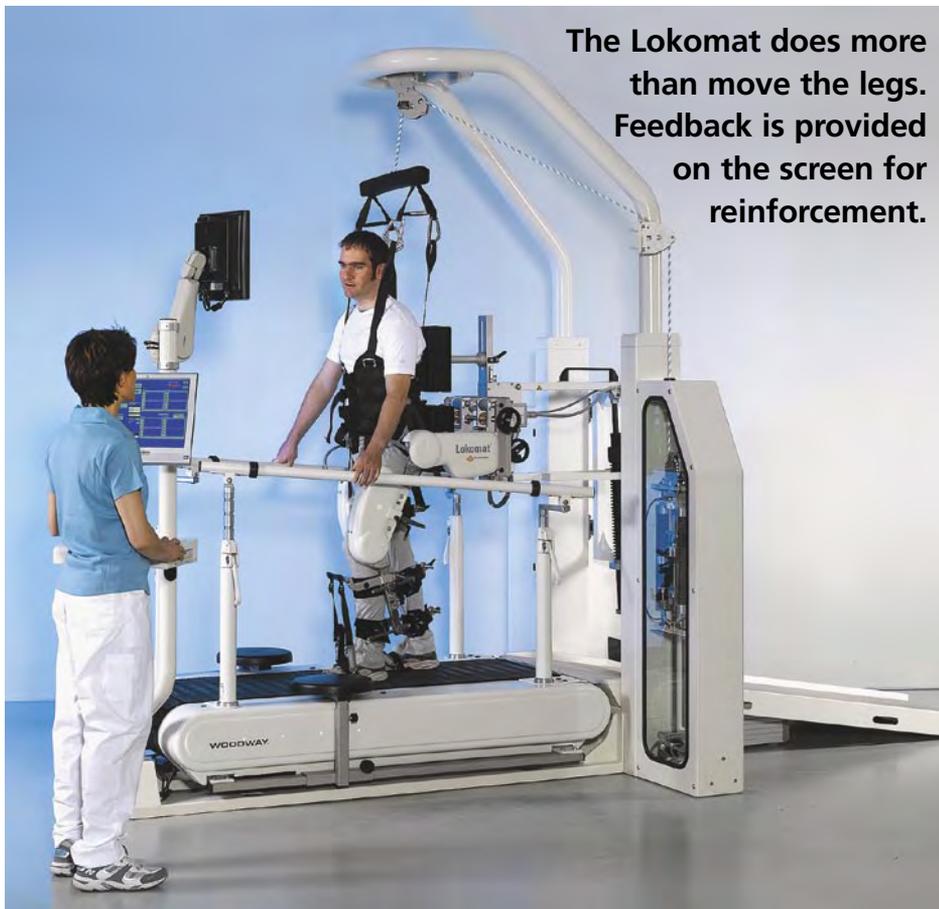
Rehabilitation research looks to high-tech

BY WINSTON DAVIS

At UCLA’s David Geffen School of Medicine, Dr. Barbara Giesser works with a team that is testing a strikingly different approach to helping people with MS improve their ability to walk. A soft-spoken woman who has devoted her

career to MS clinical care and research, Dr. Giesser is a lifelong believer in the efficacy of hope and the importance of good hard data. The rehabilitation technique she is studying—known as “locomotor” training—involves moving the legs in the correct pattern for walking.

The Lokomat does more than move the legs. Feedback is provided on the screen for reinforcement.



WWW.HOCOMA.COM

"We take walking for granted, unless we lose the ability," Dr. Giesser said. "Walking is one of the first things we learn as babies," she pointed out. "But it is actually a very complex activity which involves integrating circuits in the brain and spinal cord." This is not one of Dr. Giesser's areas of expertise but fortunately UCLA's department of Neurology is brimming with specialists.

Dr. Bruce Dobkin, a world famous expert in neurorehabilitation, pioneered using locomotor training for people with stroke and spinal cord injury in a laboratory not far from the MS center. Dr. Susan Harkema, another locomotor researcher, introduced Dr. Giesser to the technique. Soon, they were both supporting Dr. Giesser's growing interest, contributing

insights, expertise, and ultimately the use of Dr. Dobkin's laboratory.

Traditional physical therapy helps people with MS who have walking difficulty gain muscle strength and flexibility, but the gains they make don't always improve their actual walking. Locomotor training might change that.

It is hypothesized that repetitive "task specific" practice does more than restore strength. It may actually train nerves to recognize sensory cues and other subtle factors involved in walking. The

technique has been successful in stroke and other neurologic conditions, and a medical engineering firm has developed a special robot trainer: the Lokomat.

The Lokomat robot fits comfortably on the outside of the body and then, gently but noisily, moves the person's legs while she or he is suspended in a harness over a treadmill. The robot can be set for weight-bearing or weightless walking as needed. It also gives the user feedback to reinforce appropriate walking patterns.

Stroke is usually localized. In MS, injury may have occurred across many areas. Dr. Giesser, in collaboration with Dr. Harkema, started with a Society-funded pilot study involving just four people. In January 2007, they published the results.

This Lokomat user is working toward rebuilding walking speed.



WWW.HOCOMA.COM

half do standard resistive exercise training with a therapist.

“We’re also doing some task-specific training off the machine, in the hallways and out on the sidewalk, where people have to contend with uneven terrain and outdoor distractions,” Dr. Giesser said.

Additional questions are being asked. For example, does “task-specific” locomotor training have

While it took three physical therapists together to mimic the movement of just one person’s legs in walking—an incredibly labor-intensive project—all four study participants benefited. Three of them showed marked improvement in walking speed, balance, endurance, lessened spasticity, increased strength, and a better quality of life.

Now, with the help of a three-year Society grant, Dr. Giesser, Dr. Dobkin and their cross-disciplinary team have embarked on a project using Lokomat to do the heavy lifting. The study is following 40 people with progressive MS. They are all able to stand but—primarily because of spasticity and weakness—their walking speed and endurance are very limited. They come to UCLA for training 3 times a week for 12 weeks. Half the group are training with the robot and a therapist while the other

any effect on natural myelin repair? MS researchers Drs. Rhonda Voskuhl and Stefan Gold are asking the participants for blood samples before and after training to test for levels of growth factors and cell-signaling molecules called cytokines. The cognitive effect of the training is also being assessed.

“We’re a long way from proving that this will work,” Dr. Giesser cautioned. “And we will need compelling outcome data if medical centers are to invest in this equipment for people with MS.” The Lokomat is a half-million dollar baby. But that sum could seem reasonable if research establishes solid lasting benefits.

The Society is currently funding over 30 research projects, including this one, focused on improving life for people with MS until the day that cures are here. ■

Winston Davis is a freelance science writer.