

# The Neuromotor Recovery and Rehabilitation Laboratory

Helping people get back to living their lives

A partnership of the UC College of Allied Health Sciences, UC Department of Rehabilitation Sciences, UC Academic Health Center and Drake Center



# The Neuromotor Recovery and Rehabilitation Laboratory



## ***Our goal: to restore motor function after disability***

The primary focus of the Neuromotor Recovery and Rehabilitation Laboratory (NmRRL) is developing approaches to restore movement after disabling injuries and diseases. Our studies show that many years after stroke and spinal cord injury, patients can regain meaningful motor skills such as walking, feeding themselves and writing. When you choose the NmRRL, you will be choosing a team of experts that:

- 1** Is dedicated to helping patients improve their quality of life
- 2** Develops and tests clinical strategies to reduce or eliminate impairments from neurologic diseases
- 3** Serves as an information resource for individuals with neurological disabilities and their families and caregivers, as well as health care professionals

Everything we do — from our our free research studies offering alternative treatment options to our community engagement efforts — is aimed at helping people get back to living their lives .

*On the cover, top photo: Physical therapist and NmRRL member Tracey Schweder, PT, administers transcranial magnetic stimulation to a stroke patient. This technique allows “real time” brain imaging that determines the impact of a particular rehabilitative intervention on brain physiology.*

## ***Our team***

■ The Neuromotor Recovery and Rehabilitation Laboratory — also called the “Rehab Lab” — is a partnership of the University of Cincinnati College of Allied Health Sciences, UC’s Department of Rehabilitation Sciences, the UC Academic Health Center and Drake Center, a leading specialized medical and rehabilitative care facility in Cincinnati. This collaboration gives you the benefit of expertise from one of America’s top public research universities, and from one of the first and largest stroke teams in the world, all located at Drake Center.

***“My work with Dr. Page and his team started 14 years after my stroke. Already I can do many more tasks with my right hand than just two years ago, including brushing my teeth and loading the dishwasher.”***

***—Anita Elsna, Cincinnati, Ohio***







The Rehab Lab has hosted two international workshops on stroke rehabilitation, both held at Drake Center. The workshops attracted clinicians from 18 states and four countries.

## Our services

With a rapidly aging population, the number of people experiencing neurologic diseases such as stroke is rising exponentially. We offer an approach to treating these diseases that encompasses both research and education.

## Cutting-edge therapies

Our work is aimed at increasing the quality of life for stroke and spinal cord injury patients. Just as important, that same work will likely change the way rehabilitative care is delivered in the future.

## Research studies

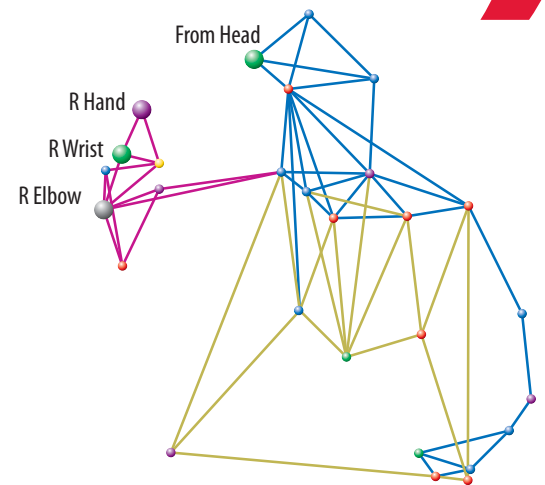
We offer free research studies providing treatment options not usually available in any for-profit clinical setting. We strive to design these treatment therapies so they will be seen by clinics and managed care as reasonable, reimbursable and effective. And, because of grant funding, patients receive all treatment at no cost to them.

As both scientists and clinicians, we recognize the importance of making sure that research findings are meaningfully translated into everyday care. We're not just testing tools or techniques as is frequently the case in clinical research; we're often the ones who developed the techniques.

**Our research is frequently featured in the local and national media.**

**Visit [www.rehablab.org](http://www.rehablab.org) to see some of this coverage.**

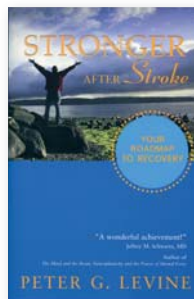
We are an interdisciplinary research and clinical team made up of physical, occupational, and speech therapists; neurologists; physiatrists; engineers; basic scientists; psychiatrists; and others. These varied backgrounds mean that patients receive specialized care tailored to them. And to best serve our patients, we work not only with them, but also with their care partners.



## Community engagement

We're committed to providing education and community outreach such as:

- :: Local, regional and national seminars for therapists and patients
- :: Free "lunch and learn" courses offered to local clinicians
- :: Regularly attending local and regional support groups to act as a resource for patients and their care partners



As another example, lab member Peter Levine, BA, PTA, has authored *Stronger After Stroke*, a top-selling stroke recovery book. And lab director Stephen Page, PhD, has worked on key national committees to develop fact sheets and brochures for stroke survivors. We also partner every two years with the American Society of Neurorehabilitation to host a one-of-its-kind, international conference for clinicians on best strategies for management of disabilities.

And it doesn't stop there. We have taken our knowledge of the best care and our passion for clinical excellence and used that to develop a world-class Stroke Recovery Center, located at Drake Center.

## Meet the team

### Stephen Page, PhD, FAHA

- Associate Professor, Department of Rehabilitation Sciences, College of Allied Health Sciences (CAHS), UC Academic Health Center, and in the Departments of Physical Medicine and Rehabilitation, Neurology, and Neurosciences, UC College of Medicine
- Director, Neuromotor Recovery and Rehabilitation Laboratory



Nearly all of Stephen Page's work has focused on restoring movement after stroke. His background includes more than 70 peer-reviewed articles and over 100 professional presentations. He has obtained more than \$6 million in grants from the National Institutes

of Health, the American Stroke Association, and other sources. Page holds degrees from the College of Wooster and Ball State University. He earned a PhD in motor learning and control from the University of Tennessee. He completed a post-doctoral fellowship at Kessler Institute for Rehabilitation, one of the top rehabilitation hospitals in the country.

Page was named a fellow of the American Stroke Association and has received numerous awards. Recently, he received UC's highest honor for a faculty member, the President's Excellence Award. He demonstrates a strong commitment to patients and is a steadfast resource in the field, volunteering, attending stroke support groups, and speaking regularly about best practices.

### Kari Dunning, PhD, PT

- Assistant Professor, Department of Rehabilitation Sciences, CAHS, UC Academic Health Center, and in the Division of Epidemiology and Biostatistics, UC College of Medicine
- Director, Clinical Research, Drake Center



For more than 20 years, Kari Dunning has been a physical therapist specializing in the evaluation and treatment of neurological patients. She has a master of science degree in neuroscience and a PhD in epidemiology.

Dunning has been conducting human subject epidemiology research in occupational exposures and fall prevention for more than 10 years. She has been working on stroke recovery research for four years, with a focus on finding strategies to optimize function after stroke. She currently is principal investigator on three stroke recovery studies, including a four-year American Heart Association Scientist Development Award.

Dunning, who has been a member of the American Physical Therapy Association for more than 20 years, also teaches evidence-based practice to physical therapy students, residents and community clinicians.

### Valerie Hill Hermann, MS, OTR/L

- Research Occupational Therapist, Department of Rehabilitation Sciences, CAHS, UC Academic Health Center, and Neuromotor Recovery and Rehabilitation Laboratory



Since 2004, Valerie Hill Hermann has worked in physical rehabilitation with a focus in stroke rehabilitation and gerontology. Hermann graduated from Indiana University (IUPUI) in 2004 with a bachelor of science degree in occupational therapy, in 2005 with

her master of science in health sciences education, and she is now pursuing her PhD in rehabilitation sciences, also at IUPUI.

Hermann was honored in 2009 both with IUPUI's Distinguished Alumnus Award and their Leadership Award. She is active in her profession serving as the rehabilitation liaison within the Ohio Occupational Therapy Association and as the quarterly editor for the Physical Disabilities Section for the American Occupational Therapy Association.

Hermann has authored peer-reviewed articles appearing in journals such as *Neurorehabilitation and Neural Repair* and the *American Journal of Occupational Therapy*. In 2009, she was one of only two individuals awarded a two-year Clinical Research Grant from the American Heart Association.

### Peter Levine, BA, PTA, AAS

- Research Associate, Department of Rehabilitation Sciences, CAHS, UC Academic Health Center
- Co-Director, Neuromotor Recovery and Rehabilitation Laboratory



Peter Levine is an author and frequent speaker with a focus on providing stroke survivors, caregivers and clinicians insight into brain plasticity as it relates to stroke recovery. He has co-authored more than 40 articles published in peer-reviewed journals, writes a monthly

column on stroke recovery in *Advance for Physical Therapists*, and is the author of the best selling book on stroke, *Stronger After Stroke* (Demos Medical, 2008).

Before coming to the University of Cincinnati and the Drake Center, Levine was a research associate in the Human Performance and Motion Analysis Laboratory at the Kessler Institute for Rehabilitation.

## Selected success stories



**Kari Dunning, PhD, PT**

### **Better coordination through games?**

Kari Dunning was skeptical at the thought of her stroke patients playing video games as part of their rehabilitation.

Dunning is a Rehab Lab member and assistant professor in the University of Cincinnati's Department of Rehabilitation Sciences in the College of Allied Health Sciences. She says patients find this new form of rehabilitation, in this case for leg muscles, not only challenging but also lots of fun. She is looking to determine whether a computer-assisted video game can improve balance and walking in patients who are more than one year post stroke. "The movement sounds simple to someone who's not suffered a stroke, but it's often very difficult for my patients," Dunning says.



**Valerie Hill Hermann, MS, OTR/L**

### **Using robotics to recover arm function after severe stroke**

Valerie Hill Hermann is a UC research occupational therapist working with stroke survivors through the Neuromotor Recovery and Rehabilitation Laboratory. With an exclusive grant from the American Heart Association, she is studying the best ways for patients to relearn muscle control after a stroke.

For two years, the Rehab Lab has used the MYOMO E100 Neurobotic system, a robotic arm brace, in rehabilitation studies with study participants. But Hermann wants to make sure the robotic arm is truly as effective as it is cutting edge. "Sometimes you have really cool technology," Hermann says, "but if it costs a lot and doesn't do any better than traditional therapy, why should a therapist or patient invest in it?"



**Stephen Page, PhD, FAHA**

### **"Rehearsal" may help spinal cord injury patients walk again**

"There's no equipment involved, there are no drugs involved, there are no real personnel involved and it's safe," Stephen Page says, adding that actual walking is unsafe for spinal cord patients to practice at home. "You just imagine yourself doing these things under the guidance of audio and visual tapes."

Over the past decade Page has shown that mental "rehearsal" of physical activities improves motor skills in stroke patients. Now, he hopes to find out if the same techniques can also help spinal cord injury patients walk again.

Page, associate professor in the College of Allied Health Sciences' rehabilitation sciences department and director of the NmRRL, has received a multi-year National Institutes of Health grant for a study on this topic that will be conducted at the lab.

**Find out more about our researchers' success stories with their patients at [www.rehablab.org](http://www.rehablab.org)**



## Physician and family resources

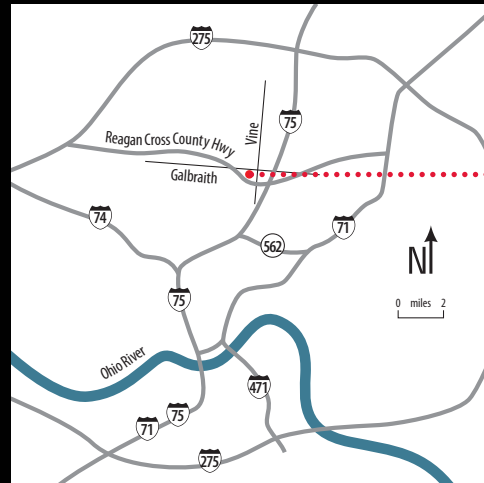
### Lodging

We are happy to advise patients and their care partners on local lodging options. In addition to a variety of nearby hotels, special accommodations are usually available at Drake Center's assisted living facility, Bridgeway Pointe. This facility is connected to Drake Center, where the Rehab Lab is located. An accessible, furnished apartment and assistive care for individuals with disabilities is available on an as-needed basis. Meal plans can also be added for a nominal fee.



*"After my stroke, the doctors told me nothing more could be done to improve my movement. Yet, after being in a study that targeted walking, I was able to walk farther, faster, and better. I then was in another study that was testing a new robotic device to improve my arm movement. Now I can use my arm again. Now things look pretty good; I am getting back in therapy again and have some new hope"*

—Ramon Robinson, Wyoming, Ohio



**Drake Center**

### Location

Centrally located in Cincinnati, Ohio, the Rehab Lab at Drake Center is easily accessible from three major highways.

Drake Center  
151 West Galbraith Road  
Cincinnati, OH 45216

### Parking

Drake Center parking is free, including valet parking at the South Pavilion. All entrances to the facility are convenient and handicap accessible. Valet parking is offered at the South entrance Monday through Friday, 7 a.m.–4:30 p.m.

### More online

#### :: Neuromotor Recovery and Rehabilitation Laboratory

Find information for patients, caregivers and health care professionals, including how to get involved with our free research studies. [www.rehablab.org](http://www.rehablab.org)

#### :: University of Cincinnati College of Allied Health Sciences

Learn more about the variety of offerings through this college, which consists of the university's "medical helping" professions' programs. [www.caahs.uc.edu](http://www.caahs.uc.edu)

#### :: University of Cincinnati Department of Rehabilitation Sciences

Discover the degrees offered by this department, and their concentrations in the fields of health sciences and physical therapy. [www.caahs.uc.edu/department/rehabscience](http://www.caahs.uc.edu/department/rehabscience)

#### :: Drake Center

Learn about the center's clinical innovations, patient success stories, upcoming events and community partnerships. [www.drakecenter.com](http://www.drakecenter.com)

### For more information about the Neuromotor Recovery and Rehabilitation Laboratory and its services, please contact:

Stephen Page, PhD  
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phone: 513-558-2754

#### Referrals

New patients may be referred by their physician or may call us directly to self-refer. An appointment for a screening will then be scheduled.

**Visit [www.rehablab.org](http://www.rehablab.org)  
to learn more!**

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