

Restore



Therapy Program Keeps Performing Artists on Their Feet

Physical therapists **Andrea Lasner**, top, and **Amanda Greene**, right, work with dancer **Cyndal Gilmore**.

When physical therapist **Andrea Lasner** joined the Johns Hopkins Department of Physical Medicine and Rehabilitation in 2009, the former professional dancer was dancing as a guest at a community dance school. There, word quickly got out about her day job, and her fellow performers streamed into her office to evaluate their aches and pains. Faculty members from a nearby university soon asked her to give their dancers baseline preventive screening exams.

Soon after, when **Ken Johnson**, director of rehabilitation therapy services at the Johns Hopkins Health Care and Surgery Center at Green Spring Station, asked Lasner what direction her future held, the answer was clear: “I always knew that I’d like to treat dancers,” she says.

Today, Lasner directs the Johns Hopkins Performing Arts Physical Therapy Program, a service dedicated to accommodating the unique needs of dancers, musicians, vocal artists, aerialists, figure skaters and other performing artists. She was joined in 2012 by physical therapist **Amanda Greene**, who also used to dance professionally.

Performing artists have unique needs that often

aren’t well-served by traditional physical therapy, says Greene. For example, the range of motion dictated by many styles of dance is far beyond what most physical therapists would consider acceptable. Similarly, the demands of some performing arts, such as playing an instrument in a specific posture for a long time, are often dismissed by traditional physical therapy.

“Someone who isn’t familiar with these types of patients would say, ‘We need to get you out of that position,’ but we can’t do that,” Greene says. “We need to work within the constraints of what this particular technique requires.”

The program offers comprehensive care for patients, including physical and occupational therapy for acute injuries, and regular maintenance to keep artists healthy and able to perform. The team also provides preventive screening, backstage evaluations, treatments and education for local dance schools. Dance medicine research with students at nearby universities is helping to improve the services that the program offers patients, Lasner says. For example, the team recently completed a study that confirmed the utility of Pilates for improving postural misalignments, strength and flexibility in dancers.

Patients who come to their program often find

The range of motion dictated by many styles of dance is far beyond what most physical therapists would consider acceptable.

comfort in the fact that she and Lasner are also performing artists, says Greene. “If they complain of pain with a plie, and I ask if it’s with grand plie or demi plie, their eyes light up,” she explains. “They know that I speak their language and that I’m going to help.”

There’s no greater reward than to see their patients perform, which they’re often invited to do, says Lasner. “When they’re able to return to the stage and do what they’re intended to do without pain and limitations,” she says, “we know we’ve done our job.” ■



Watch a webcast on the diagnosis, treatment and prevention of dance injuries at bit.ly/dancerehab.



Pablo Celnik

In the short time since I have served as the director of the Department of Physical Medicine and Rehabilitation, I have witnessed remarkable advancements in research and patient care made by my colleagues.

In late 2016, **Stacy Suskauer**, a pediatrician and physiatrist (featured at right), won an award for outstanding research in brain injury rehabilitation from the American Congress of Rehabilitation Medicine.

In early 2017, pain psychologist **Stephen Wegener** embarked on the second year of a research project to understand the risk factors for chronic pain and test psychologically informed physical therapy. He is now coordinating with Johns Hopkins physicians operating in the community to identify patients with acute lower back pain and test the intervention.

I look forward to more remarkable work this year. One particular development is the expansion of the Johns Hopkins Multiple Sclerosis Center. Referrals for the condition are on the rise, and we want to continue providing the best neurologic rehabilitation care for these patients.

We also recently opened a new, state-of-the-art inpatient unit designed to help patients practice and return to everyday activities at The Johns Hopkins Hospital. Lastly, we expanded the rehabilitation services for patients with complex medical needs, such as stroke or other neurological conditions, orthopaedics, and spinal cord injuries, at Johns Hopkins Bayview Medical Center (see page 3).

As always, if we can help with any physical medicine and rehabilitation needs, please let us know:

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On a Search for Markers to Assess the Subtle Signs of Brain Injury

Of the hundreds of thousands of children who incur concussions in the U.S. each year, the vast majority of them make a quick and complete recovery. However, a fraction of patients complain of symptoms, including headaches and problems with cognition, that can last months or years—despite the fact that they test in the normal range on cognitive exams.

“Even though these patients pass our tests, their brains may be working less efficiently and still compensating for the injury,” says **Stacy Suskauer**, a pediatrician and physiatrist who recently won an award from the American Congress of Rehabilitation Medicine for outstanding research in brain injury rehabilitation. “Right now, we don’t have any way to measure these changes that the child is reporting. But if we had a marker of what’s happening in the brain after these injuries, it could open the door to finding treatments.”

She and her colleagues are using a variety of methods to develop such markers.

One of the tools is resting state functional MRI, which assesses the functional connectivity of different structures in the brain. The team’s recent research suggests that in some children with mild to moderate traumatic brain injuries who pass standard neuropsychological tests, the brain is overactivating the attention network in concert with the motor network—an anomalous pattern that suggests more concentration is necessary to complete motor tasks, Suskauer explains.

To search for atypical connectivity, they’re also looking at measures of the neurotransmitter gamma-aminobutyric acid and cerebral blood flow, and using diffusion tensor imaging, which surveys the brain’s white matter tracts.

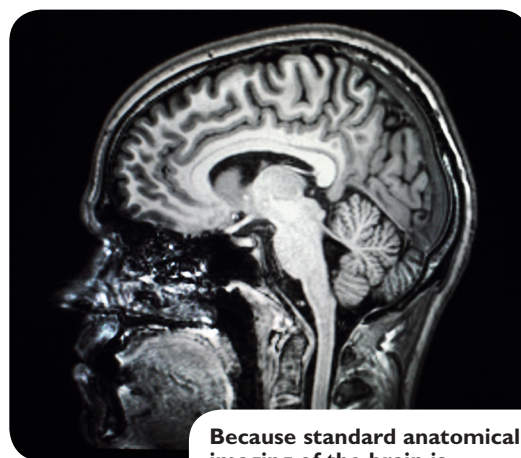
Although each of these techniques is adding unique insights, says Suskauer, none are inherently practical for assessing brain injuries in the places where it’s most needed: on the sports field sidelines or in primary care offices. That’s why she and her team are also exploring various physical and behavioral tests that



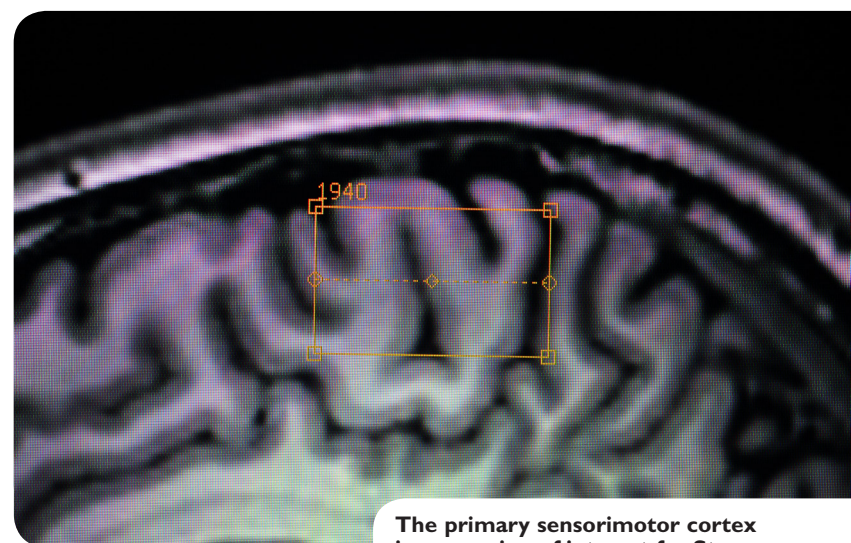
“Even though these patients pass our tests, their brains may be working less efficiently and still compensating for the injury.”
—Stacy Suskauer

might offer clues to how the brain is working. This includes the Physical and Neurological Examination for Subtle Signs, a motor exam more typically used to assess developmental disabilities that may also identify abnormalities in children with mild to moderate brain injuries. Sensory and dual task paradigms have also shown promise in revealing changes in connectivity.

Creating a new battery of tests for these subtle, lingering effects of injury could eventually lead to a host of new therapies, including medications, physical and occupational therapy interventions, or other interventions, such as transcranial magnetic stimulation, to help heal the brain. ■



Because standard anatomical imaging of the brain is normal after concussion, advanced imaging techniques are needed to understand how injury changes brain function.



The primary sensorimotor cortex is one region of interest for Stacy Suskauer’s work.

Johns Hopkins Rehabilitation Network to Span the Continuum of Care

The Johns Hopkins Rehabilitation Network is expanding services to help patients in the outpatient, in-hospital and post-acute care settings. “Delivering rehabilitation care across the continuum is our goal,” says **Pablo Celnik**, the director of the Department of Physical Medicine and Rehabilitation.

Started in 2016, the network encompasses rehab services across the Johns Hopkins Health System. One example of the program’s efforts: Johns Hopkins Bayview Medical Center now has 28 inpatient rehabilitation beds to accommodate complex patients who benefit from inpatient rehabilitation after their medical or surgical treatment.

Populations who benefit from this type of care include patients recovering from stroke, brain dysfunction, neurologic conditions, spinal cord injuries and more. In fact, 30 percent are post-

stroke, and 20 percent are recuperating from other neurological issues, such as brain tumors.

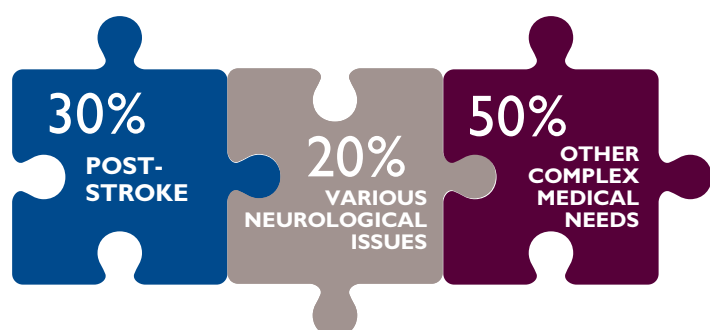
The greatest advantage that patients have when they choose one of the inpatient rehabilitation facilities within the Johns Hopkins Rehabilitation Network is the on-site availability of world-renowned medical and surgical specialist expertise.

“For example, if someone has a change in neurological status, we can almost immediately get a CT scan, have a neurosurgeon review the images and give a treatment recommendation while the patient is in rehabilitation,” says physiatrist **Krishnaj Gourab**. “If the patient was sent to a rehabilitation facility outside the hospital, it is almost impossible to get this level of care expeditiously.”

By 2018, the goal is to deliver seamless, value-based rehabilitation care across the continuum from acute care hospital to inpatient rehab, subacute rehab, home care and outpatient. “We want to expand care,” says Gourab, “so patients can benefit from Johns Hopkins expertise at every point in their recovery.” ■



Patients Taking Advantage of the Continuum of Care



Between July 2015 and June 2016, patients were asked how they would rate their satisfaction with their rehabilitation stay at Johns Hopkins Bayview Medical Center. Ninety-seven percent reported “very good” or “good.”

A New Awareness of Mental Health in ICU Patients

During the last decade, the field of critical care medicine has been undergoing a sea change, says **Dale Needham**, medical director of the Johns Hopkins Critical Care Physical Medicine and Rehabilitation Program. It wasn’t enough for a patient to leave the ICU alive, the longtime benchmark for success. Rather, he explains, doctors began devoting more attention to patients’ long-term recovery while still in the ICU, offering physical and occupational therapy in addition to lifesaving care.

Though it’s now increasingly common for doctors to focus on patients’ physical well-being, comparatively little is devoted to health of the mind. That’s a mistake, says Needham, whose research is focused on how time spent in the ICU affects mental health.

One of his recent studies, a meta-analysis of 40

studies, showed that about a quarter of patients who leave the ICU have post-traumatic stress disorder. Most doctors consider PTSD a consequence of warfare, major catastrophes or assault. But the condition can also result from delusions of events that never happened, which are common in patients

About 25 percent of patients who leave the ICU have PTSD.



with critical illness and associated organ failures. Needham says that some of his patients have reported gruesome visions of blood running down

the walls, waking up next to deceased people or being harmed by their care providers—none of which actually happened.

“These events can feel like real memories and are incredibly frightening, even though they never took place,” Needham says. “As a result, patients may suffer PTSD.”

Other recent work by Needham and his colleagues shows that about two-thirds of patients who survive acute respiratory distress syndrome, a prototypical ailment in the ICU, have symptoms of depression, anxiety and PTSD afterward. About a third of these have symptoms of all three.

These ICU-related disorders can be extremely debilitating, Needham says, leading to suicidal ideation for some patients and anxiety so severe that some panic when they get a common cold—they’re fearful that they’ll have to return to the ICU or will die.

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HONORS

Pablo Celnik, director of the Department of Physical Medicine and Rehabilitation, has been selected by the Association of Academic Physiatrists (AAP) to receive the Carolyn L. Braddom Research Award. This award is presented to an individual who has conducted research that has had the most significant impact on the science and practice of physical medicine and rehabilitation. The award was presented during the AAP annual meeting on Feb. 10, 2017, and included a plaque and a financial grant. Celnik's latest research focused on studying neurological repair and motor skills in stroke patients. He uses non-invasive brain stimulation, imaging and behavioral techniques to develop new rehabilitation strategies and augment motor function.

A New Awareness of Mental Health in ICU Patients

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Needham says that research from around the world is raising awareness of these conditions, a key to helping patients get the help they need. In addition, certain changes at hospitals may help reduce the risk of mental health problems after ICU stays. For example, Needham and his colleagues hope to improve patients' awareness and ability to process their experiences through the use of lighter sedation and interventions, such as ICU diaries, in which clinicians and family members write daily messages about what happens to a patient.

"Our hope is to improve their ability to move on from ICU stays, both physically and mentally," says Needham, "and get them back to living their lives." ■

To learn more about the Johns Hopkins Department of Physical Medicine and Rehabilitation, visit hopkinsmedicine.org/pmr.

For referrals and consultations:

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A newsletter from Johns Hopkins
Physical Medicine and Rehabilitation

Johns Hopkins Medicine

Marketing and Communications
901 S. Bond St., Suite 550
Baltimore, MD 21231

This newsletter is one of the many ways we seek to enhance our partnership with our referring physicians. Comments, questions and thoughts on topics you would like to see covered in upcoming issues are always welcome.

Physical Medicine and Rehabilitation

Pablo Celnik, M.D., *Director and Editor*
Email: pcelnik@jhmi.edu

Marketing and Communications

Dalal Haldeman, Ph.D., M.B.A., *Senior Vice President*
Lisa Rademakers, *Managing Editor and Writer*
Christen Brownlee, *Contributing Writer*
Kristen Caudill, *Designer*
Keith Weller, *Photographer*

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