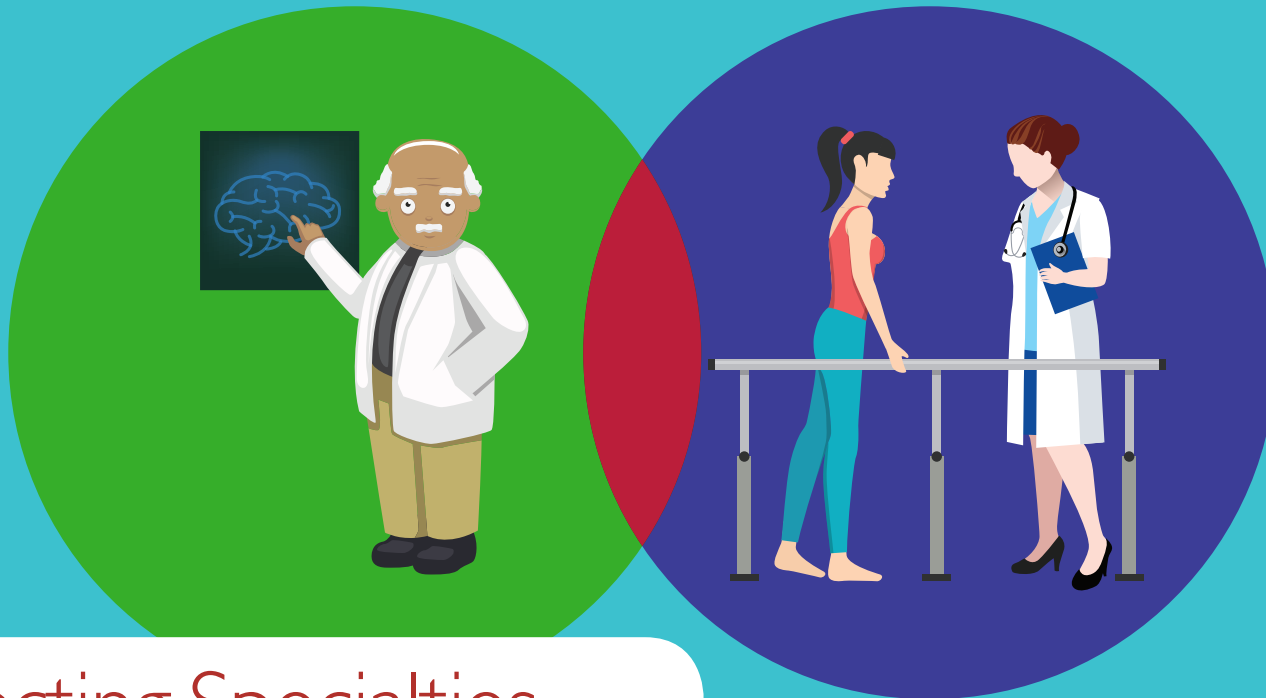


# Restore



## Connecting Specialties for Patients with Multiple Sclerosis

**T**he goals of any program to treat either the relapsing-remitting or the progressive forms of multiple sclerosis (MS) are largely the same: prevent progression, manage symptoms and rehabilitate patients as much as possible. Historically, Johns Hopkins patients with MS have been referred for rehabilitation in a piecemeal fashion. Now, three new Johns Hopkins providers are working to change this paradigm.

“We’re hoping to bolster a comprehensive care model and provide rehab care all in one system,” says **Abbey Hughes**, a rehabilitation psychologist who specializes in helping MS patients with sleep disorders that often accompany this condition.

The Johns Hopkins Multiple Sclerosis Center, part of the Department of Neurology and Neurosurgery, already offers a variety of services for MS patients to provide continuity of care.

To strengthen these efforts, Hughes, along with physiatrist Alexius Sandoval and fellow rehabilitation psychologist Meghan Beier, is forming a link to the Multiple Sclerosis Center from the Department of Physical Medicine and Rehabilitation. The goal is to facilitate additional access and communication between providers for the best outcomes.

“MS is one of the more complicated conditions in medicine,” Sandoval says. “As a rehabilitation physician who takes care of patients with MS, part of my job is to take a 100-foot view and look at everything about the patient’s condition.”

Besides coordinating care with patients who might be struggling with problems as diverse as pain, mobility, cognition and swallowing, he says care for patients with progressive MS changes over time. “Patients might need a cane one year and a wheelchair the year after,” he says. “It’s a lifelong process, and we can help with every stage.”

For Beier, medical concerns may come up during a neuropsychological assessment that could benefit from referral to neurologists at the Multiple Sclerosis Center or to other rehabilitation specialists. “With a multidisciplinary team, I don’t feel like I’m on an island trying to take care of symptoms outside my areas of expertise,” she says. “I can focus on the things I know well, and utilize the channels of care for the other issues that arise.”

### Precision Medicine and MS

Using optical coherence tomography, MRIs and other tests, Johns Hopkins researchers are working to validate the discovery of multiple sclerosis (MS) prognostic biomarkers that track and predict the course of an individual’s MS over time. In addition, they are establishing new sets of care recommendations based on how aggressively MS is progressing in an individual.

“Being able to provide the best care for our MS patients involves coordinating efforts between all their providers,” Sandoval says. “In this model, the rehab team is already playing a very important role.” ■



Watch Alexius Sandoval and Abbey Hughes discuss rehabilitation, precision medicine and more for patients with multiple sclerosis at [bit.ly/msrehabqa](http://bit.ly/msrehabqa).



**“We’re hoping to bolster a comprehensive care model and provide rehab care all in one system.”**

*-Abbey Hughes*



**Pablo Celnik**  
pcelnik@jhmi.edu

**T**his year has been a memorable one, with a variety of “firsts” throughout our department.

To start, we held the inaugural Johns Hopkins Physical Medicine and Rehabilitation Expo for medical students and trainees from Maryland and Washington, D.C. The event highlighted spasticity management, animal assistive therapy, laser therapy, lymphedema, kinesio taping and splints, and multidisciplinary therapeutic modalities for spinal cord injury and neurorehabilitation.

The first one of our faculty members was inducted into the highly selective Miller-Coulson Academy of Clinical Excellence, which honors Johns Hopkins clinicians for exemplary patient care. **Dorianne Feldman** was recognized for combining her skills as a physical therapist and board-certified physiatrist when treating her patients. She is a graduate of the Physical Medicine and Rehabilitation residency program at the Johns Hopkins University School of Medicine.

In 2017, we also:

- Launched our first clinic to diagnose, treat and prevent musicians' injuries (see story on right)
- Developed the Multiple Sclerosis Rehabilitation Program in coordination with the Johns Hopkins Multiple Sclerosis Center (see cover story)
- Expanded the Johns Hopkins Rehabilitation network by increasing capacity for acute inpatient rehabilitation at the Johns Hopkins Bayview Medical Center by 40 percent (see page 3) and opened a new 20,000 square foot inpatient rehabilitation facility at The Johns Hopkins Hospital
- Launched the first Musculoskeletal Center in collaboration with the Department of Orthopaedics to diagnose, treat and rehabilitate musculoskeletal conditions.

*continued on pg. 4*



Serap Bastepe-Gray says being able to help musicians like herself return to playing is rewarding for both the clinician and the patient alike. “There are no words to properly explain how happy, powerful and complete a musician feels once they can get back to playing,” she says. “It’s an honor to be able to play a pivotal part on that journey.”

## New Clinic to Prevent and Treat Performing Artists' Injuries

**W**hen **Serap Bastepe-Gray** pursued a degree at the Peabody Conservatory of the Johns Hopkins University, one of America's first and most prestigious conservatories of music, the hours of practice were tough on her body. With a focus on classical guitar, she developed a pervasive pain in her left elbow and a tingling sensation in the little finger on her left hand. Doctors weren't helpful, so Bastepe-Gray eventually developed a plan to heal herself.

With both a medical degree and a music degree in hand, she says, “I had to combine my medical knowledge with my knowledge of my instrument in order to find a solution.” Her plan involved altering her biomechanics to use less force, incorporating more rest into her practice schedule by using a timer for breaks and spending more time listening to pieces and imagining her hands playing chords.

Now director of the Guitar Ensemble Program at Peabody with a joint appointment in the Johns Hopkins Department of Neurology and a master's degree in occupational therapy, Bastepe-Gray has the ideal background to treat injured musicians. That expertise is one of the driving forces behind a new collaboration between Johns Hopkins' Department of Physical Medicine and Rehabilitation, Department of Neurology and the Peabody Institute of the Johns Hopkins University: the Peabody Clinic for Performing Artists.



Serap Bastepe-Gray has the ideal background to treat injured musicians.

According to **Ken Johnson**, director of outpatient rehabilitation therapy services, the hours of daily training that professional musicians require to hone their craft is similar to that of professional athletes, but without the same visibility. Consequently, while numerous therapy programs exist for injured athletes, there are few for musicians, who suffer injuries as diverse as carpal and cubital tunnel syndromes, tenosynovitis, bursitis and tendinitis.

“The cumulative stress and challenges that playing music has on posture and the musculoskeletal system can put musicians at risk to have repetitive strain injuries at a greater frequency than someone playing golf, tennis or baseball,” he says.

The Peabody Clinic for Performing Artists aims to diagnose and treat musicians and other performing artists in novel ways at Peabody and beyond.

A unique and pivotal aspect to the program, Bastepe-Gray explains, is the plan to have trained instrument pedagogues—specialists in a particular instrument who can evaluate injured musicians while they're playing to identify problems with their form or technique that might contribute to their injuries.

The clinic will also incorporate high-tech solutions to better understand the root of a musician's problems, including motion-capture technology and “smart” instruments that can measure the force a player is applying.

“These efforts not only aim to treat a musician's current issues but help prevent future problems,” says **Andrew Kunin**, a Johns Hopkins physical therapist and amateur guitarist who treats professional musicians from the Baltimore-Washington area. “If we only treat a single problem area, the likelihood of recurrence of a musician's injuries is high,” he says. “By evaluating our patients from head to toe to identify the root-cause of their injury, then by providing the best evidence-based care, we hope to keep them performing healthy for a lifetime.” ■



Learn more about the Peabody Clinic for Performing Artists, part of the Center for Music and Medicine, at [bit.ly/musicmed1](http://bit.ly/musicmed1).



# Diagnosing Postural Orthostatic Tachycardia Syndrome

**F**ive years ago, Kevin Perry, 57, went on a mountain bike ride, a hobby he'd had for years. It wasn't unusual for him to get some periodic soreness—a consequence, he reasoned, of being a middle-aged athlete.

But the lower-back pain he felt after this ride was unlike any he'd ever had before. Nothing improved it, and it worsened over time to the point where Perry could barely stand up, let alone ride his bike. He also felt chronically exhausted.

Over the next three years, he visited a total of nine different specialists but did not receive a helpful diagnosis or treatment. Eventually, he met with Johns Hopkins neuromuscular medicine specialist **Tae Chung**, who diagnosed him with postural orthostatic tachycardia syndrome (POTS).

POTS is a condition in which a standing position triggers an increase in heart rate of at least 30 beats per minute, or more for children. Although everyone experiences a small heart rate increase upon standing, such a large jump is thought to stem from a miscommunication between the autonomic nervous system and the heart.

Studies estimate that POTS affects between 0.5 million to 3 million individuals in the U.S., although Chung—one of the few doctors treating adult patients with POTS in the country—says this number is probably low. “Some patients diagnosed with chronic fatigue, fibromyalgia or who struggle with no diagnosis probably have this condition,” he says.

Chung explains that POTS symptoms include

extreme fatigue, chronic pain, headaches, a rapid heartbeat and an inability to concentrate, or “brain fog”—problems that patients and practitioners often attribute to other causes. To make an accurate diagnosis, he typically performs a physical exam and blood work to rule out other causes, as well as a tilt table test, the gold standard for diagnosing POTS. As patients transition from a prone to upright position on the table, those with POTS experience dramatic increases in heart rate. Many faint, like Perry did.

The most effective treatments for this condition are relatively simple, Chung says. A majority of patients experience significant improvement by drinking large amounts of water—he recommends a gallon a day for adults—and increasing their daily salt intake. Both, Chung explains, help retain fluids to increase blood volume, which helps fill blood vessels and ensures that

the heart receives an adequate amount of blood even during upright posture.

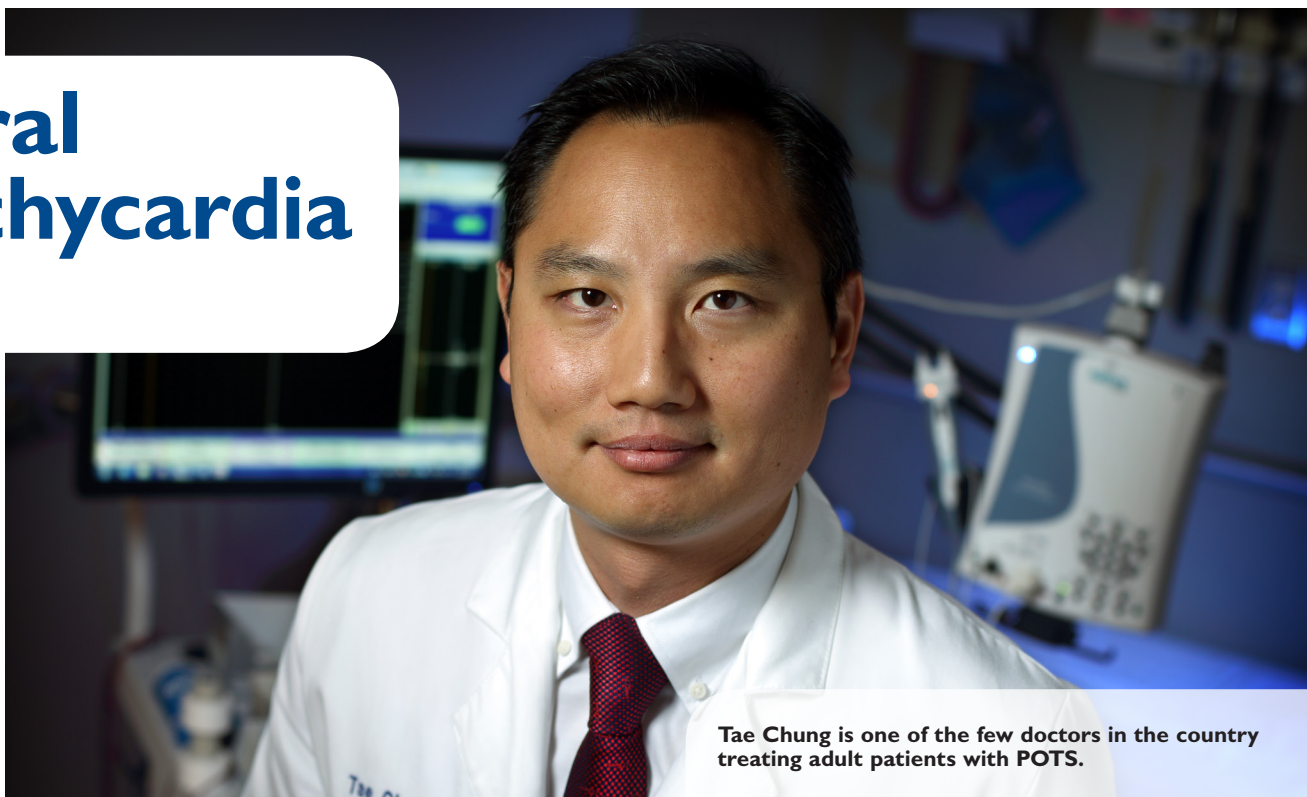
Most patients also start graded exercise, a program in which physical activity starts gently and progresses in intensity over weeks or months, gradually retraining the autonomic nervous system to allow greater exercise capacity. Additionally, some benefit from pharmacological therapy to increase blood volume, interfere with the release of epinephrine and norepinephrine or improve vasoconstriction.

After a few months on a water, salt and exercise regimen, Perry was on the road to recovery. He recently completed his first mountain bike race in years.

“It's amazing,” he says. “After three years of just going downhill, I'm getting my life back.” ■

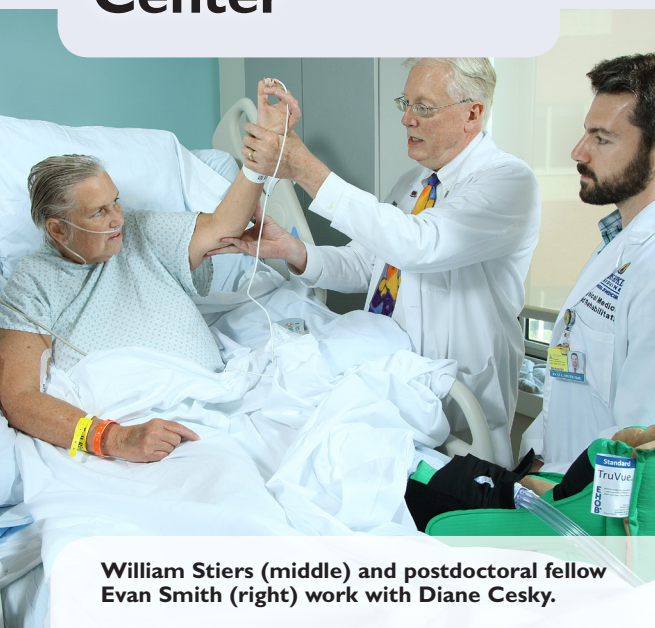


Watch Tae Chung discuss POTS treatment and rehabilitation options at [bit.ly/potsrehab](https://bit.ly/potsrehab).



**Tae Chung is one of the few doctors in the country treating adult patients with POTS.**

## Expanded Capacity at Johns Hopkins Bayview Medical Center



**William Stiers (middle) and postdoctoral fellow Evan Smith (right) work with Diane Cesky.**

**T**he capacity for acute inpatient rehabilitation has grown by 40 percent at Johns Hopkins Bayview Medical Center. The effort is being led by faculty from the Department of Physical Medicine and Rehabilitation, including rehabilitation neuropsychologist and national psychology training expert **William Stiers**.

“It's a perfect fit,” says **Pablo Celnik**, director of the Department of Physical Medicine and Rehabilitation. “Dr. Stiers has contributed so much to the field of rehab psychology as a national expert. Now he's leading our effort to help more patients who need neuropsychology, rehab psychology or other physical medicine and rehabilitation services.”

Stiers and his team have added a psychologist and two psychology residents to the team of physiatrists, nurses, therapists, social workers and recreational therapists at Johns Hopkins Bayview. He is also collaborating with colleagues across Johns Hopkins Medicine to develop specialty programs, including state-of-the-art stroke and spinal cord injury programs at Hopkins Bayview.

“We're going to incorporate cutting-edge technology, equipment and new research findings in our stroke program,” says Stiers. “I'm excited about integrating functional electric stimulation, robotics

and transcranial magnetic stimulation over the next year.”

In 2011, Stiers convened a national consensus conference on rehabilitation psychology training with 46 academic and medical experts from 17 different states. Known as the “Baltimore Conference,” the experts developed guidelines that are now accepted as the national standards for accreditation for rehab psychology. In addition, the conference made plans for a national Council of Rehabilitation Psychology Postdoctoral Training Programs, which has been in existence for three years and Stiers now chairs.

Thanks to Stiers, the rehab psychology division in the Department of Physical Medicine and Rehabilitation was one of the first accredited rehab psychology training programs in the United States. Today, his skills and experience continue to benefit students, clinicians and patients alike.

“When someone needs care after a stroke, limb loss, paralysis, burn injury or spinal cord injury,” he says, “we will help patients return as much as possible to the level of functioning they had before the injury.” ■

## Mark Your Calendar

Trends in Spinal Cord Rehabilitation Symposium

**Monday, March 12, 2018**

**3:30 p.m. to 8:00 p.m.**

Johns Hopkins Miller Research Building,  
Tilghman Auditorium  
720 Rutland Avenue  
Baltimore, MD 21205

Hosted by the International Center for Spinal Cord Injury at Kennedy Krieger Institute, this educational event is geared toward physicians, nurses, occupational and physical therapists, and other professionals who care for individuals with spinal cord injuries and disorders. Continuing education credits offered.

For more information and to register, visit [bit.ly/spinalcordrehab](http://bit.ly/spinalcordrehab).



## Directors Column

(continued from page 2)

And last but not least, our department published 64 research papers from July 2016 to June 2017 while the Blue Ridge Institute for Medical Research reported that our department ranked seventh in National Institutes of Health funding to U.S. medical schools in 2016.

Without our patients, our passion for such firsts would not exist. As always, if we can help with any physical medicine and rehabilitation needs, please let us know: 410-614-3234. ■

To learn more about the Johns Hopkins Department of Physical Medicine and Rehabilitation, visit [hopkinsmedicine.org/pmr](http://hopkinsmedicine.org/pmr).

For referrals and consultations:

**Hopkins Access Line (HAL)**

**1-800-765-5447 or  
410-955-9444**

# Restore

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.

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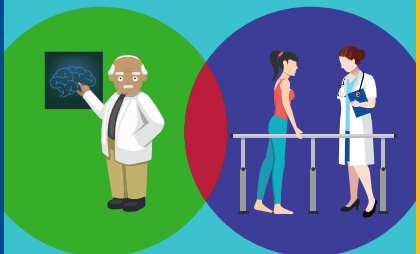
Johns Hopkins  
Physical Medicine  
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