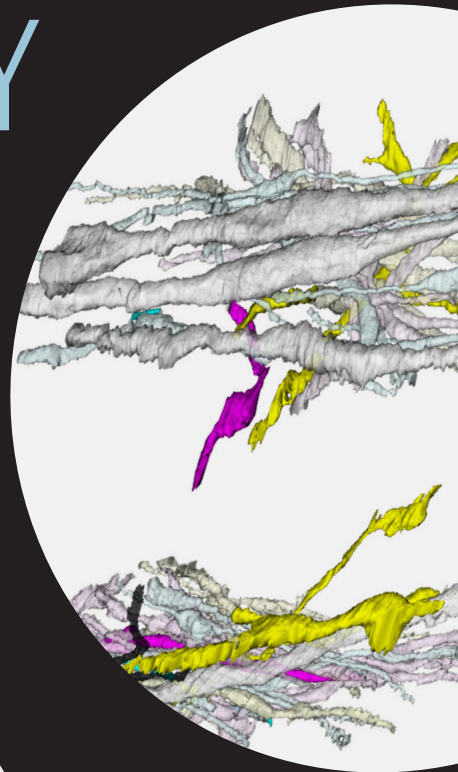
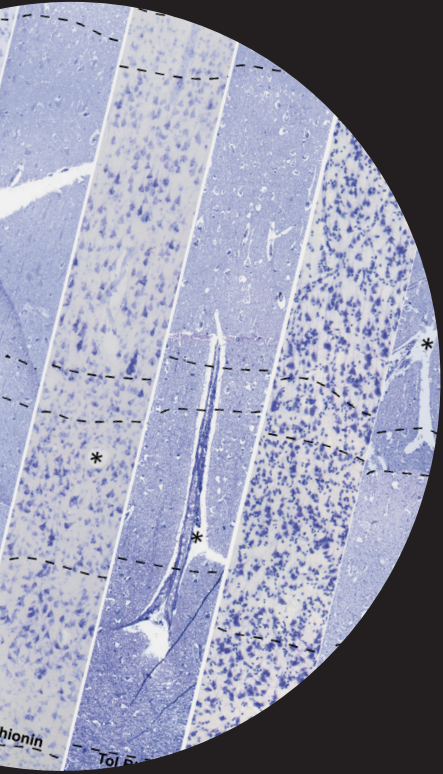


2022-2023

InsideSargent

Boston University College of Health & Rehabilitation Sciences: Sargent College

STUDYING AUTISM FROM EVERY ANGLE



A new simulation center gives students a place to practice

P 16

The CogWell program serves adults with dementia who've experienced homelessness

P 21

A promising new field rehabs stroke survivors with music

P 22

Sargent researchers are helping us better understand one of the most complex brain mysteries of our time



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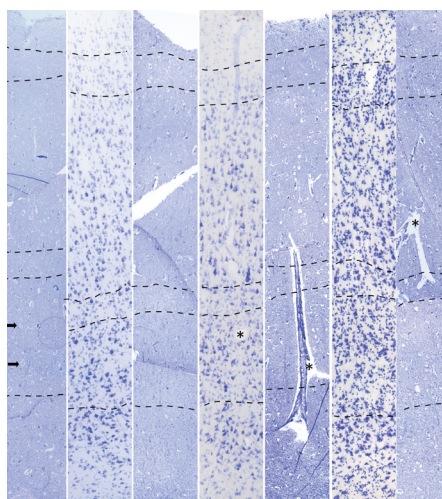
Contents

2022-2023

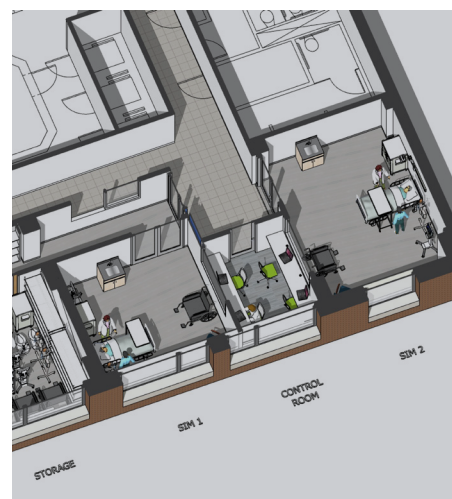
Boston University College of Health & Rehabilitation Sciences: Sargent College

8 STEERING THE SHIP

Sargent trains some of the world's top physical therapists. Leading and supporting them is clinician, researcher, professor, and department chair Terry Ellis



10 Autism, From Every Angle
Researchers are helping us better understand one of the most complex brain mysteries of our time



16 A Place to Practice
Sargent's new Center for Clinical Simulation will prepare students for real-world patient interactions



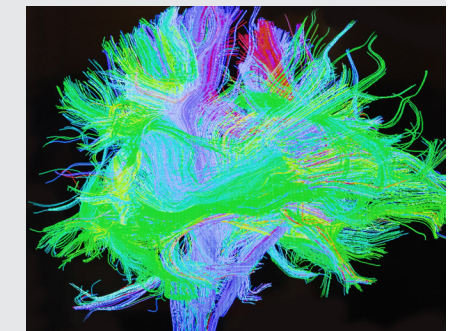
18 Communication, Community, and Healthcare
Hagere Yilma is working to reduce iron-deficiency anemia in rural India



21 Bridging the Cognitive Therapy Gap
Magdalen Balz's CogWell program provides mental acuity resources for seniors historically neglected by the medical field



22 The Healing Power of Music, from Bach to Rock
Lou Awad is harnessing the power of music and rhythm to teach stroke survivors to walk again



24 Predicting Aphasia Recovery
An interdisciplinary study uses machine learning to determine how well stroke survivors with aphasia will respond to therapy



26 A Force in the Recovery Movement
Gayle Berg reflects on how Sargent launched her career as a psychologist



28 Dr. Pain-Free
Orthopedic surgeon Steven Gorin helps his patients get back to their lives

ALSO IN THIS ISSUE

- 2 Dean's Message**
- 3 Snapshots**
- 30 Faculty in Print**
- 33 Sargent at a Glance**

InsideSargent

2022-2023



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CYDNEY SCOTT (21); SERGGIV/ISTOCK.COM (22); MICHAEL D. SPENCER (24); CHRIS SORENSEN (26); SONYA REVELL (28)

Dean's Message



Dear Friends,

It's a pleasure to introduce this issue of *Inside Sargent*. It's also bittersweet, as this is the last edition I'll oversee as dean. I've decided to retire at the end of the 2022–2023 academic year. It's been an extraordinary eight years for me at Sargent, thanks to the camaraderie and teamwork of our community of alumni, faculty, staff, and students. I'm proud of our many achievements together, including new endowed professorships and student scholarships as well as the ever-increasing quality of our clinical education and graduate professional programs. And we're not done yet!

We began the fall semester following an ambitious summer of growth and preparation—including transformational additions to our faculty and long-anticipated building enhancements to best prepare students for careers in healthcare. Most notably, construction began in July on the new Sargent College Center for Clinical Simulation, an innovative lab and learning space that will mirror an acute care hospital setting (page 16).

Interprofessional education, practice, and collaboration are at the heart of our work, and in this issue, you'll read about several examples aiming to improve health outcomes across the lifespan. In particular, the cover story on autism (page 10) showcases our uniquely specialized, interdisciplinary expertise: neurophysiologists examining the structure of autistic brains; occupational therapists studying the connections among autism, movement, and cognitive development; a speech-language pathologist developing a neurodiversity group supporting autistic women; and others who are devising new ways to build community frameworks for families and BIPOC youth with autism. It was our honor to host renowned autism researcher and advocate Temple Grandin earlier this year to discuss this work and tour Sargent's autism labs (page 6).

Collaborations across the University illustrate the power of data sciences to transform healthcare outcomes, systems, and policy. One innovative project led by speech, language,

and hearing sciences (SLHS) PhD candidate Anne Billot and Professor Swathi Kiran, in partnership with colleagues at BU's Rafik B. Hariri Institute for Computing and Computational Science & Engineering, uses machine learning to predict how a patient with aphasia will recover—a true game changer in the clinical field (page 24). With the increasing availability of large data sets and modeling capability, Sargent researchers can address social determinants of health, mitigating pernicious gaps in resources, research, and treatment. In an ambitious community health initiative, Professor of Health Sciences Hagere Yilma helped to reduce iron-deficient anemia in rural India (page 18).

Fulfilling our promise of clinical impact means translating these discoveries to practice. SLHS Professor Magdalen Balz is doing just that with her cognitive wellness program for formerly unhoused senior citizens (page 21). And Physical Therapy Assistant Professor Lou Awad has formed unique partnerships with digital therapeutic company MedRhythms and Universal Music Group, using the power of music to help stroke survivors walk again (page 22).

Our extensive alumni network helps expand the reach of this work even further. True to our ambitions, alumni are leveraging skills they developed here at Sargent to improve the lives of so many in their communities. You'll read in this issue about two alums who started their own clinical practices—psychologist and advocate Gayle Berg (page 26) and orthopedic surgeon Steven Gorin (page 28).

Many of you have written to note the retirements this year of two beloved, longtime Sargent faculty. Honored at a reception this summer, Diane Constantino, a professor of speech, language, and hearing sciences, and Julie Starr, a professor of physical therapy, were integral to Sargent's growth and success, each for more than 30 years. We are incredibly grateful for their innumerable contributions, especially in the area of clinical innovation, and for their work guiding generations of students to care most effectively for their own patients.

We look forward to continuing to build on this work in the year ahead, and I hope to see you at one of our upcoming events.

Warmly,

Christopher A. Moore
Dean and Professor

WebExtra

Read more about Dean Moore's retirement and what it means for Sargent at bu.edu/today.

DAN AGUIRRE

A NEW PERSPECTIVE

RENOWNED PUBLIC HEALTH RESEARCHER EMILY ROTHMAN NAMED TO CHAIR OCCUPATIONAL THERAPY DEPARTMENT DURING 17 YEARS ON THE FACULTY AT BU'S SCHOOL OF PUBLIC HEALTH (SPH),

Emily Rothman developed an international reputation for her violence prevention research, in particular for her studies of intimate partner violence and sexually explicit media. But her daughter's diagnosis on the autism spectrum led to a new line of research, a relationship with autism researchers at Sargent, and a professional pivot. In September 2021, Sargent named Rothman chair of the occupational therapy department.

"The challenges of leadership—and the opportunity to mentor and support others—was something that I wanted for the next chapter of my career," she says of her new role.

Rothman, who also maintains appointments at SPH and the School of Medicine, spoke with *Inside Sargent* about the state of OT, her autism research, and what most excites her about her new job.

Inside Sargent: What do you bring as a leader to this department?

Emily Rothman: First, I bring my appreciation for the faculty and staff of this top-ranked program and gratitude to be able to work alongside them. And, I think that I bring passion for disability justice, antiracism, and centering the needs of sexual and gender minority individuals. I also hope that my background in public health means that I can open new doors and make new connections. People in occupational therapy are doing incredible research and meaningful scholarship, but there are some ways in which they've been siloed away from access to grant funding opportunities and certain corners of the world stage. To give one concrete example, I've been on an editorial board of a journal in substance use treatment for many years. When I joined the world of OT, I proposed to the journal that they devote a

OLIVER PARINI

special issue to substance abuse treatment and OT. The editor in chief kindly agreed, and I am pleased to say that now faculty in the OT department are preparing manuscripts which highlight OT's role and distinct value within substance abuse treatment for that issue.

Have the fields of OT and public health evolved in ways that bring them closer?

People are increasingly embracing not only what, in OT, is called occupational justice—which aligns with what I've always thought of as social justice—but our students are enthusiastic about learning how social determinants of health influence their clients and how they are going to be able to address those through their work. That's fundamental to how I've approached the study of public health problems. The moment is absolutely ideal for this interdisciplinary collaboration between public health and occupational therapy.

You mentioned pivoting to autism research a few years ago. What are you working on now?

I have several projects, and several involve current OT students. BIPOC (Black, Indigenous, and people of color) autistic people have been marginalized in discussions about the health needs of the autistic population. And so one project involves 12 BIPOC autistic adults learning how to be research advisors and join advisory boards for research projects so that their perspectives and voices can be centered in those meetings. Entry-level OT student Megan Sullivan is our project coordinator. A different project is reaching high school students for sex education, and OT students Tori Richardson and Delaney Moslander are analyzing our qualitative data for publication.

What else are you working on?

I have a one-year project that involves working closely with six autistic people who have recent experiences with sexual assault at college. They are collaborating on the development of an online training



In her new leadership role, Emily Rothman believes her background in public health will open new doors for the OT department.

that will help college sexual assault counselors understand the different needs of autistic college students. A second project is an online class for autistic adults that teaches healthy friendship and dating relationship skills, funded by the National Institutes of Health. I am actively seeking OT practitioner partners for that project now. And third, I am researching underage alcohol use by autistic adolescents.

What are you most excited about right now?

Number one, the students. They are extraordinarily compassionate people and on fire with energy for changing the world. And I'm excited to see the research of our faculty continue to break new ground. We're not only a top-ranked professional program, but all of the faculty are also engaged in scholarship. I have a lot of energy for thinking about how we all can continue to reach an expanding national and international audience.

—Marc Chalufour

WebExtra

Read an expanded version of this interview at bu.edu/sargent/inside-sargent.



Dori Hutchinson helps adults with mental illness live full lives.

NEW LEADERSHIP AT THE CENTER FOR PSYCHIATRIC REHABILITATION

DORI HUTCHINSON SEEKS TO EXPAND ON THE CENTER'S RICH HISTORY OF HELPING PEOPLE LIVING WITH MENTAL HEALTH CONDITIONS CONNECT AND RECOVER

WHEN DORI HUTCHINSON JOINED BU'S CENTER FOR PSYCHIATRIC

Rehabilitation in 1984, just five years after it was founded by William A. Anthony, her work played a key role in the center's mission. Hutchinson helped Boston-area adults living with serious mental illnesses to choose, get, and keep meaningful work—a core component in the recovery of people with psychiatric conditions.

Like her mentor Anthony, who was the center's executive director until 2011, Hutchinson believed that as important as treatment is, people with serious mental illness needed critical skills and support to help them live full lives and participate fully in their communities. "Bill Anthony used to say, 'A pill doesn't get someone a job,'" says Hutchinson, a Sargent associate clinical professor. "When you're diagnosed with a serious mental illness, you often miss out on important life events, like getting

your first job or finishing your college degree... [which are] critical skill development opportunities."

More than three decades after joining the center, Hutchinson stepped into the executive director role in the summer of 2021. She leads a staff of more than 35 and is working to usher the center's three-pronged approach to psychiatric rehabilitation—research, training, and services—into a new era. Her goals also include continuing the center's collaboration with Sargent, perhaps by using the center's research to educate students and faculty on how to support recovery and training graduate students in psychological rehabilitation. "I want to maintain our clarity of focus on all of the innovative and impactful research, training, and services we've been doing over the last 40 years," Hutchinson says. "But I [also] want to expand those opportunities."

SERVICES, RESEARCH, TRAINING

While Hutchinson's expertise lies in the center's services arm, which treats some 170 individuals each week who live with conditions like anxiety, trauma, and addiction, she's also been heavily involved in its other divisions. "I've always had a hand in research and

training," she says. "The research at the center inspires innovative [training] and services. Some of our services then become the basis for good research."

The center's service offerings have expanded since its inception in 1979. The career education programs that were central at its founding were soon joined by health and wellness services, which focus on an individual's specific needs, such as sleep hygiene, exercise rhythms that support mental health, or navigating social relationships and difficult conversations. In 1998, the center launched its adult Recovery Education Program, which still runs three semesters a year. The program for Boston-area adults includes an array of classes on topics like yoga and tai chi, executive functioning, cooking, career development, art and music, mindfulness, financial literacy, and peer support. "The idea was that there should be no wrong door to anyone's recovery," Hutchinson says. "People get to choose where they want to start in their recovery of their lives."

INTERVENING TO PREVENT DISABILITY

After becoming the center's director of services in the late 1990s, Hutchinson oversaw its expansion in 2000 to college mental health education services, offered to BU and non-BU students. One service provides coaching to students with serious mental health conditions who want support to return to college or finish a degree. Another program, NITEO, invites US college students who have taken a medical leave of absence from any university due to a psychiatric condition to spend a semester at BU.

"It's a very intensive [early-intervention] program that focuses on building their academic and wellness skills so they can return to college," Hutchinson says. "We hope to shift the trajectory away from disability because when you don't have a college degree, that can be a challenge in terms of meaningful career development and employment."
—Christina Hernandez Sherwood

NUTRITION FOR HEALTHY AGING

NICOLA MCKEOWN EXAMINES THE CONNECTION BETWEEN WHAT WE EAT AND HOW IT IMPACTS AGING

WE'VE BEEN TOLD SINCE WE WERE KIDS TO EAT OUR FRUITS AND VEGETABLES,

which provide the essential vitamins and nutrients that support strong bodies and brains. New research suggests we should never stop spooning peas and carrots onto our plates.

A diet rich in plant-based foods may help slow the biological aging process and promote healthy aging, according to research from Nicola McKeown, a nutrition research professor who studies dietary patterns and their impact on health, wellness, and longevity.

In collaboration with her colleague and senior author Jiantao Ma at the Tufts Friedman School of Nutrition Science and Policy, McKeown examined data from participants in the Framingham Heart Study, the longest-running heart disease study in the country and a joint project of BU and the National Heart, Lung, and Blood Institute. McKeown and Ma coauthored a study published in *The American Journal of Clinical Nutrition*, finding that poorer diet quality was linked to age acceleration.

THE POWER OF GOOD FOOD

What they observed is that people who followed a DASH diet—which has more vegetables, fruits, nuts, legumes, whole grains, and low-fat dairy, and less sodium, red and processed meats, and sugary drinks—experienced slower age acceleration.

These results were not surprising to McKeown, who has spent two decades studying the impact of carbohydrate quality and foods, including whole grains and sugary drinks, on risk factors for heart disease and type 2 diabetes.

"When people talk about pursuing low-carb diets, I automatically jump in and say, 'But hold on, not all carbohydrates are created equally,'" says

McKeown. "Whole grains are incredibly beneficial to health, but the same can't be said for sweet, refined grain foods or sugar-sweetened drinks."

McKeown's previous research showed that a diet rich in whole grains led to smaller gains in waistlines and less belly fat, a particularly dangerous type of fat surrounding vital organs. Individuals who consumed three or more servings of whole grains daily also had lower increases in blood pressure and blood sugar levels compared to those who ate less than half a serving. Conversely, her research has found that these health benefits are not observed among those who eat more refined grains.

"I recommend people try to increase their intake of whole grains by replacing some refined grains with whole-grain alternatives, such as switching from sugary ready-to-eat breakfast cereals to oatmeal or switching from white rice to quinoa or brown rice," McKeown says. "Over time, these small shifts may improve risk factors linked to heart disease."

WHAT NOT TO EAT

For those looking for a specific diet to support healthy aging, good options are the Mediterranean and DASH diets as well as the MyPlate plan, which all emphasize plants and minimize highly processed foods laden with added sugars, salt, or saturated fats. "These diets are similar in that they contain more plant foods and less red and processed meats than the typical Western diet," says McKeown.

The Western diet is clearly detrimental to our health, explains McKeown. This low-quality diet pattern is high in refined grains, processed food and meat, sugary beverages, candy, and sweet desserts, not to mention lacks healthful plant foods.

Unfortunately, added sugar—ubiquitous in our food supply—is a carbohydrate almost everyone is overeating. The Dietary Guidelines for Americans (DGA) recommends limiting added sugars to less than 10 percent of



Nicola McKeown found that a healthy diet can slow aging.

daily calories, but, on average, upwards of 15 percent of our daily caloric intake is derived from added sugar in the diet. Sugary beverages are among the biggest problems. McKeown found that people who drink more sugar-sweetened beverages are at greater risk of developing nonalcoholic fatty liver disease, prediabetes, dyslipidemia, and more of that unhealthy belly fat.

There is overwhelming evidence linking the Western diet to the rising prevalence of obesity. According to the US Department of Health and Human Services, one in three adults in the US is overweight, and older adults with a higher body mass index are at greater risk for age-related conditions such as cognitive decline, osteoarthritis, macular degeneration, heart disease, and diabetes.

ADAPT AS YOU AGE

As we grow older, our calorie needs decline. This means that to maintain a healthy weight or lose weight, we should be consuming fewer calories as we age. Your diet doesn't need to be restrictive, McKeown says. For example, Mediterranean and vegetarian diets are both healthy and in line with DGA, and aging adults may choose the one that better aligns with their preferences.

After all, says McKeown, "a healthy diet can be personalized to align with what you enjoy to eat, so you don't need to limit yourself." —Stephanie Rotondo

DAN AGUIRRE

COURTESY OF NICOLA MCKEOWN

TEMPLE GRANDIN TOURS SARGENT

AUTISM ADVOCATE AND SCIENTIST TEMPLE GRANDIN, who splits her career between animal behavioral science and autism scholarship, spoke at BU March 18 about developing collaborative approaches to problem-solving and about her latest book, *Navigating Autism: 9 Mindsets for Helping Kids on the Spectrum*. Earlier in the day, she toured Sargent College to learn about the research being done, even signing autographs for faculty members and graduate students. —BU Today Staff



Temple Grandin (fourth from right) met with Sargent College faculty and graduate students.

NEW FACULTY

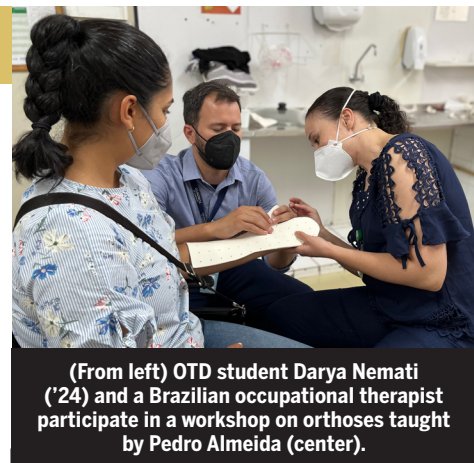
- Samantha Brown**, clinical assistant professor, physical therapy
- Kimberly Crespo**, assistant professor, speech, language, and hearing sciences
- Emily Evans**, assistant professor, physical therapy
- Jana Iverson**, professor, physical therapy
- Sara O'Brien**, lecturer, nutrition

PROMOTIONS

- Dustin Allen**, senior lecturer and program director, human physiology
- Magdalen Balz ('09)**, clinical assistant professor, speech, language, and hearing sciences
- Joan Salge Blake**, program director, nutrition
- Marijane Staniec ('96)**, dietetic internship program director
- Maura Walker**, assistant professor, nutrition

CLINICAL SUMMER EXPERIENCE IN BRAZIL

THIS SUMMER, SARGENT STUDENTS IN THE DOCTOR OF OCCUPATIONAL THERAPY (OTD) program spent two weeks in Brazil learning about the country's healthcare system and its model of occupational therapy. Led by Pedro Almeida, a clinical assistant professor, and Tatiana Pontes, a clinical associate professor and the Entry-Level OTD program director, students saw occupational therapists practicing in settings such as oncology, rheumatology, mental health, NICU, and maternity care. Almeida led a workshop on orthoses for Sargent students and occupational therapists at the Universidade de Brasilia hospital. The group shared experiences,



(From left) OTD student Darya Nemati ('24) and a Brazilian occupational therapist participate in a workshop on orthoses taught by Pedro Almeida (center).

learned how to make orthoses, discussed current clinical cases at the hospital, and used their clinical reasoning to identify the best client interventions.

The trip was added this year as part of the OTD curriculum, and organized and led by the department's internationally licensed faculty.

CYDNEY SCOTT, TATIANA PONTES

AN EXEMPLARY CAREER

AFTER 34 YEARS IN THE CLASSROOM AND CLINIC, JULIE STARR RETIRES

JULIE STARR, WHO JOINED SARGENT'S PHYSICAL THERAPY FACULTY IN 1988, retired in June. How do you measure the good a clinical professor has made over a career spanning more than three decades?

"There are really no words to express the impact that [Julie] has had on the physical therapy profession, on our students, and in our department," says Terry Ellis, physical therapy department chair and Starr's colleague since 1995.

Starr's scholarly and practice interests include acute care physical therapy, cardiovascular and pulmonary care, chronic lung disease treatment, and the epidemiology of lung diseases worldwide. In the last few years, Starr ('80) has studied and written about the importance of empathy in a physical therapist. She has published more than 30 papers in peer-reviewed journals and has been an invited speaker at dozens of conferences around the world.



Julie Starr instructs a class of her physical therapy students.

But Starr's influence is probably best felt in the classroom, where thousands have passed through her courses throughout her tenure, Ellis estimates. In 2006, Starr received the Whitney Powers Award for Teaching Excellence, and in 2019 the American Physical Therapy Association named her a Catherine Worthingham Fellow—the organization's highest honor. "She is super passionate in the classroom, very engaged, and very invested in the growth and development of our students," Ellis says.

Starr has maintained her certification in cardiac life support and as a cardiopulmonary specialist and continued to see patients at Beth Israel Deaconess

Medical Center through her practice there. This only added to the richness of her in-class instruction, Ellis says.

"There's nothing like being able to stand up in front of the class and say, 'The patient I saw yesterday in the ICU presented with...,'" Ellis says. "She has done that for 34 years and maintained both of those things in a way that is exemplary."

What will Starr miss most about teaching at Sargent? Two things, she says: "The camaraderie with the other Sargent faculty" and "watching for those 'aha' moments from the students when it all starts to click into place. That is so much fun." —Steve Holt

AWARDS & HONORS

HEALTH SCIENCES

Sara O'Brien ('10), a nutrition lecturer, is a recipient of the 2022 Outstanding Preceptor Award from the Academy of Nutrition and Dietetics.

OCCUPATIONAL THERAPY

Marianna Farkas, director of training and international services at the BU Center for Psychiatric Rehabilitation and a clinical professor, was elected president of the World Association of Psychosocial Rehabilitation.

Karen Jacobs, clinical professor and associate dean for digital learning and innovation, received the IEA Fellow Award from the International Ergonomics Association.

Leanne Yinusa-Nyahkoon (CGS'98, SARGENT'01,'03,'09), a clinical assistant professor, received an inaugural MACE Fellowship.

PHYSICAL THERAPY

Terry Ellis (MED'05), associate professor and chair, received the 2022 American Parkinson Disease Association Shawn Thornton Service Award.

Akshat Mehta ('20,'22), a doctor of physical therapy student, received the Ruth Hall Award from the Massachusetts chapter of the American Physical Therapy Association.

LaDora Thompson received the Denham Harman Award from the American Aging Association and was named a Catherine Worthingham Fellow of the American Physical Therapy Association.

SPEECH, LANGUAGE, AND HEARING SCIENCES

Liz Hoover, a clinical professor, received the Gerry Cormier Communicative Access Award from the Aphasia Institute.

Jennifer Zuk, an assistant professor, received the Hartwell Individual Biomedical Research Award, as well as the Albert M. Galaburda Research Award from the Dyslexia Foundation.

Kimberly Dahl ('24) and **Hilary Miller ('24)** were awarded ASH Foundation New Century Scholars Doctoral Scholarships. Miller was also awarded a Raymond H. Stetson Scholarship in Phonetics and Speech Science from the Acoustical Society of America.

KALIMAN ZABARSKY

Steering the Ship

Americans today live 11 years longer, on average, than we did in 1950, and benefit from earlier detection and treatment of chronic conditions. As a result, the field of physical therapy is as vital as ever.

The beating heart of Sargent's physical therapy department is its chair, Terry Ellis. Ellis (MED'05) got her start as a physical therapist in 1988, and for more than 30 years has helped her patients maintain or regain their mobility and quality of life—especially those with neurological conditions. Ellis joined the Sargent faculty in 1995, where her research has focused on how exercise and rehabilitation improve mobility and reduce the progression of disability in individuals with Parkinson's disease. In 2019, Sargent named Ellis department chair, a role in which she encourages her colleagues, supporting their research—while continuing her own, be it studying the positive effects of exercise after a neurological diagnosis or using music and robotics to improve walking ability in the real world. From labs to classrooms to clinics, the department is a leader in an exciting and growing field of practice.

“We want to move the field of physical therapy forward, we want to lead that movement, and we're doing that in many different ways,” she says.

Ellis spoke with *Inside Sargent* about her research, how she approaches her leadership role, and why she believes the department's best days are ahead of it.

Inside Sargent: Your research really runs the gamut, from the positive effects of exercise on those with chronic illness, to using exosuits in rehabilitation, to digital therapeutics, and more. What is most exciting for you right now?

Terry Ellis: I'm very passionate about helping people with chronic neurological conditions. The approach I take to doing that is multifaceted, coming at it from multiple directions to try to optimize the outcomes. People with Parkinson's disease and stroke, they live and they live a lot longer. Rehab becomes more and more important as we have more and more people in our population living with conditions, and living decades.

One of the most exciting things we're working on now are these exosuit projects. Lou Awad is leading this work in

Sargent trains some of the world's top physical therapists. Leading and supporting them is clinician, researcher, professor, and department chair Terry Ellis

by Steve Holt

stroke (page 22). In Parkinson's, there's something called “freezing of gait.” This is a problem with walking in which people with Parkinson's either can't initiate walking, or they stop walking, or they have difficulty turning, because their feet shuffle and get stuck to the floor. We have a gentleman in his 60s with Parkinson's who came in to see us over the last couple months, who basically cannot walk. So, we tried these soft exosuits, these robotics, which are wearable. It's made out of fabric that you put on, the legs in this case, and there's a motor around your waist, and cables that pull joints in certain directions, based on what we're after. We have brought this person in several times, and when we activate the suit, we can prevent that freezing from coming on. So, there's some initial promising results that are actually quite profound, suggesting that we might be able to use this technology in the rehab space to try to overcome a major problem that doesn't have any other treatments.

What does being chair entail, compared to professor, researcher, clinician?

Much of my time over the last two years has been spent figuring out how to keep our programs going in the face of a pandemic. With social distancing and all the requirements that were put in place, we had to establish a real innovative way to deliver our program and still provide the education that our students need to become great physical therapists.

But besides that, I see myself as the person who is steering the ship. One of my favorite parts of the job is to help other faculty reach their goals and help them be successful in what they aspire to, whether that's advancement in their rank, advancement in the work they're doing, starting a new project, or innovating something that will help move the field forward. I've been here for many years, and I've felt a lot of support from the faculty over the years, so I feel like it's my turn to step up, to continue to bring the department together, and to help us advance as individuals and as a group.

We've also spent a lot of time over the last year and a half or so reviewing our curriculum. We know we have a great curriculum. But that's not good enough. Healthcare is changing rapidly. Are we preparing ourselves for the future? When our students graduate in a few years, where are they

going to be? We want to be on the forefront of producing leaders in our field who are going to be the innovators and people leading the charge as healthcare continues to evolve. We have to be ahead of the curve.

What are some of the curriculum changes you're anticipating, in light of how the field of PT is changing?

The field is moving toward “value-based care”—what is the value we bring, how do we optimize that value, and how do we demonstrate that to the patient and the third-party payers? Boston University is obviously putting a lot of emphasis on big data, with data science faculty being hired and the [Center for Computing & Data Sciences] coming up, so we are eager to collaborate with the data science faculty in the healthcare sphere, and particularly in rehabilitation. Using their skills in machine learning and AI, and our expertise in healthcare data, we can answer the big questions in the field in order to then elevate practice and outcomes.

We spend a lot more time in our courses now talking about the social determinants of health and population-based practice. In physical therapy, you treat one individual at a time. But I think we're at a time where we need to think about how we can help people from underserved communities access healthcare in the same way as others.

What are you most excited about as you look to the future of this department?

We're really growing our research agenda.

We're bringing in these talented faculty this fall (page 6). The growth and our impact in terms of research in the rehab field is going to be even greater as we leverage the incredible talent that we have among our faculty as we help them grow and get tenured and evolve their work. I'm also excited about our clinical faculty and their growth and achievements. I really think they are going to be even better positioned and better able to move their scholarship forward as we invest in them, their ideas, and their growth and development over the next several years.

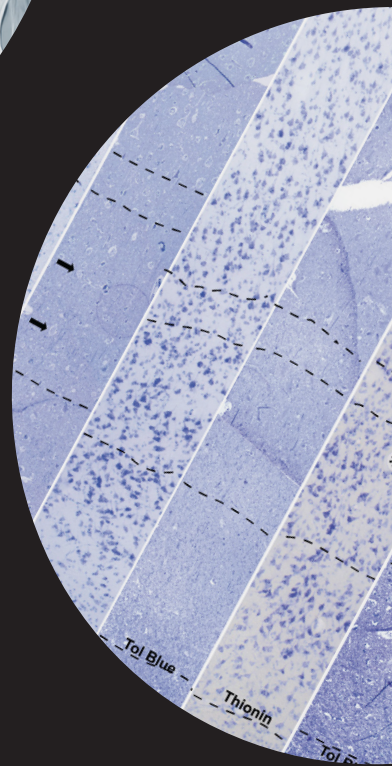
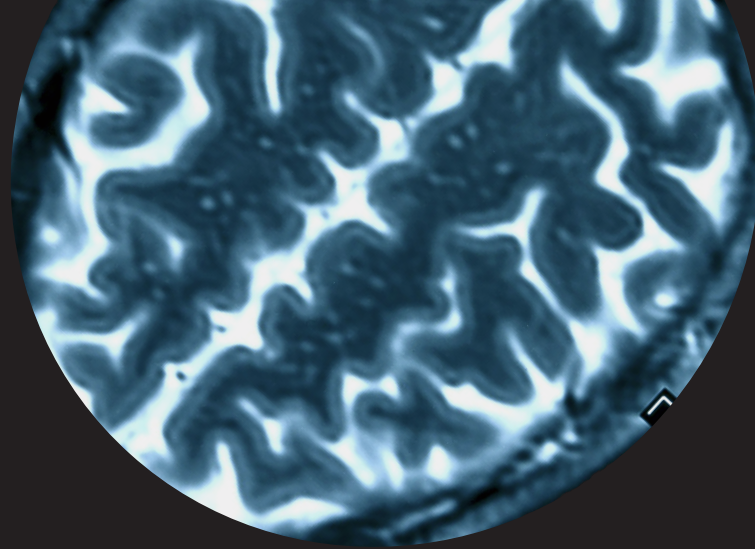
We also have amazing students. They're very invested, they're great to work with, and we have high expectations of them when they graduate. I see many of our students as the future leaders of the field, and we're really trying to prepare them in that way.

You have a big job. How do you balance it all?

I do have a great infrastructure in my research because I have built it over the years. I can rely on a strong team to carry out the day-to-day aspects of the research that need to be accomplished, so that helps a great deal. I also have an amazingly talented, successful faculty. You're really taking a strong group and making them even stronger. That's a good place to be. It is a challenge to juggle it all, but I'm invested in this, so that helps you give your all. ■



MICHAEL D. SPENCER



AUTISM, FROM EVERY ANGLE

From identifying the markers of neurodivergence to treating and supporting autistic people, Sargent researchers are helping us better understand one of the most complex brain mysteries of our time

by Ting Yu

In 1943, eminent child psychiatrist Leo Kanner published a seminal report in the journal *The Nervous Child* detailing his observations of 11 children with remarkable intelligence whose behavior was “governed rigidly and consistently by the powerful desire for aloneness and sameness.” Kanner was among the first to describe the condition that would later come to be known as autism spectrum disorder (ASD), a developmental disability characterized by highly focused interests and marked differences in communication and social interaction. Although our understanding of autism has evolved significantly, much about ASD, including its causes, remains a mystery.

Autism cannot be diagnosed with a medical test. Instead, physicians and psychologists evaluate a person’s abilities and development. But as the word “spectrum” connotes, there’s no one profile for individuals with autism. People with ASD may exhibit a varied constellation of traits and behaviors that can make it challenging to treat. One autistic high school student may be headed for college with their typically developing peers while another is nonverbal. As autism researcher, author, and advocate Stephen Shore once said, “If you’ve met one person with autism, you’ve met one person with autism.”

Over the last two decades, autism rates have risen steadily in the US, according to the Centers for Disease Control and Prevention. In 2000, one in 150 children had a diagnosis of ASD by the age of 8. Today that statistic is 1 in 44. But experts say the jump in reported cases doesn’t point to a true surge. Rather, the increase can be explained by greater parental awareness, more routine pediatric screening, and a broadening of diagnostic criteria to include its milder forms.

With more and more families looking for answers and support, Sargent investigators and clinicians are at the forefront of some of the most innovative work in autism research and intervention. Emily Rothman, chair of the occupational therapy department, is devising new ways to support BIPOC (Black, Indigenous, and people of color) youth with autism as well as those who are grappling with alcohol or substance abuse or who have been victims of sexual assault. (See page 3 for a Q&A with Rothman.) Gael Orsmond, who directs Sargent’s Families & Autism Research Lab, is studying ways to prepare autistic teenagers for adulthood. Basilis Zikopoulos, director of the Human Systems Neuroscience Laboratory, is pioneering research comparing the physiology of neurotypical brains to the brains of individuals with ASD. Simone Gill, director of the BU Motor Development Lab, is probing the connection between the way autistic kids move and how they think. Meghan Graham, a clinical assistant professor in the Department of Speech, Language, and Hearing Sciences, supports women with autism through a social group that embraces their neurodiversity.

“We still have so much to learn,” says Orsmond, who started her research with autistic individuals in the 1990s. “Back then we didn’t know much about autism, and in some ways, we still don’t. The complexity of autism requires that we all work together.”

Note: In this story, the author uses “autistic” and person-first language interchangeably. While some advocate for person-first language when referring to individuals with autism, many people with ASD prefer “autistic” as an embrace of their neurodiversity.

BASILIS ZIKOPOULOS/SDI PRODUCTIONS/ISTOCK.COM; KATARZYNA BIALASIEWICZ/ISTOCK.COM; PASIEKAY/SCIENCE SOURCE

Preparing for the Road Ahead



MEGHAN GRAHAM, CLINICAL ASSISTANT PROFESSOR, SPEECH, LANGUAGE, AND HEARING SCIENCES

When speech-language pathologist Meghan Graham ('06) started a group for women with autism in 2021, she brought together six of her clients with similar profiles. All were ambitious and highly capable—three had PhDs and most held demanding jobs—but, as a group, they struggled with executive functioning and navigating the social demands of their jobs. Graham believed she could offer valuable coaching to help them overcome these challenges.

But as the women began to share their stories, Graham found herself listening more than presenting. She was unsettled by how her clients had been mistreated in academic, professional, and even healthcare settings. One woman's boss told her, "You're smarter than you are annoying, thankfully." Another woman, a talented data analyst, was deluged with criticism from her team. "The way this woman can see patterns in the data is remarkable, yet all she gets is negative feedback for her communication style," Graham says. "These women have amazing gifts that are often not appreciated because they don't fit the typical mold. Hearing how misunderstood they are was heartbreaking."

It was also revelatory. Graham was struck by how, despite their troubles at work, the women understood one another

perfectly when they were together. It wasn't that her clients were poor communicators, she realized. They were simply speaking a different dialect. "I started taking more of a neurodiversity approach," Graham says—one where differences in ways of thinking and behaving are seen as variations, not deficits.

"I'm unlearning everything I thought I knew about how to treat autism," she says. "It's not about teaching these women how to act more like the rest of us. I see my role now as helping them understand their own profiles as well as sharing what the neurotypical experience and expectations are, because that's the majority of the world they're living in."

Mostly, Graham says, it's about creating community and building self-advocacy skills. Last month, the group generated a flyer about what it's like to be a woman with autism and shared it with coworkers. It was so well received that they're now working on launching a website.

"The way our society approaches people with autism is biased in many ways. We make it so that neurodivergent people have to conform to our [neurotypical] social frameworks, and they shouldn't have to," Graham says. "We should be teaching about these differences and giving people the autonomy to advocate for what they need."

GAEL ORSMOND, ASSOCIATE DEAN OF ACADEMIC AFFAIRS AND PROFESSOR, OCCUPATIONAL THERAPY

Gael Orsmond, director of Sargent's Families & Autism Research Lab, has a knack for shining a light on blind spots in autism research. In 2017, she began interviewing autistic youth for The ROAD Ahead, a longitudinal study of academically capable high school students on the autism spectrum. Previous literature on young people with autism told a discouraging story about their transition to adulthood: they couldn't get full-time jobs; they struggled in college; and they had trouble maintaining relationships. But that didn't line up with what Orsmond was hearing.

"Almost all the youth [in our study] are working or are in postsecondary education, and they are largely satisfied with their social lives," she says. Some of the discrepancy may be related to the abilities of this subset of autistic youth, but Orsmond believes previous measures of success were simply too binary. Working full-time and living independently were seen as good outcomes. But what if an autistic young woman was gladly living at home while taking part in a transition program to prepare her for college?

Orsmond developed more nuanced indicators for assessing productivity, social well-being, and autonomy within one's living situation—indicators that consider a person's satisfaction. "In our analysis, our young adults are doing very well," she says.

Still, early data from Orsmond's study point to the need for interventions focused on helping autistic youth strengthen

executive functioning—higher-order cognitive processes that include working memory, planning, flexibility, and self-regulation—and social communication skills needed to manage daily life tasks. Orsmond hopes to develop programs that can motivate students with autism. "We know autistic youth don't learn as much by observation," she says, "so we need to explicitly teach these skills."

Orsmond is spearheading another innovative project: helping families plan for when an autistic person's parents or guardian can no longer provide support. "These are difficult conversations," she says, and parents can be reluctant to burden siblings with caregiving responsibilities. "What often happens is, families don't talk about it, and then a crisis happens," leaving an autistic person without someone to support them in everyday life.

Orsmond and her colleague Kristin Long, an associate professor of psychological and brain sciences, recently completed the successful pilot of Siblings FORWARD, a program designed to help families of autistic individuals plan for the future. Through a series of telehealth sessions, siblings of autistic people received coaching on how to initiate tough conversations, set family goals, and navigate adult autism services. She plans to apply for another grant this year to expand the trial across other states. "Siblings know from a young age that they will play some type of role," Orsmond says. "We want to empower them to have those conversations and share what they want."



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Variations, Not Deficits

**SIMONE GILL, ASSOCIATE PROFESSOR,
OCCUPATIONAL THERAPY**

As director of BU's Motor Development Lab, Simone Gill spends her days studying how children and adults move through the world. She has examined how obesity impacts a person's gait and whether body composition affects motor performance and cognitive functioning.

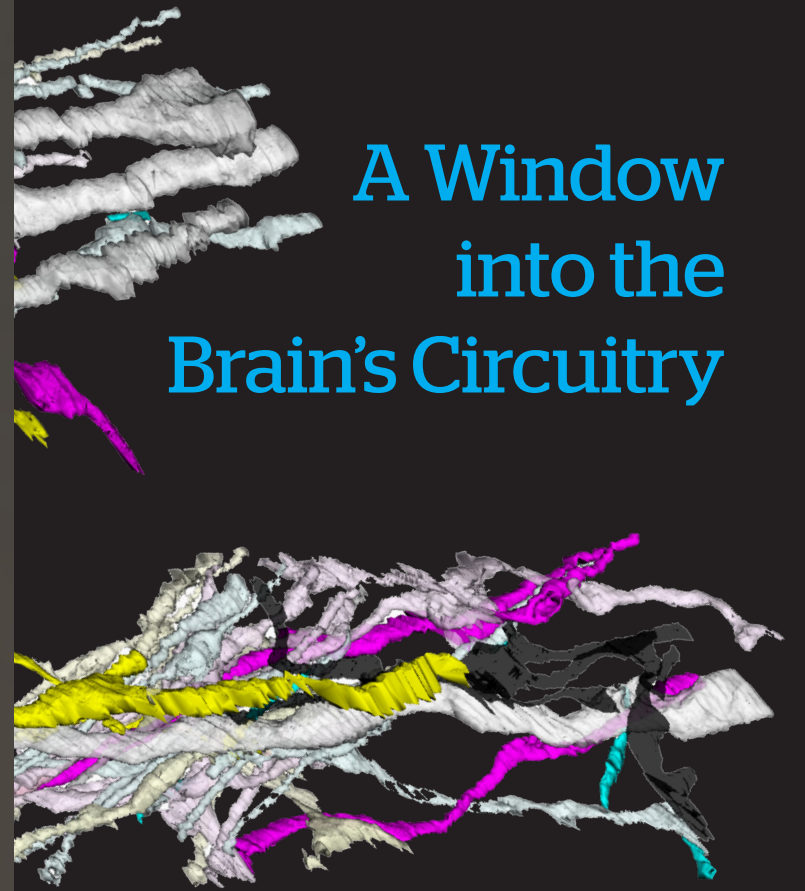
In 2018, Helen Tager-Flusberg, director of BU's Center for Autism Research Excellence and a mentor to Gill, proposed they do a joint study on minimally verbal children with ASD. The working assumption is that these children have cognitive impairments that impede language development. But what if there is a physical component too?

The study piqued Gill's interest in exploring the relationship between gross motor function and cognitive development in kids with ASD. "Autistic children tend to sway when they stand and have less postural control," she says. This makes them less apt to engage in physical activity, such as playing tag at recess or climbing a jungle gym. "Yet we know for all kids, especially those with autism, engaging in group activities spurs growth in cognition and social interaction—things like turn taking and reading nonverbal cues. All of these things are very much related."

Gill has applied for a grant from the National Institutes of Health to study the neural basis of motor function in kids ages 7 to 12 with ASD. The proposed study would recruit 60 children—30 who are typically developing and 30 who fall across the range of the autism spectrum. Gill plans to compare brain scans taken while the children perform physical and cognitive tasks, particularly ones that involve competition between the two: keeping balance and talking at the same time or completing a categorization exercise on a touch screen while balancing on one leg, for example. "Having them perform dual tasks will expose challenges related to both," she explains. (Gill plans to collaborate with David Boas, a BU professor of biomedical engineering and an expert in functional near-infrared spectroscopy, a groundbreaking technology that allows neuroimaging to be done while a subject is moving.)

"Perhaps we can find new interventions that give us more bang for our buck—ones that improve both motor function and cognitive development at the same time," Gill says. "My hope is that what we learn will help us move toward creating personalized, innovative interventions for children with autism."

A Window into the Brain's Circuitry



A Move Toward Better Interventions



PASIEKA / SCIENCE SOURCE; CIARA CROCKER / BASILIS ZIKOPOULOS

**BASILIS ZIKOPOULOS, DIRECTOR,
HUMAN SYSTEMS NEUROSCIENCE LABORATORY**

Fifteen years ago, when Basilis Zikopoulos was still a research associate in BU's health sciences department, working with BU neuroscientist Helen Barbas, he received a profound gift from a colleague. Gene Blatt, then a neurobiologist at BU's School of Medicine, gave him samples from two postmortem human brains donated from individuals with autism and matching control tissue. The tissue samples enabled Zikopoulos to conduct a series of pilot studies that led to securing his first-ever grant—to study white matter cortical pathways in autism—and launched his career as a neuroscientist.

"A human brain is the most precious resource you could ever ask for," says Zikopoulos, now an associate professor in health sciences. Today, his tissue bank contains nearly 100 postmortem brain samples from child and adult donors, with and without autism or other brain disorders. Specially cryopreserved and processed, the tissues can last for decades.

Most autism research centers on the functioning and behavior of living subjects. Zikopoulos' access to human brain tissue gives him a unique window into the neural circuitry—and even molecular inner workings—of developmental disorders such as autism and schizophrenia. "It's amazing to be able to understand exactly how different neurons connect and communicate with each other at the structural and molecular level," he says.

Using high-resolution microscopy and advanced imaging and computational approaches, Zikopoulos is breaking ground on an avenue of research that explores the anatomical and physiological basis of neurodiversity. "We are the only lab in the world that has shown specific structural and molecular changes in the individual axons in brains of people with autism," he says. "We have identified specific markers and growth proteins that can give us clues about how and when disorders like autism develop. Once we understand the pathology of these networks and pathways, we can be more targeted in our approaches to treating people with autism."

In addition, Zikopoulos and Barbas, a professor of health sciences, have spent years working together to map the cortical pathways of rhesus monkey brains, yielding critical clues about the possible organization of human brain networks. With the additional help of BU computational neuroscientist and close collaborator Arash Yazdanbakhsh (GRS'05), a research assistant professor, the team is building a digital brain that can be used to simulate human brain activity. "Through these models, we can start disrupting nodes and processes in the network and begin to understand which mechanisms might play a key role in various disorders."

A prolific investigator with several papers currently under review and more in the pipeline, Zikopoulos is brimming with new ideas. "Every time we answer a question, we have at least two or three more we want to answer," he says. "It's a never-ending process, but it's very exciting." ■

A Place to Practice

SARGENT'S NEW CENTER FOR CLINICAL SIMULATION WILL PREPARE STUDENTS FOR REAL-WORLD PATIENT INTERACTIONS

BY MARC CHALUFOUR

Imagine stepping into a radiology suite for the first time. An anxious patient sits on the table, awaiting an uncomfortable barium swallow test. Their nervous partner waits outside the room. Machines beep and whir. Even the weight of the dense lead aprons feels unfamiliar. In that moment, you need to draw on all of your expertise and empathy—and not get distracted by a new environment.

There's a wide gulf between classroom learning and performing a high-stakes task. It's why pilots have long trained in flight simulators that can take the form of video games or realistic cockpits anchored to the ground, before trying to land a jet on a runway. Likewise, only practice can prepare a clinician for the experience of interacting with a flesh-and-blood patient. Increasingly, that practice is coming through a variety of health-care simulations rather than on the job. Early next year, Sargent will close that classroom-to-clinic gulf when it opens the new Center for Clinical Simulation.

The center will occupy a row of rooms on Sargent's third floor. Two rooms will act as the sets for simulations. Faculty and staff can stage them with props to mimic acute care hospital rooms or radiology suites. There, students can practice in a safe space, opposite trained actors or animatronic mannequins. Faculty, watching the sessions from an observation room, will be able to communicate with participants throughout the experience.

"It's one thing to provide students with a lot of training in working with a client who had a stroke, so they know what to expect and know how to do an evaluation," says Michelle Mentis, a clinical professor and chair of speech, language, and hearing sciences (SLHS), who chaired a faculty committee that guided the center's design. "It's a very different thing when they actually go into a hospital room. That's where the [simulation] lab comes in."

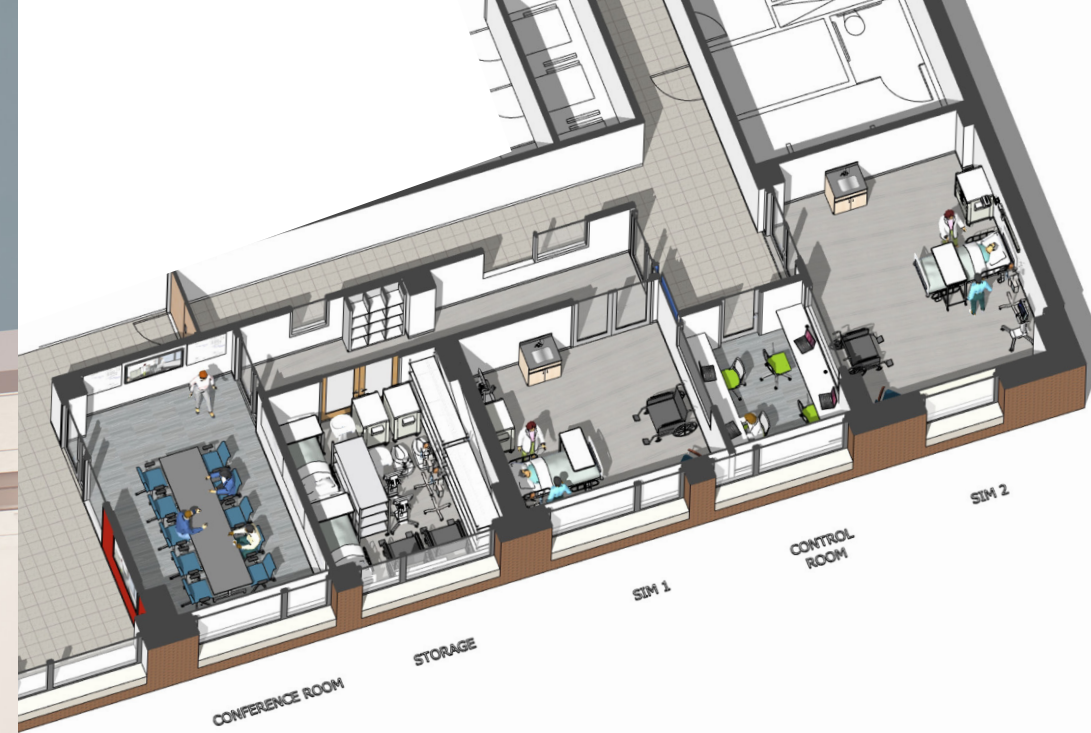
SIMULATED EDUCATION, REAL GROWTH

The use of simulations in healthcare isn't new. Anatomical models have long been used in classrooms, for example. But

Simulation rooms will be staged to mimic either acute care hospital rooms (as shown) or radiology suites. The center (opposite) will occupy a row of rooms on Sargent's third floor.



JESSIE LIN



“These simulations will help prepare students to be confident in their clinical skills and contributions to team-based care. Students will be able to apply knowledge and skills in a safe learning environment, where they can receive real-time feedback.”

—CRAIG SLATER

in recent years, its use has been on the rise. New technology, from increasingly lifelike mannequins to virtual reality, have made the practice more immersive and realistic. Accreditation boards have begun recognizing the use of simulations in place of some fieldwork. And the pandemic accelerated the expansion of simulation-based education as many hospital and clinic-based placements were suspended. Plus, as simulations become more common, there's more literature detailing their efficacy, Mentis says. That, in turn, fuels more growth. "It hadn't been very much a part of our field even five years ago," she says.

Simulations aren't entirely new to Sargent, but the center will represent a huge step forward in capacity and sophistication. "Our simulation activities have taken place in a traditional classroom or even my office," says Marijane Staniec ('96), a senior lecturer and director of the dietetic internship program. "Having fully functional acute care hospital rooms will provide a much more authentic environment for students to practice skills and grow in confidence."

Mentis says that the SLHS department previously used computer simulation software to teach students how to work through a diagnosis and how to plan treatments. The physical therapy department was already using actors—typically referred to as standardized patients—so students could practice engaging with patients and obtaining histories before they move on to a clinical setting. In occupational therapy, faculty and students often helped each other practice common maneuvers, like bed-to-wheelchair transfers. And nutrition students have practiced several skills with standardized patients, including nutrition counseling and nutrition-focused physical exams.

Anne Escher ('08), a clinical assistant professor, has seen the use of simulations in OT grow in recent years as studies have shown that they increase students' confidence and comfort levels. And since the last revision of accreditation standards in 2018, students have been able to earn fieldwork credit for participating in simulations. That meant Sargent could offer online simulations with standardized patients in

place of clinical placements during the pandemic. "It was really successful, having students think and interact, in the moment, with someone they didn't know," Escher says.

PRACTICING AS A TEAM

Mentis and her SLHS colleagues began planning to expand their own simulation capabilities during the pandemic. That's when Sargent Dean Christopher Moore, following a series of discussions with each department, recognized that the college needed a state-of-the-art shared space where students could not only practice skills but work together in interdisciplinary teams. The results: the simulations coordinated in the new center will be more holistic and immersive than anything Sargent students have experienced before.

"These simulations will help prepare students to be confident in their clinical skills and contributions to team-based care," says Craig Slater, a clinical assistant professor of occupational therapy. "Students will be able to apply knowledge and skills in a safe learning environment, where they can receive real-time feedback." Slater, Sargent's director for interprofessional education and practice, will help to design those exercises. Sargent is also in the process of hiring a director for the center.

"It's ideal for teaching students how to work together, which is what they do in the real world," says Mentis.

Simulations are much more than practicing hands-on care. Standardized patients can be instructed to challenge students by, for example, questioning their level of experience. Actors may also stand in as family members and partners who are receiving an update on their loved one, and may even require consoling. And faculty will be there to coach students through each of those interactions.

"That's part of an education in health and rehabilitation sciences that's sometimes talked about but not taught," Escher says. "But that is the piece that determines whether an intervention is successful." ■

Communication, Community, and Healthcare

HAGERE YILMA IS WORKING TO REDUCE IRON-DEFICIENCY ANEMIA IN RURAL INDIA

BY JESSICA COLAROSSO

You are what you eat,” as the old saying goes, is not always so simple. Depending on the food you have on hand, your access to nutrition information, and regional customs and traditions, sometimes you are what you *don’t* eat.

An example: people who don’t eat enough iron-rich foods—such as leafy greens, seafood, or meat—can develop iron-deficiency anemia, a condition in which their blood produces fewer than normal red blood cells, or hemoglobin. Left untreated, it can lead to fatigue, weakness, shortness of breath, and serious complications during pregnancy. The condition

is common in all countries, regardless of wealth, according to the World Health Organization. But Southeast Asia has some of the highest rates of iron-deficiency anemia. In India, more than half of women are anemic.

“Women have a hard time recognizing that they are anemic,” says Hagere Yilma, a clinical assistant professor of health sciences and lead researcher for the RANI Project—short for Reduction in Anemia through Normative Innovations—which took place in Odisha, India, from early 2019 to spring 2021. “Rani” translates to “woman” in Hindi. “A lot of the daily lives of women in these areas are characterized by physical labor, like agricultural work and taking care of their families morning



Hagere Yilma is passionate about women’s health and researches how social and cultural norms shape individual health behaviors.

and night.” So, at the end of a long, tiresome day, many women don’t think twice about how fatigued they might feel.

Though anyone can develop anemia, it is more common in women who menstruate and women who are pregnant. It is typically combated by eating foods high in iron or, if changing a diet isn’t possible, taking iron supplements. Despite the relative ease of treatment and past public health efforts in India to encourage pregnant women to take iron supplements, rates of anemia are still high.

“Going to a health center or seeking health advice is not an easy thing to do in Odisha,” Yilma says, since many people live in rural areas, far from community health centers and clin-

ics. The RANI Project, which began at George Washington University and partnered with health organizations in Odisha and New Delhi, had the goal of reducing anemia in the area by 10 percent. To do that, Yilma and the team built a transformative public health intervention to raise awareness of anemia, frequently test women for the disorder, provide them with iron supplements as needed, and change the existing stigma and false beliefs about taking iron supplements.

CULTURAL BARRIERS TO DETECTION

Yilma and her research colleagues interviewed more than 4,000 women to learn about their daily habits and the prevailing social norms that prevent women from addressing signs of anemia. They went door to door throughout the region to conduct the interviews and gather necessary data for the intervention to work. Their findings were published in the journal *BMC Public Health*.

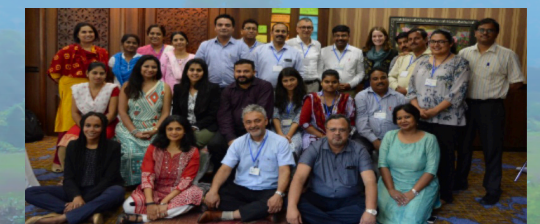
Every home had a different story. Many of the women were married, some had children (interviews were occasionally interrupted by toddlers scampering through the room, Yilma recalls), some were in school, and many lived with their mothers-in-law, since it’s common in the region for mothers to live with their sons.

“It was like admitting tiredness or fatigue was a luxury or an admission of a personal weakness,” Yilma says. “We had to help people realize that if they’re feeling fatigue, it might be a medical concern.”

Odisha women also traditionally are the last in their families to eat, a sign of love and respect. “What’s left over is usually not the most iron-rich, limiting their iron intake,” Yilma says. And their diets may not include meat at all—many households are vegetarian for religious reasons.

From their interviews with women, who ranged in age from 15 to 49, researchers learned that many women thought that only pregnant women should take iron supplements, making the idea of taking them less appealing to women who aren’t pregnant. There was also the idea that taking iron pills while

Agricultural workers in Odisha, India



The RANI Project team met with local stakeholders from the beginning of their planning phase. Yilma, seated at the bottom left corner, recalls this being the first time various stakeholders came together to outline the core of the project.

"IT WAS LIKE ADMITTING TIREDNESS OR FATIGUE WAS A LUXURY OR AN ADMISSION OF A PERSONAL WEAKNESS. WE HAD TO HELP PEOPLE REALIZE THAT IF THEY'RE FEELING FATIGUE, IT MIGHT BE A MEDICAL CONCERN."

—HAGERE YILMA

pregnant can lead to babies being born larger, which is not the case, Yilma says. She and the team were then poised to change the narrative about iron supplements—and convince the women and their mothers-in-law that the supplements are safe for them and their babies.

"Mothers-in-law are very much involved in household and health decisions," Yilma says. "We saw that, for the most part, husbands supported whatever was good for their wife, but mothers-in-law took issue with iron supplements. There's this idea that since [their generation] didn't need it, why do their daughters-in-law need it, and is it good for their baby?"

A NEW APPROACH

Yilma, who is a first-generation Ethiopian American, has been passionate about women's health since she was a graduate student at George Washington University in Washington, D.C. She focused on RANI while pursuing her PhD and started teaching at Boston University shortly after graduating in fall 2021. Outside of analyzing and collecting vital data for the RANI Project, her other research has often focused on how social norms—the shared beliefs about what is acceptable in society—shape individual health, and what can be done to change them.

"[India and Ethiopia] are very different countries, but I saw a lot of similar social dynamics from my own family in Ethiopia," she says. "People want to be healthy, and people want their loved ones to be healthy, but sometimes our interactions with each other are not conducive to our health. It's a matter of changing those interactions so someone feels supported to change their health."

After conducting interviews, collecting data, and designing a community-oriented approach to normalize iron supplements in Odisha, the RANI team launched health interventions in more than 138 villages at the end of 2019. The

interventions, outlined in the *Bulletin of the World Health Organization*, consisted of public meetings where women, men, mothers-in-law, and others learned about the effects of anemia and underwent blood tests—a reliable way to check if someone is anemic. About 15 women volunteered during each meeting for a finger prick that would instantly show hemoglobin levels; if the number was low, they likely had an iron deficiency. Each volunteer was then handed a color-coded card, depending on the results of the test—red being a serious deficiency, red-orange and yellow being less severe, and green meaning normal hemoglobin levels. They placed the cards on a large mat, giving them a sense for how prevalent anemia is in the community, and showing them that they are not alone. The volunteers who received red and red-orange cards were given iron supplements to treat the anemia.

"Over time, more and more green started to pop up," indicating hemoglobin levels had returned to normal for many volunteers, Yilma says. "It was a way for women to understand that other women were taking iron supplements, and it is actually resulting in this change in hemoglobin."

Women were able to watch this shift, all while learning and talking with one another about their health. The meetings took place once a month for about a year, with each one led by local facilitators to address questions and concerns about taking iron supplements and to chip away at doubts or fears that held women back from seeking care. Some villages began to expand on the prescribed intervention material—one village, Yilma says, began a community-wide bell system to remind women to take their iron supplements.

As the COVID-19 pandemic swept the globe in March of 2020, large village meetings halted to keep people safe, and iron supplements became increasingly difficult to get. To keep the interventions going, some RANI Project facilitators received permission from the Odisha government to hold small group meetings in village members' homes. The facilitators provided face coverings and gloves, and distributed iron supplements for those who needed them.

MAKING GAINS

By the end of 2021, the researchers found that the intervention was successful in reducing the number of women with anemia in Odisha, and women who were not originally part of the project began asking about how to get involved. Odisha public health officials have since adopted the RANI interventions in an effort to keep meetings operating and make iron pills more accessible to those who need them.

"Whether you're someone who is from a disadvantaged caste or lives far from a health center, we have evidence that shifting social factors can motivate people in the face of barriers," Yilma says. She is working with Sargent students to continue going through the data collected by the RANI Project researchers and delve more into how communication and social norms shifted behavior in Odisha.

"How we communicate with others is very important, especially in disenfranchised groups," she says. "Sometimes how we interact with each other is all we have." ■



Alexandra Kcomt ('25) (left) and Magdalen Balz, a clinical assistant professor, chat with resident Walter Smith at Hearth at Olmsted Green.

"There's a body of literature that shows that doing preventive cognitive therapy helps seniors maintain their independence—in terms of managing their activities of daily living—longer."

—MAGDALEN BALZ

Bridging the Cognitive Therapy Gap

MAGDALEN BALZ'S COGWELL PROGRAM PROVIDES MENTAL ACUITY RESOURCES FOR SENIORS HISTORICALLY NEGLECTED BY THE MEDICAL FIELD

BY ALENE BOURANOVA

When Magdalen Balz polled residents at a Dorchester, Mass., senior housing facility about factors that determine quality of life, she wasn't expecting one of the answers to be "feeling victorious."

"We know that being social, active, and engaged in your community are positives for health and wellness as you age," says Balz ('09), a clinical assistant professor in Sargent's speech, language, and hearing sciences department and a longtime speech-language pathologist. But feeling victorious?

"When I asked the senior what they meant by 'victorious,' they said feeling as though they had an important role in their day, where they were active in their community and successful at what they did," Balz explains, adding that she wouldn't have thought to ask someone if they felt successful that day.

That's the beauty of an open-ended study, she says. And that's why in 2019, she surveyed residents of Olmsted Green—affordable senior housing operated by the nonprofit Hearth—about what constitutes quality of life. Their answers helped her construct the Cognitive Wellness Program (CogWell), designed to combat age-related cognitive decline in seniors who have experienced homelessness.

From the get-go, Balz knew she wanted to create a cognitive therapy program for older adults historically excluded from such resources. That's how she ended up partnering with Hearth: a selection of units in its seven Greater Boston complexes are reserved for formerly homeless individuals.

"There's a body of literature that shows that doing preventive cognitive therapy helps seniors maintain their independence—in terms of managing their activities of daily living—longer," Balz says. "One of the reasons we picked Hearth is that they have a diverse group of seniors with diverse cognitive needs who could likely benefit from cognitive exercise. Other seniors might be able to sign up for a class at a university. But that's not a resource available to all seniors. So we bring the class to them."

CogWell is run by Balz and graduate students in the speech-language pathology program. Each cohort is free, lasts a semester, and involves weekly sessions at one of Hearth's locations. Participating seniors practice attention, memory, language, and organization skills; at the same time, student speech-language pathologists accumulate clinical hours by leading therapy sessions. The activities vary: sometimes facilitators have seniors listen to a podcast and answer questions about what they remember; other times they'll create brain teasers for participants to solve. Often, Balz says, the seniors dictate what a day's tasks should be: for example, a recent conversation about preparing for doctor's visits led to an organizational activity where seniors created appointment-prep checklists.

Such activities help even if participants aren't exhibiting cognitive decline. For one, the tasks often help seniors practice memory strategies for use in their daily lives. But CogWell's main goal is preventing decline in the first place, Balz says.

Much of the program is tailored to support individuals' needs. CogWell sessions started out in person at Hearth's Olmsted Green and Anna Bissonnette House buildings in 2019 and 2020, but switched to Zoom for much of the COVID-19 pandemic. During that time, Balz and her students had participants pick a task to accomplish and set goals to attain it. One senior chose to practice latch hook, a craft similar to rug-making, and established goals for how many rows to complete each week. "At the end of the very last session, they held up their finished latch hook for us to see, and it was a nice, tangible moment of success," Balz says.

Feedback from seniors and grad students has been positive, according to Balz. Last semester, one senior suggested renaming the program Intergenerational Dialogue and Collaboration for Cognitive Wellness. "He wanted to change the name because he liked that he got to give life advice to the students, and they brought him tasks for cognitive activity," she relates. "It's this really lovely exchange." ■

THE HEALING POWER OF MUSIC, FROM BACH TO ROCK

LOU AWAD IS HARNESSING THE POWER OF MUSIC AND RHYTHM TO TEACH STROKE SURVIVORS TO WALK AGAIN

BY STEVE HOLT

Chrissy Bellows secures a set of headphones over her ears and clips a hard plastic sensor to her left sneaker, then her right. She presses a button on her smartphone and stands up from the wheelchair that's been her main way of getting around since a hemorrhagic stroke restricted her ability to walk in 2016. Music begins to play, slowly at first, through the headphones—in this case, it's oldies—and Bellows starts walking inside her Newcastle, Maine, home.

Holding on to her husband's arm for support, Bellows strolls along in lockstep with the rhythm of the song. (We do this automatically and subconsciously, it turns out.) If Bellows has trouble matching her steps to the beat, the sensors attached to her shoes send real-time gait data to her mobile device, and in turn, the music is mixed to aid her walking. And if she seems to have no trouble at all walking to the beat? The algorithm increases the tempo of the music to create a new therapeutic challenge.

Bellows is among the nearly 800,000 Americans who have a stroke each year. More than half of stroke survivors over 65, like Bellows, have mobility limitations—including trouble walking. Early studies suggest that those who use music in relearning to walk after a neurological diagnosis such as a stroke or Parkinson's disease move faster and with better gait than those who

trained without music—all while expending less energy.

BU's Neuromotor Recovery Laboratory is home to some of the most promising research into music-based gait training. The lab's founder and director, Lou Awad, an assistant professor of physical therapy, has partnered with MedRhythms Inc.—the Portland, Maine, start-up that developed the technology Bellows has been using—to research how neurological diseases and injuries affect the ability of patients to walk to the rhythm of music. As the company's scientific advisor, he is also assisting MedRhythms with its clinical trials and in preparing the device for the commercial market. Awad says many stroke survivors may soon receive “prescription music” from their healthcare provider to work on their gait when they're on their own.

Awad's Neuromotor Recovery Laboratory received its fourth grant in three years from MedRhythms Inc. in September 2021—\$1 million to continue studying results and additional applications of the company's “rhythm-based gait training” technology. (Bellows tested the technology in her role on MedRhythms' patient advisory board and not as part of a clinical trial or for therapeutic outcomes.)

“Music, and the rhythm of music, is one of the most powerful stimuli on Earth,” Awad says. “The same way a capsule or an injection is the delivery method for some medications, the



music is the delivery method for rhythm-based gait training.” He adds that a partnership with Universal Music Group provides MedRhythms with access to the most diverse and culturally rich collection of music ever assembled for the purpose of providing prescription music to patients. When a patient selects a song, a proprietary algorithm screens it to be sure it meets minimum criteria

to be used in rehabilitation and then mixes the music into an individualized track for each user.

“So, if you really like Eminem's ‘Till I Collapse,’ we can use that song to help someone relearn how to walk.”

A BOOMING FIELD OF STUDY

Advancements in understanding the ways music benefits human brains and bodies have exploded in recent decades, Awad says, fueled by an increase in funding for studies on the topic. We now know, for instance, that the auditory and motor regions of the brain are more connected than once thought. Listening to rhythm causes us to move our muscles, at times without even knowing. (Think of the way you involuntarily tap your foot to the song playing in the lobby at the dentist's office.) As the auditory-motor connection has become clearer, therapists have started using music and beats to help people regain certain movements after a neurological or physical trauma—a therapeutic intervention called rhythmic auditory stimulation.

“In rhythmic auditory stimulation, you find a beat in the music that's aligned with the speed a person walks,” Awad says. “Once they entrain, or synchronize, to the rhythm—which is completely subconscious because of the auditory-motor connection—you can progress the rhythm. Because the technology uses real-time gait analysis by wearable sensors, the training is adaptive and very individualized.”

In 2015, neurologic music therapists at Spaulding Rehabilitation Hospital in Boston began treating patients with rhythmic auditory stimulation. Stories of patient progress relearning to walk piled up, and demand for MedRhythms' therapy quickly outpaced the hospital's supply of trained clinicians. The start-up made plans to scale up by developing a digital therapeutic that could deliver the music therapy without the presence of a clinician. That's when Awad, then an associate faculty member at Harvard's Wyss Institute, got involved with MedRhythms, first joining the company's board of advisors and later its scientific advisory board.

Awad came to BU in 2016 to start the Neuromotor Recovery Laboratory, which works to “develop, study, and translate novel rehabilitation therapies and technologies for people living with impaired neuromotor control.” Awad and Terry Ellis (MED'05), chair of the physical therapy department, codeveloped a soft, wearable exosuit that uses robotics to assist those relearning to walk. On the MedRhythms project,

Awad served as the lead principal investigator for two clinical trials in stroke rehabilitation in 2020 and says his role with the company “is really to help shape and inform the application of that fundamental technology.”

THE NEXT STEPS

Results from initial clinical trials—overseen by Awad and his team—have shown that stroke survivors who use MedRhythms' digital app for gait training are able to walk faster and with a better gait, and also use less energy, after just a single session of training. The team is currently leading a large, multisite trial to support Food and Drug Administration authorization to distribute the technology commercially, which could happen as early as 2023.

The genius of music-based gait training, Awad says, is it can be used for stroke rehabilitation anytime, anywhere.

“In our world, in rehab, people often say you can't come to the clinic three times a week for one hour each time and expect to transform how you move, because the other 23 hours of the day you're not getting treatment,” Awad says. “Technologies like this allow us to have an impact on real-world moving, where every step can be therapeutic. Walking to the mailbox can be therapeutic.” ■

\$6 MILLION TO HELP COMMERCIALIZE WEARABLE REHAB TECHNOLOGY

Two Sargent researchers are founding faculty in a new, multi-institutional lab that is developing next-generation robotics and wearable technologies. Sargent's Lou Awad and Terry Ellis are part of a cross-institutional collaboration of clinicians, engineers, and researchers in Harvard's Move Lab working on translational research involving wearable sensor and robotic technologies. In March, the Move Lab received a \$3 million grant from the Commonwealth of Massachusetts to launch the initiative, which will be matched by another \$3 million from BU and Harvard. While centered at Harvard, the Move Lab brings together a variety of multidisciplinary teams—including from BU. Funding from the commonwealth will initially support four specific areas of study aimed at commercializing treatments and technologies that help people stave off age-related mobility declines and restore movement to those who have lost it. Awad serves as the principal investigator of one of the four areas of study: a project developing a wearable neuroprosthesis to help stroke survivors regain control of their muscles.

PREDICTING APHASIA RECOVERY



Anne Billot (left) and Swathi Kiran (right) are studying the recovery predictors in stroke survivors with language loss.

MICHAEL D. SPENCER

“THIS SORT OF WORK IS A GAME CHANGER FOR THE CLINICAL FIELD.” —SWATHI KIRAN

AN INTERDISCIPLINARY STUDY USES MACHINE LEARNING TO DETERMINE HOW WELL STROKE SURVIVORS WITH APHASIA WILL RESPOND TO THERAPY

BY MARA SASSOON

When stroke patients with the communication disorder aphasia undergo language therapy, results often vary. Some survivors recover their language skills almost completely; others show only partial improvement. The reasons for these vastly different responses are often not readily apparent.

Anne Billot, a PhD student in behavioral neuroscience at the School of Medicine, wanted to find out what factors contributed most significantly to language recovery and if a patient's response to therapy treatments could be predicted from the outset. In 2021, she teamed up with Swathi Kiran, director of Sargent's Aphasia Research Laboratory and the James and Cecilia Tse Ying Professor in Neurorehabilitation, and an interdisciplinary team of researchers from BU, Northwestern University, and Johns Hopkins University, to study uses of machine learning for predicting language recovery success in aphasia survivors.

“This is one of the first studies to use this approach in studying people with aphasia,” says Billot (MED'23). “Knowing in advance how people will recover is very important for patients themselves and their family, so that they can plan how their life will be affected. It's also important for clinicians to choose the best treatments that will be most beneficial for the patients.”

Aphasia is a communication disorder that results from damage to the parts of the brain that control language formulation and processing. For the initial part of the study, 55 stroke survivors with aphasia—who were all at least six months post-stroke—received treatment at BU, Northwestern, or Johns Hopkins for two hours a week over 12 weeks. The researchers had previously conducted behavioral assessments of the participants, who, Billot says, exhibited a wide range of aphasia severity. The therapy targeted areas including naming, syntax processing, and spelling—all of which can become impaired following a stroke. The researchers also took fMRI scans of the patients' brains to gather sets of neuroimaging data. As expected, at the end of the treatment, some participants nearly fully recovered their language skills. Others did not recover as well.

DEVELOPING MODELS

After the course of treatment, Billot met with colleagues from BU's computer science department and the Rafik B. Hariri Institute for Computing and Computational Science & Engineering—which provided funding for the project. They got to work figuring out how all the data gathered from the neuroimaging and behavioral assessments, combined with additional background on the patients, such as demographic information, could be used to develop machine learning models to predict how the patients would ultimately recover. Billot and her fellow researchers also wanted to see what types of information would be most important for a model to make the most accurate prediction.

“This sort of work is a game changer for the clinical field,” says Kiran. “It's not a new approach for the computer science or data science fields. They've already developed these models and they're applying them to these different problems, like weather prediction and climate sustainability. But when you apply these models to stroke rehabilitation, you now have a way to make very concrete predictions of what's most important to recovery.”

The researchers found that the best combination of data for predicting language recovery after a stroke included the aphasia severity, where the lesion from the stroke is and its size, demographics such as age and education level, and resting-state connectivity—or how different areas of the brain work together when at rest. And how well that connectivity has been preserved post-stroke is the key predictor in how fully survivors will recover—a breakthrough from the study, according to Billot and Kiran.

“When you have a stroke, you have severe damage to one or more parts of the language regions of the brain,” says Kiran. “What's remaining, how areas of the brain are in sync with each other, seems to predict how much somebody can recover with intervention. I think this is a big deal because it says what's remaining is what's working. And what's working predicts how much somebody will improve from treatment.”

Billot sees opportunities to expand the study—namely, using machine learning to prescribe the most promising treatment for an aphasia patient. “With this study, we were more looking at which type of data could help us predict how someone will respond overall to language treatments,” Billot says. “The next step is knowing which data we need to use, to look at each type of treatment, and then really reach this kind of precision medicine that is the end goal.” ■

A FORCE IN THE RECOVERY MOVEMENT



Gayle Berg formed her private practice, Psychological Solutions, around the recovery principles she learned at Sargent and applied as a young psychologist in New York.

“ [WILLIAM ANTHONY] WAS DEMONSTRATING THAT RECOVERY IS POSSIBLE, AND HIS PIONEERING EFFORTS WERE CREATING A MAJOR PARADIGM SHIFT IN TREATMENT AND SERVICE DELIVERY, WHICH WAS SO BADLY NEEDED IN OUR COUNTRY AT THAT TIME. ”

spurred Berg’s work as a mental health advocate to improve and expand access to quality mental health care. For decades she along with others lobbied Congress for equal treatment, or parity, of mental health conditions and substance use disorders in insurance plans, and in 2008, Congress passed the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equality Act. Now, someone living with mental health conditions like depression or schizophrenia could no longer be discriminated against by insurance companies. Their coverage is now required to be on par with their plans’ reimbursements for treatment of diabetes or other medical conditions.

CONTINUING THE WORK

Besides her advocacy work, Berg has served on several boards and agencies to promote access to quality mental health care. She continues to fund the training of new mental health professionals through her support of BU, where she serves as a member of the Sargent Dean’s Advisory Board and the University Advisory Board. In 2009, Berg made a \$1.5 million gift to Sargent—at the time the largest single donation in the college’s history—to create an endowed fund for interdisciplinary research in psychiatric rehabilitation.

Berg says she won’t stop advocating and giving of her time and resources “until the true promise of recovery is realized and there is quality mental health care easily accessible to everyone in need.” She says the mental health system needs to include a comprehensive array of evidence-based services, including prevention, early detection and evaluation, treatment, and aftercare. Looking back on her role in shaping the changes in mental health care over the past four decades, Berg feels fortunate to have been able to pursue her passion and to have played her part in transforming a system that has been stressed in recent years: “I’ve learned that with crisis comes opportunity, and the pandemic—with its concurrent mental health crisis—creates the possibility where a vision of recovery can be turned into reality.” ■

GAYLE BERG REFLECTS ON HOW SARGENT LAUNCHED HER CAREER AS A PSYCHOLOGIST AND THE INSPIRATION THAT KEEPS HER ADVOCATING FOR BETTER ACCESS

BY STEVE HOLT

In the early 1970s, the notion that people living with chronic mental illness could recover and lead relatively normal lives was still novel. The signing of the Community Mental Health Act of 1963 by President John F. Kennedy (Hon.’55), along with the movement to remove Americans from institutions and asylums, was considered revolutionary in providing needed mental health services to communities across the country. While the effort was never adequately funded, it created new opportunities for counselor training programs and rehabilitation research. A decade later, the Rehabilitation Act of 1973 banned discrimination on the basis of disability in any federal agency or program receiving federal funding. That year, Gayle Berg, an enthusiastic college graduate from Long Island, enrolled in Sargent to pursue a master’s of science in rehabilitation coun-

seling, where a new specialization in psychiatric rehabilitation had been launched.

Berg (’74) obtained a teaching assistantship under William A. Anthony, founder of the Center for Psychiatric Rehabilitation (page 4) and considered by many to be the “father of the recovery movement.” During her time at Sargent, Berg also worked part-time for a nonprofit that provided services to individuals with intellectual disabilities, putting lessons from Anthony and other professors into immediate use.

“Bill was creating the processes and mechanisms for systemic and personal transformation,” Berg says. “He was demonstrating that recovery is possible, and his pioneering efforts were creating a major paradigm shift in treatment and service delivery, which was so badly needed in our country at that time.”

Berg founded Psychological Solutions, her New York-based practice, on Anthony’s recovery movement principles: helping people with mental illness participate in society. She has worked to improve and expand the availability of mental health care as a practicing psychologist and member of many advocacy and governance organizations, and has ardently supported Sargent’s training of new mental health care professionals who are committed to recovery.

THE NEEDLE MOVES ON CARE AND POLICY

After graduating, Berg returned to New York to see if she could apply the principles of psychiatric rehabilitation in a hospital setting, which she says had been operating like a “revolving door” for people with psychiatric challenges. She joined the staff of a prominent New York City teaching hospital, where she helped to develop an innovative day treatment center of services for individuals in mental health crisis or living with psychological conditions. She and her colleagues implemented a work readiness training program as well as treatment-focused groups for families and patients. They also started a group home for patients to learn independent living skills. “We moved the needle big time at that moment in this hospital,” says Berg, who earned a PhD in psychology from New York University while working full-time at the hospital.

She eventually left the hospital and in 1984 founded Psychological Solutions, a private psychology practice in Roslyn Heights, N.Y. Here, she would confront the negative impact that a lack of funding for care has on access to services for these individuals seeking psychological help. “Insurance carriers were still paying for 30 days of inpatient stays,” she says, “but not for outpatient mental health services or care.” This

CHRIS SORESENSEN

DR. PAIN-FREE

**ORTHOPEDIC SURGEON
STEVEN GORIN HELPS
HIS PATIENTS GET BACK
TO THEIR LIVES**

BY MARA SASSOON



Shortly after he found out he was accepted to BU, Steven Gorin flew to Boston with his father to take a campus tour. It was a cold, gray, and rainy early spring day—a far cry from the usually warm, sunny weather the South Florida native was used to. Even so, Gorin says he felt at home as he walked down Comm Ave. “For whatever reason, I just fell in love. The campus, the tour—it seemed right,” says Gorin (’94). At the end of the tour, he proclaimed to his father that he would be attending BU.

That decision set him on a path to becoming one of the top-ranked orthopedic surgeons in Miami.

While Gorin entered BU wanting to follow in the footsteps of his cardiologist father, he also had a passion for history and archaeology. He opted to major in archaeology while taking all of the prerequisites to attend medical school, but after one semester, he felt a little aimless, unsure if it was the best choice for him. One day, he was sitting in his first-year chemistry class when one of his friends suggested he look into Sargent. It sounded like the right fit, and he made the switch. “One draw of Sargent, for me, was that it was very streamlined. I knew exactly what classes I needed to take each year. I also thought it would better help me get into medical school.”

Gorin transferred into Sargent’s bachelor’s in human physiology program, which has all medical school prerequisites built into its curriculum. Classes in gross human anatomy and exercise physiology planted the seeds for his interest in helping people recover from sports-related injuries. Gorin says he still draws from his Sargent education today, including Professor Emeritus Whitney R. Powers’ anatomy lessons, which, he says, are “the backbone of my knowledge and understanding of the human body and its function.”

HELPING PEOPLE LIVE PAIN-FREE

Gorin returned to Florida to get his master’s degree in sports medicine from the University of Miami before starting medical school at Nova Southeastern University in Davie, Fla. He still intended to become a cardiologist just like his father—until he finished his orthopedics rotation in his fourth year. “I went to my dad and said, ‘I’m lost.’ I loved my cardiology rotation, and I thought this was what I wanted to do my whole life. I grew up with it,” Gorin says. “But I really loved my ortho rotation and being in the operating room. The idea that I could directly fix someone’s pathology or injury was very appealing.” His father encouraged him to do what would make him the happiest.

After his residency, Gorin completed a fellowship in orthopedic sports medicine, which gave him the opportunity to work as the physician for the various athletic teams at Rowan University in New Jersey. The fellowship also allowed Gorin, who played on the club volleyball team at BU, to be one of the physicians for the Association of Volleyball Professionals, the largest professional beach volleyball league in the US, as well as for the Jose Cuervo Pro Beach Volleyball Series. He also spent a few years postfellowship working with US Youth Soccer, treating young athletes who were training in Florida.

SONYA REVELL

**“THROUGH A TEAM
EFFORT, WE HAVE BEEN
ABLE TO GET [PATIENTS]
BACK TO THEIR SPORT
AND OFTENTIMES AVOID
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IT IS COMPLETELY
NECESSARY.”**

Today, Gorin is an orthopedic surgeon at the Advanced Orthopedic & Sports Medicine Institute, a practice he cofounded in Aventura, Fla. Ranked highly by *U.S. News & World Report*, the institute sees patients from “age 2 to age 102” for all kinds of injuries, “from hand to foot.” He primarily treats sports-related injuries. The most common are those affecting the knees, shoulders, and ankles—such as meniscus tears, rotator cuff tears, and ankle sprains. He also does joint replacements.

As Gorin grew his practice over the years, he realized he still had a lot to learn about the business side of medicine. “When you go to medical school, you learn medicine, but you don’t really learn anything about the business of medicine,” he says. In 2018, he received an MBA from the University of Miami.

A lot has changed in the field of orthopedics, Gorin says. For one, since he began his practice, he says the use of biologic agents—substances from a patient’s tissues or from donors—over steroids to decrease inflammation has become a more commonplace practice. He also notes that “the understanding of the mechanics around the entire shoulder joint, including the scapula, has grown by leaps and bounds.”

Gorin says his work continues to inspire him every day. “I have seen people who play basketball, baseball, soccer, football, and dance—to name a few—who have come to the institute concerned about their specific injury. Through a team effort, we have been able to get them back to their sport and oftentimes have been able to avoid surgery unless it is completely necessary. The beauty of orthopedics is we’re able to help people get out of pain and get back to their normal daily lives,” he says. “With surgery, we can directly affect somebody’s life. When I go in and fix something, I know I’ve fixed it. And even if it’s something not operative, it’s gratifying to help people get out of pain or discomfort and be active again. I know it’s so important.” ■

Faculty in Print

OUR FACULTY'S RESEARCH REACHES AUDIENCES ACROSS THE GLOBE. HERE'S A SELECTION OF PUBLICATIONS AND ARTICLES BY BU SARGENT COLLEGE FACULTY IN 2022-2023.

Abbott-Gaffney, C.R., Gafni-Lachter, L., Cason, J., Sheaffer, K., Harasink, R., Donehower, K., and Jacobs, K. (2022). Toward successful future use of telehealth in occupational therapy practice: What the COVID-19 rapid shift revealed. *Work*, 71(2), 385–394. doi:10.3233/WOR-210789.

Abur D., Subaciute A., Daliri A., Lester-Smith R.A., Lupiani A.A., Cilento D., Enos N.M., **Weerathunge H.R.,** Tardif M.C., **Stepp C.E.** (2021). Feedback and feedforward auditory-motor processes for voice and articulation in Parkinson's disease. *Journal of Speech, Language, and Hearing Research*, 64(12), pp. 4682–4694.

Almeida, P.H.T.Q., Bernardo, L.D., **Pontes, T.B.,** Davis, J.A., Deodoro, T.M.S., Ferreira, R.G., Souza, K.I., Macdermid, J.C. (2021). Short-term impact of social distancing measures during the COVID-19 pandemic on cognitive function and health perception of Brazilian older adults: A pre-post study. *Journal of Applied Gerontology*. doi: 10.1177/07334648211015458.

Collimore, A.N., Aiello, A.J., Pohlig, R.T., **Awad, L.N.** (2021). The dynamic motor control index as a marker of age-related neuromuscular impairment. *Frontiers in Aging Neuroscience*. Jul 22;13:678525. PMID: 34366824 PMCID: PMC8339561.

Porciuncula, F., **Baker, T.C.,** Arumukhom Revi, D., Bae, J., **Sloutsky, R., Ellis, T.D.,** Walsh, C.J., **Awad, L.N.** (2021). Targeting paretic propulsion and walking speed with a soft robotic exosuit: A consideration-of-concept trial. *Frontiers in Neurobotics*. Jul 28;15:689577. PMID: 34393750 PMCID: PMC8356079.

Joyce, M.K.P., Marshall, L.G., Banik, S.L., Wang, J., Xiao, D., Bunce, J.G.

and **Barbas, H.** (2022). Pathways for memory, cognition and emotional context: hippocampal, subgenual area 25 and amygdalar axons show unique interactions in the primate thalamic Reuniens Nucleus. *The Journal of Neuroscience*. 42(6): 1068–1098.

Brown K.M., **Dahl K.L.,** Cler G.J., **Stepp C.E.** (2021). Listener age and gender diversity: effects on voice-based perception of gender. *Journal of Voice*, 35(5), pp. 739–745.

Osborne, J.A., Botkin, R., Colon-Semenza, C., **DeAngelis, T.R.,** Gallardo, O.G., Kosakowski, H., Martello, J., Pradhan, S., Rafferty, M., Readinger, J.L., Whitt, A.L., **Ellis, T.D.** (2021). Physical therapist management of Parkinson disease: A clinical practice guideline from the American Physical Therapy Association. *Physical Therapy*. Dec 28:pzab302. doi: 10.1093/ptj/pzab302. Epub ahead of print. PMID: 34963139.

Driscoll, L., Holmes, M.B., Starr, J., Murphy, E. (2022). A longitudinal study of empathy among students at two doctor of physical therapy programs. *Journal of Allied Health*. 51:27E-32E.

Escher, A., McKinnon, S., & Berger, S. (2022). Effective interventions within the scope of occupational therapy practice to address participation for adults with aphasia: A systematic review. *British Journal of Occupational Therapy*, 85(2), 99-110. Doi: 10.1177/03080226211057835.

Mote, J., Gill, K., & **Fulford, D.** (2021). Skip the small talk: Assessing a community-based virtual event to improve social connection and reduce loneliness during a global pandemic. *JMIR: Formative Research*, 5, e28002.

Gill, S. V., Ayoub, M. J., Mueser, K. T., & McGurk, S. R. (in press). Motor skill, motor planning, and motor performance in adults with severe mental illnesses and obesity. *Journal of Motor Behavior*.

Cherney, L.R., DeDe, G., **Hoover, E.L.,** Murray, L., Obermeyer, J., & Pompom, R.H. (2021). Applying the rehabilitation treatment specification system to functional communication treatment approaches for aphasia. *Archives of Physical Medicine & Rehabilitation*.

Rafferty, M., Held Bradford, E., Fritz, S., **Hutchinson K.,** Miczak, K., Resnick, A., Billinger, S.A. (2021). Health promotion and wellness in neurologic physical therapy practice: strategies to advance practice. *Journal of Neurologic Physical Therapy*. 2021;000: 1–15.

Kaldenberg, J., Newman, R., Jimenez, C., and Walker, M. (in press). Systematic review brief: Vestibulo-ocular interventions to support occupational performance for people with Traumatic Brain Injury with visual symptoms (June 2013 through October 2020). *American Journal of Occupational Therapy*.

Wu, M.P., Goldsmith, T., Holman, A., **Kammer, R.,** Parikh, A., Devore, E.K., Emerick, K.S., Lin, D.T., Deschler, D.G., Richmon, J.D., Varvares, M.A., Naunheim, M.R. (2021). Risk factors for laryngectomy for dysfunctional larynx after organ preservation protocols: a case-control analysis. *Otolaryngology Head Neck Surgery*, 164(3), pp. 608–615.

Byrne, A. J., Conroy, C. and **Kidd, G. Jr.** (2022). The effects of uncertainty in level on speech-on-speech masking. *Trends in Hearing*, 2, 1–16.

Villard, S. and **Kidd, G. Jr.** (2021). Speech intelligibility and talker gender classification with noise-vocoded and tone-vocoded speech. *The Journal of the Acoustical Society of America*. EL, 1, 094401 (2021), 9 pages.

Braley, M., Pierce, J. S., Saxena, S., De Oliveira, E., Taraboanta, L., Anantha, V., . . . **Kiran, S.** (2021). A virtual, randomized, control trial of a digital therapeutic for speech, language, and cognitive intervention in post-stroke persons with aphasia. *Frontiers in Neurology, Neurorehabilitation* 12(34). doi:10.3389/fneur.2021.62678, PubMed PMID: 33643204; PubMed Central PMCID: PMC7907641.

Endrighi, R., Zhao, Y., Hughes, R.M., **Kumar, D.,** Borrelli, B. (2021). Associations between smoking status and physical and mental health-related quality of life among individuals with mobility impairments. *Annals of Behavioral Medicine*. Aug 28 [PMID: 34453512].

Lewis, C.L., Halverstadt, A.L., Graber, K.A., Perkins, Z., Keiser, E., Belcher, H., Khuu, A., Loverro, K.L. (2021). Individuals with pre-arthritis hip pain walk with hip motion alterations common in individuals with hip OA. *Frontiers in Sports and Active Living*. 3:719097. PMID: 34505057; PMCID: PMC8421535; doi: 10.3389/fspor.2021.719097.

Locks, L.M., Shah, M., Bhaise, S., Hibberd, P.L., Patel, A. (2022). Assessing the diets of young children and adolescents in India: challenges and opportunities. *Frontiers in Pediatrics*.

Aoyag,i K., Neogi, T., Peloquin, C., Dubreuil, M., **Marinko, L., Camarinos, J.,** Felson, D.T., **Kumar, D.** (2021). Association of physical therapy interventions with long-term opioid use after total knee replacement. *JAMA Network Open*. Oct 1; 4(10):e2131271 [PMCID: PMC8552057].

McGurk, S. R., & Mueser, K. T. (2021). Cognitive remediation for successful employment and psychiatric recovery: The Thinking Skills for Work Program. New York: Guilford Press.

Sawicki, C.M., Jacques, P.F., Lichtenstein, A.H., Rogers, G.T., Ma, J., Saltzman E., **McKeown, N.M.** (2021). Whole- and refined-grain consumption and longitudinal changes in cardiometabolic risk factors in the Framingham offspring cohort. *The Journal of Nutrition*, 151(9):2790–2799.

Wong, J., Coster, W.J., Cohn, E.S., & **Orsmond, G.I.** (2021). Identifying school-based factors that predict employment outcomes for transition-age youth with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 51, 60–74.

Beach, S.D., Lim, S.-J., Cardenas-Iniguez, C., Eddy, M.D., Gabrieli, J.D.E., & **Perrachione, T.K.** (2022). Electrophysiological correlates of perceptual prediction error are attenuated in dyslexia. *Neuropsychologia*, 165, 108091.

Peters, S. M. (2021). Demedicalizing the aftermath of sexual assault: Toward a radical humanistic approach. *Journal of Humanistic Psychology*. 61(6), 939-961.

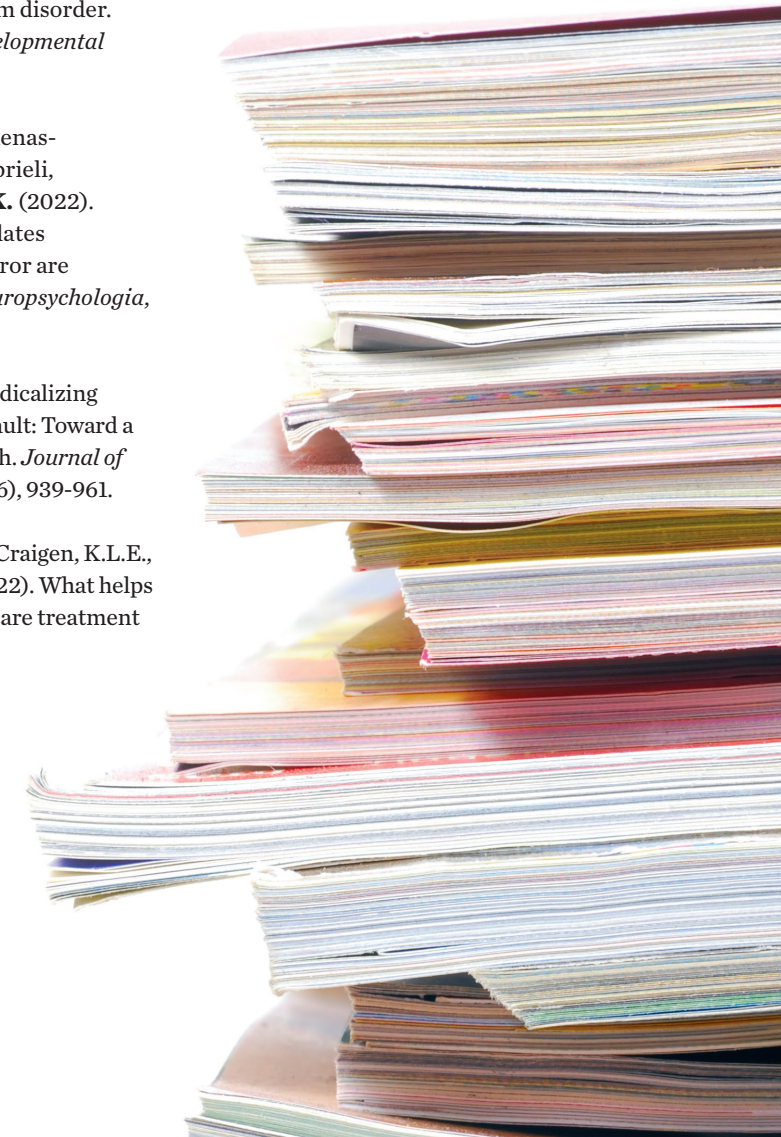
Ritholz, M.D., Slavia, M.G., Craigen, K.L.E., and **Quatromoni, P.A.** (2022). What helps and what hinders primary care treatment

for women with type 2 diabetes and binge eating disorder? A qualitative study. *Diabetic Medicine*, 00:e14887.

Perazza, L.A., Brown-Borg, H., **Thompson, L.V.** Physiological systems in frailty. *Comprehensive Physiology*. 12:1–46, 2022.

Tomassi, N.E., Castro, M.E., Timmons Sund, L., Diaz-Cadiz, M.E., **Buckley, D.P.,** Stepp, C.E. (in press). Effects of sidetone amplification on vocal function during telecommunication. *Journal of Voice*.

Walker, M.E., O'Donnell, A., Himali, J.J., Rajendran, I., Melo van Lent, D.,



Xanthakis, V., Jacques, P.F., Beiser, A., Seshadri, S., Vasan, R.S. (2021). Associations of the Mediterranean-DASH intervention for neurodegenerative delay diet with cardiac remodeling in the community: The Framingham Heart Study. *British Journal of Nutrition*, 1–28.

Nicholson, C.J., Xing, Y., Lee, S., Liang, S., Mohan, S., O'Rourke, C., Kang, J., Morgan, K.G. (2022). Ageing causes an aortic contractile dysfunction phenotype by targeting the expression of members of the extracellular signal-regulated kinase pathway. *Journal of Cellular and Molecular Medicine*. Mar;26(5):1456–1465.

Yilma, H., Rimal, R. N., & Parida, M. (2022). Multilevel theorizing in health communication: integrating the risk perception attitude (RPA) framework and the theory of normative social behavior (TNSB). *PLOS One*.

Treder, K., White, K.O., Woodhams, E., Pancholi, R., & Yinusa-Nyahkoon, L. (2022). Racism and the reproductive health experiences of US-born Black women. *Obstetrics and Gynecology*, 139(3), 407–416.

Park, S., Zikopoulos, B., Yazdanbakhsh, A. (2022). Visual illusion susceptibility in autism: A neural model. *European Journal of Neuroscience*, 1–20. 2 Jun 14. doi: 10.1111/ejn.15739.

Zuk, J., Dunstan, J., Norton, E., Yu, X., Ozernov-Palchik, O., Wang, Y., Hogan, T.P., Gabrieli, J.D.E. & Gaab, N. (2021). Multifactorial pathways facilitate resilience among kindergarteners at risk for dyslexia: A longitudinal behavioral and neuroimaging study. *Developmental Science*, 24(1), e12983.



Areas of Study

- Behavior & Health
- Health Science
- Human Physiology (Pre-Med)
- Nutrition
- Occupational Therapy
- Physical Therapy
- Rehabilitation Sciences
- Speech, Language & Hearing Sciences
- Speech-Language Pathology

Distinctive Programs

- Combined BS and MPH in Public Health
- Combined BS in Health Studies and Doctor of Physical Therapy
- Combined BS and MS in Human Physiology
- Joint Bachelor of Science in Linguistics and Speech, Language & Hearing Sciences
- Combined Doctor of Occupational Therapy/ PhD in Rehabilitation Sciences
- Combined Doctor of Physical Therapy/PhD in Rehabilitation Sciences
- Fellowship in Orthopaedic Manual Physical Therapy
- Neurological Physical Therapy Residency Program
- Orthopaedic Physical Therapy Residency Program

BU Sargent College

Who We Are

Students	Undergraduate	Graduate
Number of full-time students	1,057	767

Faculty

Full-time	79
Part-time	31

Alumni

20,001 in 72 countries

Clinical Sites

More than 1,200 in 50 states



Sargent College On-Campus Clinical Centers

- Academic Speech, Language & Hearing Center
- Aural Rehabilitation Services
- Center for Stuttering Therapy
- Cognitive Health and Rehabilitation Programs
- Language, Literacy and Social Communication Programs
- Preschool Summer Intensive Language Intervention Program
- Speech Sound Disorders Program
- Voice and Swallow Programs
- Aphasia Resource Center
- Center for Neurorehabilitation
- Center for Psychiatric Rehabilitation
- Physical Therapy Center
- Ryan Center for Sports Medicine & Rehabilitation
- Sargent Choice Nutrition Center

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Our graduate programs are officially among the nation's best—Sargent programs tracked by *U.S. News & World Report* all rank in the **top 20** in their respective fields:

- 1** Occupational Therapy Program ranked number 1 out of 198 programs
- 10** Speech-Language Pathology Program ranked number 10 out of 261 programs
- 20** Physical Therapy Program ranked number 20 out of 239 programs

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- 97%** NUTRITION
- 100%** OCCUPATIONAL THERAPY
- 94.8%** PHYSICAL THERAPY*
- 100%** SPEECH-LANGUAGE PATHOLOGY

Percentage of BU Sargent College students in entry-level graduate professional programs who passed their certification exams the first time (data averaged over the past three years).

*Data averaged over the past two years, per USDE requirements.

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