

EMORY | extension

FALL 2010

Reaching for a breakthrough

Using oxygen deprivation therapy
to restore limb function

from the director

On behalf of the faculty, staff and students, I welcome you to Extension. While summer is a time for rest and renewal, at Emory, our summer was extremely busy.

In early May, we graduated the Doctor of Physical Therapy Class of 2010 that included our first two DPT-MPH graduates and our second DPT-MBA graduate (see page 5). Professor Steven Wolf of our faculty was chosen by the graduates to give the commencement address.



In mid-June we matriculated the DPT Class of 2013, our biggest class ever, represented by students from 23 states and Canada, 46 universities and 17 different majors. We also launched our enhanced curriculum with this new class (see page 4). We are proud to be leading the way with additional course offerings and content which parallel the goals of our profession and continue to prepare our students for the future.

In order to continue to recruit the brightest and most committed students, we are mounting our first scholarship campaign. I ask that you make an investment in the Emory Physical Therapy Program. About 6% of our alumni make a gift to our program on a regular basis. I challenge you to raise the participation rates among our alumni to 100%. Every dollar counts and no gift is too small to count towards your participation in this important endeavor. For your convenience, a pledge form is enclosed and should you wish to contribute online, please see page 9 of this magazine for the details.

Finally, we like to extend our heartfelt thanks to Professor Susan Herdman for her service as the Director of the Division of Physical Therapy. Earlier this year, Dr. Herdman stepped down as the Director after serving in this position for almost six years. Under Dr. Herdman's leadership, the division made many strides including launching the dual degree programs, successfully renewing our accreditation and launching important changes to our curriculum.

I hope you enjoy this issue of Extension and my thanks to all who support the Division of Physical Therapy in so many ways including our scholarship fund.
Best Wishes,

Zoher Kapasi, PT, MBA, PhD
Associate Professor
and Interim Director

Visit us online at
<http://www.rehabmed.emory.edu/pt>



Comments or questions?

Contact **Heather Pharris**, Health Sciences Development, at 404.727.5932, heather.pharris@emory.edu, or 1440 Clifton Road, Suite 112, Atlanta, GA 30322.

Please write to us if you wish to have your name removed from the list to receive fundraising requests supporting the Emory Division of Physical Therapy.



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Extension is published annually for faculty, staff, students, and friends of the Division of Physical Therapy, Department of Rehabilitation Medicine at Emory University School of Medicine.

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Emory's Woodruff Health Sciences Center (WHSC) is an academic center focused on teaching, research, health care, and public service. The Physical Therapy Program is part of Emory University School of Medicine, a component within the WHSC.

Reaching for a breakthrough

Using oxygen deprivation to restore limb function

- Trumbower uses sophisticated technology, such as this cyberglove, to measure the effectiveness of intermittent hypoxia therapy.



BY MARTHA MCKENZIE

Randy Trumbower believes oxygen deprivation and recovery go hand in glove. Put another way, he is investigating a novel way to restore limb function in people paralyzed by spinal cord injury using a therapy involving acute intermittent hypoxia (AIH). His study is so unique – and so promising – that he has already secured more than \$1 million in funding.

Trumbower joined the Emory DPT faculty in the fall of 2009. He received a master's degree in physical therapy from Duke University, went on to obtain master's and doctoral degrees in biomedical engineering from the University of Connecticut, and most recently completed his postdoctoral fellowship at the Rehabilitation Institute of Chicago and Northwestern University.

Department of Defense. Trumbower has also garnered grants from the Craig H. Neilsen Foundation and National Institutes of Health (K12 Award). "This is pretty exciting," he says. "I've got the funding to do the research I have always wanted to do."

Trumbower's AIH study has its roots in an unlikely source – sleep apnea studies. Researchers discovered that the short

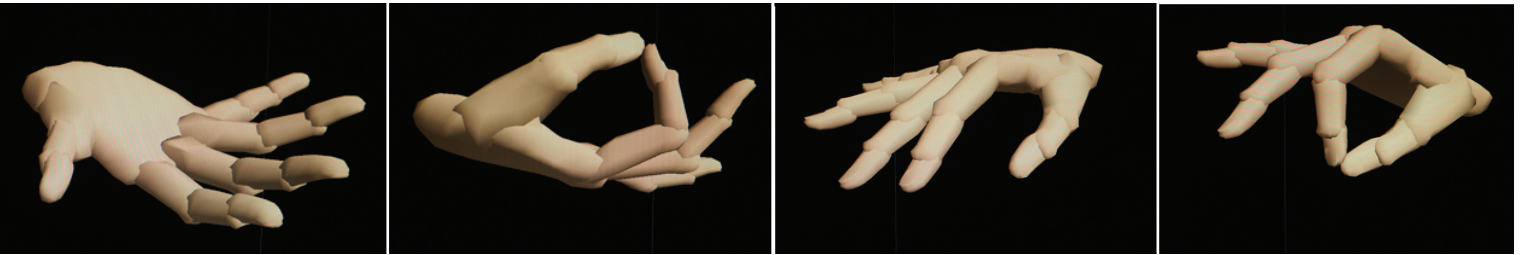
fect lasted for four hours," says Trumbower.

In Trumbower's current study, subjects will don a breathing mask connected to an air generator. The mask will take the subjects into thin air, and back again, delivering two-minute episodes of reduced oxygen. The oxygen-deprived state simulates the atmosphere at the peak of Mt. McKinley. Then the oxygen level will re-

fectured limb, they should be able to push harder."

To test this theory, Trumbower's patients will interact with robots to perform simulated physical tasks. "The robot is really just a tool for me to quantify the effectiveness of this intervention," he says.

But they are very sophisticated tools. "I use haptic robots to simulate physical environments and to quantify how the



He was lured to Emory by its strong, progressive program and by the university's ties with area institutions. "The interaction and cooperation of Emory, Georgia Tech and the Shepherd Center was very attractive to me," he says. "I was looking for a position that would complement my background and give me a lot of independence to develop something unique."

"At Emory, I felt I could strengthen bridges between other programs – engineering and applied physiology at Georgia Tech and spinal cord research at the Shepherd Center," continues Trumbower, who recently received an appointment in bioengineering within the College of Engineering at Georgia Tech.

As principal investigator of the intermittent hypoxia study, Trumbower and his colleagues Gillian Muir from the University of Saskatchewan and Gordon Mitchell from the University of Wisconsin have secured a \$750K grant from the

periods of oxygen deprivation that plague people with sleep apnea actually stimulate spinal plasticity. Plasticity is the ability of the brain and nervous system to respond to experience or injury, sometimes by assuming new functions. In stroke victims, for example, uninjured parts of the brain often step in and take over the functions of the damaged parts. Animal studies showed that rats responded to periods of oxygen deprivation by strengthening pathways to boost respiration.

While at the Rehabilitation Institute of Chicago, Trumbower was part of a team that set out to find if intermittent hypoxia could stimulate plasticity in nerve cells associated with voluntary leg strength. They found that after only one 30-minute session of mild deprivation of oxygen therapy, subjects who had been paralyzed improved their ankle strength. "Not only did their function improve, but that ef-

fect lasted for four hours," says Trumbower.

If Trumbower's hypothesis is correct, subjects should perform therapy tasks better during and after AIH than they

nervous system adapts to these virtual environments," says Trumbower.

If the therapy proves effective, it could be a true breakthrough for victims of spinal cord injuries. Past studies on reversing spinal cord damage have focused on regeneration. Trumbower's study is attempting to retrain the parts of the spinal cord that remain intact.

"In neurologic rehab, outcomes are frustratingly limited," says Trumbower. "I'm hoping provocative ideas like intermittent hypoxia may translate directly into a promising therapeutic intervention."

Perhaps an intervention that reaches beyond the population he is currently studying. Says Trumbower, "We may start looking at AIH as a way to prime the nervous system to treat patients with other neurologic impairments." e



Randy Trumbower thinks taking spinal cord injury patients into thin air, and back again, can retrain the spinal cord.

did before. "Stronger neural connections translate into greater drive to muscles," he says. "Greater drive to muscles translates to greater ability to generate force. So when I ask a patient to push with their af-

PREPARING FOR tomorrow's practice

Want to know what the practice of physical therapy is going to look like tomorrow? Take a look at Emory's DPT curriculum today.

Faculty this year revamped Emory's already strong DPT curriculum to better prepare its students for a changing clinical landscape. These changes include: the introduction of a complex of courses on health promotion, wellness and prevention; the expansion of offerings dealing with clinical diagnosis; and the enhancement of experiential learning opportunities.

Other new course offerings in the DPT's revamped curriculum include:

Principles of motor learning. Formerly the domain of industrial psychology, the science behind the process of acquiring new motor skills applies directly to the practice of physical therapy.

Exploration of human behavior. This course focuses on patient empowerment and understanding that patients will adhere to physical therapy interventions if intervention goals are meaningful to them.

Bioengineering. In light of the increasing importance of robotics in rehabilitation, this course familiarizes students with basic bioengineering concepts.

"We always try to innovate," says Zoher Kapasi, interim director of the Emory DPT program. "We try not only to stay with the times, but to project what the profession will be like in the future."

Paralleling the health care system's shift in focus toward wellness and prevention, Emory has launched courses in health promotion at both the individual and community levels.

"This is an area into which physical therapy can step nicely," says Jeanne Charles, assistant professor. "The courses begin in the first year by focusing on how you can make yourself healthy and culminate in the third year with coverage of community health promotion and wellness."

The wellness offerings also dovetail with another trend in physical therapy – the advent of direct access. "In addition to seeing people with musculoskeletal and neurological problems, we will increasingly be the first point of



contact for people who are seeking health and wellness services," says Brenda Greene, assistant professor.

Direct access also necessitates improved diagnostic skills. Accordingly, Emory has added an advanced course in clinical diagnosis. "If you are in a direct access setting, you need to be able to understand those conditions that can be treated by you and those that need to be referred to a physician," says Charles.

Another exciting addition is a host of experiential learning opportunities through the Emory Center for Experiential Learning (ExCEL). At the Objective Structured Clinical Examination (OSCE) center, trained actors present with a particular condition and students are asked to examine, assess and provide treatment. Afterwards, the actor gives feedback, and the student can also watch a video playback. "It's a much more powerful learning experience to practice and receive feedback in a more 'real life' rather than classroom environment," says Charles.

ExCEL also offers a simulation lab, in which students can assess and treat a mannequin. The mannequins, which are equipped with high fidelity simulators, respond much like real humans to the performance of various procedures.

"All of these changes are going to impact the DPT program in a very positive way," says Charles. "We have adapted to changes in the physical therapy profession, and we'll continue to evaluate our curriculum, projecting future patient and community needs." e

First DPT/MPH graduates ready to change the world



Emory graduated its first dual DPT/MPH degree candidates in May.

Megan Brock (above left) and Lori Northcraft completed their final clinical rotation at an Indian Health Service Hospital in rural Arizona and disseminated their final research titled “Musculoskeletal Health in Farmworkers in South Georgia.” Now, with their newly minted DPT/MPH diplomas, they have left Emory to pursue their dreams.

The innovative dual degree was the brainchild of Susan Herdman, professor and former director of the DPT program. “She recognized that the two areas of study complement each other,” says Brenda Greene, DPT assistant professor. “One

focuses on group intervention and the other individual intervention. One on prevention and the other on rehabilitation. The study of public health enables our students to intervene on a community level.”

To gain the degree, students take two years of study in the physical therapy division, then do a year in Emory’s Rollins School of Public Health. They finish with a year in physical therapy. Brock and Northcraft are the first to earn the dual degree. Rising second-year DPT student Karen Wilson has been accepted as the program’s third student.

For their year in public health, Brock and Northcraft studied a core of courses in behavioral science and health education, as well as one course in each of the main areas of public health: environmental health, epidemiology, and biostatistics. Brock also took electives in global health and human rights approaches to health and worked for the Emory Prevention Research Center, which focuses on cancer prevention in rural Southwest Georgia. Northcraft took electives in global health and social justice

approaches to health and worked for CARE on their water and sanitation projects in Latin America.

In July, Brock joined the University of Alabama at Birmingham Hospital as an acute care physical therapist. “First, I intend to develop as a clinician,” she says. “Down the line, I’m interested in completing research on social determinants of health, particularly as they impact rehabilitation and minimization of disability.”

Northcraft has moved to Washington, D.C., where she plans to either work at a pediatric hospital or at a community-based pro-bono pediatric clinic. “The dual degree really opened my eyes to the complexities of health issues and the importance of looking at the population level,” she says. “When I interact with patients on a personal level, I’ll be able to better understand the other issues that might be impacting their physical therapy.

“And aside from the perspective, my year in the public health school taught me how to write grants, to conduct research and to make pamphlets readable to a population with low health literacy,” Northcraft continues. “These skills will be helpful throughout my career.” e

Goodrich earns DPT/MBA

In May, John Goodrich became the second student to graduate with the dual DPT/MBA degree. Nate Thomas (see “Dr. Thomas goes to Washington,” p. 8) was the first DPT/MBA graduate in May 2009. Michael Wang, a third year DPT student, was recently accepted into the program.

The dual degree program is a cooperative initiative between the Emory School of Medicine and the Goizueta Business School. Students spend their first two years studying physical therapy, then do their third year in the MBA program and finish with their fourth year in physical therapy internships, allowing them to receive their degrees in four years, rather than the five required if the degrees were earned separately.

Interest in the program is high among DPT candidates. “The applicants

tell me they may not decide to pursue the dual degree, but the fact that it is a possibility persuades them to come here,” says Zohar Kapasi, interim director of the Emory DPT program and the driving force behind the dual degree. Kapasi received his executive MBA from the Goizueta School in 2006.

Goodrich is working as an outpatient orthopedic physical therapist at a clinic affiliated with Floyd Medical Center in Rome, GA. He contends the dual degree will open many career paths for him. “The MBA program opened my eyes to all the options that are out there for someone with both a DPT and an MBA degree,” says Goodrich. “Eventually I would like to either work in hospital administration or open my own consulting firm for clinic management.” e





The Bahrain exchange

East met West recently at Emory's Division of Physical Therapy when two practicing physical therapists from the Kingdom of Bahrain came to study neurorehabilitation at the university.

Sameer Abdulla Shaban (above left) and Mohamed Jawed Abdulla Hussain were selected from a wide pool of applicants to be the first participants in an innovative academic exchange. They attended classes alongside Emory DPT students from August through December, 2009, before retuning home to share what they had learned.

The exchange program, which was initiated by Andrew Butler, associate professor of rehabilitation medicine, was two years in development. Bahrain, a small island country in the Persian Gulf, lacks academic physical therapy universities. In order to receive continuing education, Bahrain therapists can either go abroad or study under a visiting therapist. Butler was invited to teach such a continuing ed course in Bahrain two years ago, and he immediately began investigating ways to bring Bahrain therapists to Emory to study.

"I saw this as an opportunity for Westerners to get involved in Middle Eastern educational opportunities and for people from the Middle East to come here," says Butler, who is also a research scientist at Atlanta Veterans Administration Medical Center.

Shaban and Hussain are the first Bahrainian therapists to seize that opportunity. "In Bahrain, we have always heard that the best physical therapies are in the United States, so it's an incredible opportunity to be able to study here," says Shaban.

Both Shaban and Hussain graduated from the University of Kuwait with an MPT (although Hussein had to temporarily trans-

fer to the University of Cairo during the war in Kuwait), and both work for the government rehabilitation hospital.

They endured a grueling application process to win their slots at Emory, but they agree the effort was well worth it. Shaban and Hussain were particularly impressed by the sophistication of Emory's physical therapy program.

"The labs here are bigger and have more pieces of equipment," says Shaban. "The machines, such as the vestibular equipment, are very modern."

Hussain agrees. "We're taking the brochures of these machines back to the ministry," he says. "The rotational chair costs \$170,000, so I'm not sure we'll get that. But perhaps we can purchase some other pieces."

The therapists were also impressed by the prevalence of the DPT degree in the U.S. Only four or five physical therapists have their doctorate degree in Bahrain, a country of about one million people. Those few DPTs have private clinics.

Since they have returned to Bahrain, the therapists have begun applying some of the techniques they learned at Emory. "We have started using new scales we studied in the U.S., such as FIM (Functional Independence Measure) Scale, Rancho Los Amigos Scale for head injury patients, and ASIA (American Spinal Injury Association Impairment Scale) for patients with spinal cord injury," says Hussain.

Butler hopes that Hussain and Shaban are but the first Bahrainian therapists to come to Emory. "Eventually, we'd like to have people from Bahrain come here and go through the entire three-year program," says Butler. **e**

Nguyen Vu Dinh: An athlete treating athletes

Nguyen Vu Dinh recently presented a paper at the International Conference on Kinesiology and Exercise Sciences in Athens, Greece. He works as a staff physical therapist at The National Training Center in Clermont, Fla., as well as sees patients in the acute setting at the affiliated Southlake Hospital. He is close to breaking into the professional cycling circuit.

Not bad for someone who graduated from Emory's DPT program just a year ago. And especially not bad for someone who didn't set out to become a physical therapist at all.

Dinh was at the top of his class in his chosen majors of Information Systems and Business Administration at Stetson University in DeLand, Fla. Though he excelled at the course work, he began to have a change of heart.

"I just couldn't see myself sitting behind a desk all day," says Dinh. "And that's where a business/IT path was leading me."

Dinh discovered his desire to pursue physical therapy quite by accident. He served three of his undergraduate years as a Resident Advisor, and one of the students on his floor had cerebral palsy. He helped the student shower, dress and get ready for class each day. "I became more and more interested in working with people like that, so in my junior

year I set up an internship with an outpatient rehab facility," he says. "I volunteered there during the school year, working directly under a physical therapist, and I was hired as tech during the summer."

From Stetson, Dinh went directly into Emory's DPT program. He received his degree in May 2009. While at Emory, under faculty advisor Marie Johanson, Dinh and his research group did the primary research for the study he would eventually present at the Athens conference. The study, which looked at the effectiveness of two techniques of gastrocnemius stretching, has been submitted for publication.

After graduation, Dinh signed on at The National Training Center. The Center is a unique 300-acre sports, health, fitness and education campus. "The biggest emphasis at the center is community wellness, although a lot of high-level athletes train here," says Dinh. "We probably get more attention for the professional and Olympic athletes who train here, but our focus is on the community."

Yet, as a cyclist, Dinh can easily relate to his professional clients. "I can empathize with these patients and understand their motivation to get back into the game," he says. e

Phillips and Rossi join DPT faculty

Two new faculty members joined the physical therapy division. Tami Phillips, who was named assistant director of clinical education and assistant professor, didn't have to move very far for her new appointment. "I've been the physical therapy supervisor at Emory's Center for Rehabilitation Medicine for the past six years," says Phillips. "So I'm switching from the health care side to the academic side, but I only had to move a half a block."

Although Phillips says she will miss the day-to-day practice of physical therapy, she's excited about the new opportunity. "I wasn't looking to make a move, but when they approached me about this post, it was a good fit for my skill set," says Phillips. "I really like teaching and think that clinical education is such an important piece of Emory's physical therapy education program."

Phillips will be teaching adult neurorehabilitation as well as placing students on their clinical affiliations.

After attending the United States Naval Academy, Phillips earned an MSPT from the University of Miami in 1994 and a DPT from the same school in 2003. She also completed a Master's of Business Administration at the University of Minnesota in 2000. She is married with two children, ages 9 and 5.

Ainsley Rossi joins Phillips on the faculty as assistant professor. She moved to Atlanta with her husband, Michael Rossi, who is a faculty member within Emory's Department of Human Genetics.

"I applied to Emory, and when I gave my Grand Rounds and met the faculty, I was 34 weeks pregnant with twins," says Rossi. "I delivered 10 days later."

Rossi will be the course coordinator for introduction for therapeutic intervention, which is part of the new curriculum (see page 4.) Rossi got her



Tami Phillips, left, joined the faculty as assistant director of clinical education, and Ainsley Rossi came on as assistant professor.

bachelor's of physiotherapy at the University of Queensland in Australia and practiced in Australia and the United Kingdom before earning her clinical doctorate at Daemen College in western New York. She is an orthopaedic certified specialist and also teaches within the musculoskeletal complex. She currently works part time so she can spend time with her 22-month-old twin daughters.



Dr. Thomas goes to Washington

Nate Thomas (DPT/MBA 2009) joined the American Physical Therapy Association (APTA) as a lobbyist just as the health care reform bill hit the legislature. "It was baptism by fire," says Thomas, whose official title is associate director of federal government affairs. "We ate, slept and breathed health care reform. A once-in-a-lifetime piece of legislation was moving through Congress, and I was there at the beginning."

Now that reform has passed into law, Thomas and the other two APTA lobbyists have shifted some of their focus from lawmakers to association members. "There is still a lot of uncertainty among physical therapists," says Thomas. "They want to know what just happened, how it will affect them as providers, as employers and as consumers. So much of the law still has to be interpreted."

Heady stuff for a young man one year out of graduate school. But Thomas is no stranger to the APTA. He attended the associations' student conclave in his first year in the DPT program, was appointed treasurer of the student assembly during his second year and served as president during his third. He also served as the elected student PT delegate at the House of Delegates annual meeting. Still, he never envisioned working at the APTA.

"I wasn't sure if I wanted to focus on clinical work or something more business related, such as consulting," says Thomas, who was the first student to graduate with the dual DPT/MBA degree. "I never imagined this pathway would open up."

When he's not focusing on health care reform, Thomas devotes his energies to research, appropriations, education and small business issues.



Assistant Professor Sarah Blanton placed third in the visual arts division with her painting titled "Through a glass darkly"

Support the Emory DPT Program!

As a graduate of Emory's Physical Therapy Program, you know the value and direct impact of your education in the community. In order to continue to recruit the best students, we need your support. A gift to the PT program will go directly to our students, to help offset their educational costs and reduce their debt loads. These students are the health care leaders of tomorrow, and your support will ensure that they are able to receive the same first-class education you received. To give, return the enclosed envelope or go to www.emory.edu/give and select "Health Professions" from the first menu, "Physical Therapy" from the second menu, and continue to follow the online form. Please make your annual gift today.

Crowley and Blanton win art competition

Creativity is alive and well in Emory's DPT program. DPT second year student Sam Crowley placed second in the Emory Arts Competition's music division and Assistant Professor Sarah Blanton placed third in the visual arts division. The Emory Arts Competition is an annual event presented by The Office of the Provost in collaboration with the Emory College Center for Creativity & Arts and Emory University Creativity: Art and Innovation.

Crowley won for an original song titled "Nineteen Thirty Three," inspired by working on cadavers for the first time. Crowley says, "My cadaver would have been sixteen in 1933. I wanted to write a personal song to honor her sacrifice in allowing us to learn from her body. The song expresses the hope that this person is in a better place, soaking up the sun like she did back in her more carefree teenage years."

Blanton won for a photo taken in Taos, NM, on her first trip with her new digital SLR. "Through a glass darkly, speaks to the experience of the viewer", says Blanton. "I was initially struck by this truck's obvious longevity and its owners loyalty. The rear view mirror was used to capture the full perspective of the truck, while still emphasizing the primary focus of the image – the character of the rust, color patterns and the cracked window. Symbolically, I was hoping to express the concept that we only fully see ourselves through the critical process of self-reflection."



Movin' on up

In December, Emory's Division of Physical Therapy moved into a new space on the third floor of the 1462 building on Clifton Road. "Our program has been growing," says Zoher Kapasi, interim director of the Emory DPT program. "We have more faculty, more students. We had simply outgrown our old space."

The new location offers additional faculty offices, a 1,100-square-foot lab and a large student lounge. The building also houses the health sciences library, Emory's physician's assistant program and some classrooms used by the biology department. It is close to the Center for Rehabilitation Medicine and the School of Medicine education building.

"Overall, it has been a very good move for us," says Kapasi.



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Join leaders of the APTA in shaping our future direction in health care reform, practice, education and research.

Evening event: Foundation for Physical Therapy Black Tie Gala fundraiser.

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If you are interested in helping with the weekend activities or would like to coordinate a special event during the reunion weekend for your particular class, please contact **Shanna Holt** at shanna.holt@emory.edu.