

# EMORY *extension*

Division of Physical Therapy ■ Emory University School of Medicine

## ADVANCING THERAPY THROUGH DISCOVERY

### What if spinal cord injury patients could retrain their leg muscles at home, instead of traveling to a rehab setting?

What if a new treatment for stroke patients could help children with cerebral palsy? What if a better understanding of the mechanics of walking could keep older people from falling?

Those are just a few of the questions that the Division of Physical Therapy's new faculty members are working to answer. They're among the field's most talented researchers, and they've been recruited to strengthen Emory's growing body of discovery in physical therapy. The new strategies, treatments, and devices they develop will bring hope to patients and increase the number of evidence-based treatment options.

Emory's physical therapy division has long been known for its great strength in teaching and its commitment to quality education and critical thinking. Now the department is working to raise the research bar just as high.

"My goal for the program is that it will become as excellent in research as it is in teaching," says Susan Herdman, director of the division. "The new faculty we have added bring with them new strengths in research. And adding new faculty will also free up existing senior faculty to do more research."

To Herdman, the focus on research is something of a professional obligation. "The profession of physical therapy is aiming for basing practice and treatment on solid research. So I think educational programs such as ours have a responsibility to advance that goal of evidence-based practice. By building the

research component in our program, we are going to be adding to the body of knowledge that supports our practice and helps us provide better care for patients."

Here's a brief introduction to the division's newest faculty members:



**Sarah Blanton** STUDIES CLINICAL TRIAL RETENTION AND QUALITY OF LIFE FOR STROKE SURVIVORS.

**Deborah Backus** FOCUSES ON MOVING RESEARCH FROM THE LAB TO THE CLINICIAN'S OFFICE.

**Vijaya Krishnamoorthy** STUDIES THE MECHANICS OF WALKING TO DISCOVER WHY OLDER PEOPLE FALL.

**Deborah Backus** Before joining Emory's faculty as an assistant professor in September, Deborah Backus was director of spinal cord injury research at Atlanta's Shepherd Center, where she studied activity-based interventions for spinal cord injury patients. She cites one intervention, in particular, that holds great promise: functional electronic stimulation to activate leg muscles to pedal a stationary bike. This new approach to retraining patients to walk, she says, would be less expensive and more widely available than the currently accepted method of locomotor training.

Locomotor training involves a specialized treadmill that can support the body's weight. It requires manual assistance from trainers or robotics to move the limbs, which means it must be done in a rehab setting. "It can take a long time to retrain the nervous system to walk, so we need to figure out a more cost-effective way to provide

*Continued on page 3*

## Supporting our best students



WELCOME ONCE AGAIN to the inside world of the Division of Physical Therapy at Emory School of Medicine. This issue of *Extension* introduces you to the research of some of our newer faculty and updates you on the work of well-known faculty such as Steve Wolf. We also feature two alumni who have taken their Emory education and training into new areas of care (see pages 5 and 8).

And then there are our students. Read the story of Lori Northcraft, who is working toward Emory degrees in physical therapy and public health (see page 6). Fluent in Spanish and passionate about helping others, Lori cared for Georgia's migrant farm families this summer. Her experiences represent a small portion of the service-learning opportunities our division offers. Just this past year, Emory physical therapy students traveled to Nicaragua to work in a wound care clinic, raised money for cancer research and the Multiple Sclerosis Society, and staffed the South Georgia Farmworker project along with Lori. To read more about our wonderful students, visit our website—[rehabmed.emory.edu/pt](http://rehabmed.emory.edu/pt).

I urge you to think seriously about contributing to the education of these students, who will be our colleagues and the future leaders of our profession. Become a clinical instructor, serve as a mentor, or make a donation to support student volunteer efforts. Our students accrue an average debt of more than \$110,000 during their three years in the program. Help fund scholarships or provide unrestricted gifts we can use to strengthen the program wherever needed most. See the special envelope in this issue of *Extension* for more on giving to the Division of Physical Therapy.

My thanks—and the thanks of our faculty and students—go to all of you who already support the Division of Physical Therapy in so many ways!

Best wishes,

Susan J. Herdman, PhD, FAPTA, Professor and Director

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

**Susan J. Herdman** Professor and Director, Division of Physical Therapy

**Terri McIntosh** Editor, **Martha Nolan McKenzie** Writer, **Peta Westmaas** Designer, **Jack Kears** Photographer

### Comments or questions?

Contact Heather Pharris, Health Sciences Development, at 404.727.5932, [heather.pharris@emory.edu](mailto: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.

## DPT/MBA degree

**Emory soon will become one of few schools in the nation to offer a DPT/MBA degree.**

The joint program of the School of Medicine and Goizueta Business School, will begin accepting students this summer.

The degree is the brainchild of Zohar Kapasi, associate professor of physical therapy, who received an executive MBA from Emory in 2006. "It occurred to me this would be an incredible advantage we could offer our students," he says. "Health care is governed more and more by business decisions, so medical practitioners with management and financial skills are better equipped for today's practice.

"A lot of physical therapists realize this after they've been out practicing for several years and come back to get an MBA. But if you can get that degree while you're still in school, you'll have the skills right from the start."

Students in the DPT/MBA program will finish in four years rather than the five it takes to earn the degrees separately because they will be allowed to complete a one-year MBA program. Students will spend their first two years studying physical therapy, complete their third year in the MBA program, and end with a fourth year in physical therapy internships.

"It does add an extra year of school, so it will take someone who is really driven to do it," says Kapasi. "But I think the payoff will be huge."

## Correction

New faculty member Patricia H. Bridges earned her bachelor's in physical therapy from the University of Florida, her master of medical science from Emory, and her doctorate in education from the University of Georgia.

**Advancing therapy** *continued from cover*

these interventions,” says Backus. “This functional electronic stimulation therapy is something patients might be able to do in their own homes. They could stay in their wheelchair, attach the electrodes themselves, and pedal the bike. It might be an effective tool to help patients get stronger and more coordinated to prepare them for walking.”

Backus will continue research into interventions for spinal cord injuries at Emory. She also plans to focus on taking others’ work from the lab to the clinician’s office. “I hope to make a difference in research transfer: helping translate evidence from research into meaningful interventions and programs. I want to figure out how to apply research that has been done by others.”

**Sarah Blanton** Sarah Blanton joined Emory’s physical therapy faculty in September, but she’s been a staff physical therapist in the Center for Rehabilitation Medicine since 1992. After eight years of experience with stroke and brain injury patients in rehab, she began working with Steven Wolf, Emory professor and principal investigator of the Extremity Constraint-Induced Therapy Evaluation (EXCITE) in adult stroke patients. She now manages the constraint-induced therapy clinic.

Blanton’s other research interests include stroke survivor quality of life and recruitment and retention in clinical trials. “We looked at the participants in the EXCITE trial and tried to determine how their physical health related to their quality of life a year after the stroke,” she says. “We found that if they had poor upper extremity function and other medical conditions—such as heart disease, cancer, diabetes—their overall quality of life was lower than participants with greater upper extremity function.

“Also, stroke survivors with other medical conditions fared worse in memory and thinking. These findings emphasize the need to take demographic and personal characteristics into account when planning post-stroke rehab programs.”

Blanton is the lead author of “Lessons learned in participant recruitment and retention: The EXCITE trial,” published in the November 2006 *Physical Therapy* journal.

“The reason some research projects fail is often because of recruitment,” she says. “It’s a pivotal part of the research study, yet researchers often don’t allocate enough human and financial resources to it. You have to screen a lot of candidates to get the few that really fit the study’s criteria.”

**Jeanne Charles** Jeanne Charles’ area of study dovetails nicely with research already under way at Emory. While working on her doctorate at Columbia University, Charles teamed with a

colleague to study constraint-induced therapy in children with hemiplegic cerebral palsy. For guidance, they turned to Steven Wolf (see “Fifteen minutes of fame and counting,” page 7). “We modeled our study very closely after Dr. Wolf’s study and worked in consultation with him,” she says.

Charles tested a new intervention as well—“hand-arm

bimanual intensive training,” or HABILIT. Rather than constraining the “good” limb and forcing the child to operate with the impaired limb, the HABILIT trial allowed participants to use both limbs. “Children in a natural environment tend to use both hands,” she says. “So we decided to test what would happen if we engaged kids who have one limb impaired by cerebral palsy in intensive practice using both hands.”

In the end, she saw similar improvement with both inter-

ventions. However, she notes that the HABILIT study was a pilot and did not use the same outcome measures as the pediatric constraint-induced therapy study. Charles will continue testing HABILIT at Emory, in conjunction with her Columbia counterpart.

**Vijaya Krishnamoorthy** Vijaya Krishnamoorthy hopes to apply her previous research on posture and gait to older people who are prone to falling. As a postdoctoral researcher at the University of Delaware, she studied the use of gravity-balanced orthosis to help stroke patients relearn to walk. Though a system of springs and pulleys, the orthosis eliminated the effects of gravity. Patients saw improvements in range of motion and achieved a more symmetrical gait pattern.

Krishnamoorthy also has studied the muscle coordination involved in posture. “We wanted to know how the nervous system knows which muscles to activate at what time in order to keep us upright,” she says. “We looked at what combination of muscle is involved and how muscles work together to keep our position relatively stable.”

At Emory, she will study the mechanics of walking. “I want to look at what happens on a muscular level when the foot strikes the ground and at different phases in the gait cycle. First I’ll need to study this in young healthy individuals and then look for differences in older people who are prone to falling.” **e**



**Jeanne Charles** STUDIES CONSTRAINT-INDUCED THERAPY IN CHILDREN WITH CEREBRAL PALSY.

# A stronger approach to PT education

**When Megan Crawford was choosing a physical therapy program, one of things that swayed her toward Emory was its location in the School of Medicine.** She expected a richer educational experience, and she has not been disappointed.

“We get wonderful guest lecturers whom we otherwise would not get,” says Crawford, now a second-year student. “We speak one-on-one with these specialists and learn more about what they do with their patients. We interact with physicians and so develop a greater understanding of what they do. That’s invaluable. After all, it’s the physicians who refer to physical therapists.”

Indeed, Emory’s physical therapy program enjoys a fairly unique position. “Many physical therapy programs are housed independently,” says Susan Herdman, director. “Many others are in public health schools or community health schools. The fact that we are part of a department of rehabilitation within a school of medicine within a rehab center sets us apart.”

William Casserella, executive associate dean of academic affairs for the medical school, agrees. “Being part of the medical school makes for a whole different atmosphere in the physical therapy program. The medical school’s mission, and hence the mission of the physical therapy program, is to enhance medical care through discovery. As part of that mission, the faculty and students of our physical therapy program are focused on doing research, being on the cutting edge, and using creativity to advance the field. I don’t think that level of emphasis on research or teaching methods would exist outside the School of Medicine.”

Physical therapy students watch surgeries, attend rounds, use the medical school anatomy lab, and, as Crawford noted, learn directly from physicians. “When you’ve actually seen a surgery, you have a much better appreciation of the trauma to the body involved,” says Herdman. “So when you work with that person after the surgery, you can appreciate what the body and psyche are dealing with. That can only help a physical therapist’s work.”

Going on rounds shows Emory physical therapy students what

physicians are learning, and they can further their own knowledge of diagnoses and injuries. “It also helps build the team of people who are going to be helping these patients,” says Herdman. “The more we all know about each other, the more we understand our different strengths, the better care the patient is going to get.”

Although PT and medical classes are separate, some classes may be combined in the future. “Last year, I held a seminar for our third-year physical therapy students and physical medicine residents,” says Bruce Greenfield, physical therapy assistant professor. “We looked at manual therapy approaches, and it was very

well-received by both sets of students.”

Medical school status became even more critical when Emory began offering a doctorate in physical therapy. “We had to get approval through the School of Medicine and the Board of Trustees to grant a clinical doctorate within traditional medical school framework,” says Greenfield. “We are the only nonphysician training program in the medical school granting a clinical doctorate. That speaks well for the recognition of what physical therapists do as experts of movement dysfunction within the health care model.”

Perhaps the greatest benefit is the least tangible. It’s the enhanced sense of professionalism that comes with being part of the medical school. “An important part of students’ training is to

develop a professional identity,” Greenfield says. “It’s not always easy. Students’ ability to be in a medical setting where they are continually interacting with med students and physicians is an advantage for them in developing their professional identity in relationship with other health care workers.”

The advantages go both ways. “It’s definitely good for medical students to understand more about the role of physical therapy in the area of medicine,” says Casserella. “It certainly advances the strategic mission of the university to train 120 students in physical therapy. That adds to the overall mission of the medical school to train health professionals. It strengthens the medical school, and in that respect, it strengthens the university.” **e**



ALUM PROFILE

# Karen Davis: Poised for success

**As an experienced physical therapist with 13 years in an outpatient practice and a year on the women's professional tennis tour, Karen Davis knew she could help her patients get well.** What she couldn't do was keep them that way.

"Once they were done with therapy, I could not keep them under my wing as far as weight loss, nutrition, exercise, and overall health," she explains. "Many people

goes beyond the usual gym fare of fitness equipment, personal training, and step classes to offer physical therapy, massage therapy, nutrition counseling, orthotics, and life coaching—all under one roof.

"Jim and I had been co-treating for more than 10 years, referring patients to each other, but we were on opposite sides of I-285. We finally decided to put our practices in the same place. When we found space significantly bigger than we needed, the idea came to us to add a gym and fitness facility," Davis says. "But we definitely did not want to call it a gym or fitness center, because it was so much more than that. We came up with 'Equipoise,' which means 'the state of being equally balanced.' That's what we try to provide here. It's my way to help patients get well, not just in a physical therapy sense but in terms of lifestyle. And it gives patients an opportunity to stay well."

The physical therapy practice she operates at Equipoise, One-on-One Therapy, differs from traditional practice. "It's a pet peeve of mine," she says. "If you go to a massage therapist, a personal trainer, a dietitian, you see them one-on-one. But in physical therapy you typically have therapists seeing several patients at the same time. That's not the way we do it here. Our therapists see one patient at a time. It may cost a little more, but there is a savings because the patient needs less therapy and misses fewer days of work because of the superior quality and intensity."

In addition, Davis often incorporates fitness equipment, yoga, and Pilates instruction into her therapy. "All of our therapists went through Polestar's pilates training for the rehab professional, and we incorporate it into our therapy as well

as offer it as a transition after therapy," she says. "Pilates is such a complement to any type of therapy that you are doing."

When patients need nutritional counseling or massage therapy, those services are close at hand. "Not only is it more convenient for the patient since he or she is already here, but I talk to the dietitian or massage therapist about each patient's specific needs," Davis says. "It truly is a team approach."

Her patients have unlimited access to the gym while in therapy, and many elect to join after their sessions have ended. But not all Equipoise patrons are former therapy patients. Everyone from weekend warrior to serious athlete takes advantage of the unique mix the facility has to offer.

The structure of her business model is different as well. "In my practice, therapists can, if they choose, earn their way toward a partnership and buy into the practice just like attorneys do in law firms," she says. "There is risk as well as reward in that model—as a partner, you only make what you bring in—but I don't want to *employ* my colleagues. I want to work alongside peers. I think this structure brings more professionalism to our field."

As busy as Davis stays with Equipoise, she finds time to give back to Emory, where she received her master's in physical therapy in 1993. She offers student internships (see "Where you lead, I will follow," page 8), and lectures and assists in labs as an adjunct faculty member.

"These things keep me connected to Emory and keep me up to date on the latest teaching, research, and treatments," she says. "When you teach a student, you learn and grow. You become a better clinician." **e**



**Karen Davis co-founded Equipoise, a unique facility combining traditional fitness fare with physical therapy, massage therapy, nutrition counseling, orthotics, and life coaching.**

would go back to their old habits and reverse some of the gains we had made."

Seeing a need for a new approach to rehab, Davis teamed up with Atlanta orthotist and athletic trainer Jim Fox to found Equipoise, a health and fitness facility unlike any other in the region. At more than 12,000 square feet, Equipoise

## STUDENT PROFILE

# Terapia física: Creating a dream job



Lori Northcraft hopes to combine her fluency in Spanish and desire to help others into a tailor-made physical therapy career.

**While working on her senior thesis for a small liberal arts college in Oregon, Lori Northcraft discovered that only one of the 57 farm workers she interviewed had seen a physical therapist.**

“But many of them had suffered work-related injuries,” she remembers. “Mostly because of financial and language barriers, these workers were not receiving proper treatment.”

Moved by their plight, she decided to put her fluency in Spanish, her interest in physical therapy, and her passion for helping others to the best possible use: Today she is working toward Emory degrees in physical therapy and public health.

“It’s a perfect blend of my interest in

physical therapy and my passion for working with underserved populations. Emory is the only place I know of that offers both.”

In fact, she turned down a \$30,000 scholarship to a Boston program to take advantage of Emory’s strengths in physical therapy and public health. “It was really hard to walk away from that money,” she says, “but I believe Emory will allow me to pursue my dream.”

After her college graduation, Northcraft entered Teach for America, an elite national corps of recent college graduates who commit two years to teach in public schools in the nation’s lowest-income communities. Only about 13% of all applicants

are accepted into the program.

Northcraft’s assignment was teaching Spanish-speaking second graders in southern Texas on the Mexican border. She’d become fluent in Spanish after a semester in Spain but had never taught before. “My mom is a teacher, and she told me I had taken on a huge challenge,” recalls Northcraft, “but it was a challenge that just had to be overcome.”

During her second year, she taught a bilingual first grade class and provided after-school tutoring. “It was such a rewarding experience to be sitting next to children as they learned how to read,” she says. “They were so excited when they could finally read simple words like ‘cat.’”

As an Emory physical therapy student, Northcraft has volunteered at Spanish-language diabetes classes offered through Emory’s endocrinology department, where she assisted with preliminary screenings and patient education. This summer, she and three other Emory physical therapy students are providing free care to migrant workers through the South Georgia Farmworker Health Project, organized through Emory’s physician’s assistant program.

Northcraft hopes to create a career that combines her fluency in Spanish with her desire to help farm workers and their families live healthier lives.

“I would love to be a pediatric physical therapist, since I love to work with kids,” she says. “I get so excited when I’m able to speak Spanish and help others. I see myself doing prevention and rehab seminars at farm worker labor camps about occupation injuries. I don’t know if that job exists, but I’d like to create it.” **e**

For more details, visit [rehabmed.emory.edu/pt](http://rehabmed.emory.edu/pt) or

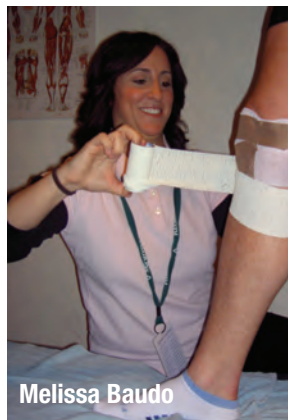
## Where you lead, I will follow

Never underestimate the power of a good mentor. That's what Melissa Baudo believes. As a student (DPT 2006), she studied as an intern under Karen Davis (see "Karen Davis: Poised for success," page 5). "Karen mentored me for seven years, and she challenged me every day," she says. "I was so impressed by her clinical skills, her professionalism, and her philosophy. I knew I wanted to follow in Karen's footsteps."

Those footsteps led Baudo to the Sony Ericsson WTA Tour (Women's Tennis Association), where she serves as a primary health care provider. Davis worked on the tour and recommended Baudo for the job. "I've always loved sports—I played on the women's club soccer team at Ohio State University—and I knew I wanted to stay involved in some way, but I had no idea it would be on such a professional level," Baudo says.

She is the first point of contact for athletes on the tour. "I take care of their physical health, primarily injury management and prevention. If they need a referral to a specialist or service in whatever country they are in, I arrange it. It's a dream job—working with professional athletes and traveling to destinations such as Italy, Spain, Switzerland, and New Zealand. And I wouldn't be here without Karen," she says.

The physical therapy division is hoping to foster more relationships like Davis and Baudo's through its new mentor program. If you'd like to give something back, consider becoming a mentor. Someone may be waiting to follow in your footsteps. Contact Monica George-Komi, admission coordinator, at 404.727.4130 or [mgeorg2@emory.edu](mailto:mgeorg2@emory.edu).



Melissa Baudo

## Getting children back in the game

As a child, Jill McJunkin Reyes played "every sport, all the time." She also was injured "all the time." So it's only natural that Reyes grew up to pursue sports medicine.

As a student in Emory's physical therapy program, she got her foot in the door at a lecture by Diane Waldner, director of rehabilitation and orthopaedic services at Children's Healthcare of Atlanta. After the lecture, Reyes asked Waldner if the Children's sports medicine department accepted students. As a result, Reyes did a long-term rotation in pediatric sports medicine, and

she was hooked.

Reyes joined the facility's sports medicine program after earning a DPT in 2005. Today she works with patients ages five to 21, primarily treating athletes with orthopaedic injuries. "Children's also has certified athletic trainers at many area schools.



A young Jill McJunkin

We work together to make sure our kids get the best care so they can return to their sports ASAP," she says.

Reyes is an adjunct faculty member at Emory, returning to teach classes in orthopaedics, such as exercise prescriptions for pediatric and adolescent patients. "I've always had an interest in teaching, so it's rewarding to go back to Emory and share some of the knowledge I have gained," she says.

EMORY | *extension*

ADVANCING THE SCIENCE AND ART OF PHYSICAL THERAPY

Division of Physical Therapy  
Emory University School of Medicine  
1440 Clifton Road, Suite 112, Atlanta, GA 30322

## FACULTY NEWS

**A better treatment for stroke**

To find a better way to rehabilitate affected upper limbs in stroke patients, Andrew Butler has been awarded a \$150,000 grant from the Department of Veterans Affairs. Butler, an assistant professor, will use high-frequency repetitive transcranial magnetic stimulation (rTMS) in the brain's motor cortex area to increase the synaptic activity in that region. His goal is to determine whether a single session of rTMS can improve motor learning.

In the first year of his study, Butler will apply rTMS to healthy veterans, and in the second year he will use it on veterans with post-stroke hemiparesis (impaired use of hand and arm).

If rTMS proves to be an effective and safe way to enhance motor learning, researchers could expand its use to patients relearning other skills, such as language and mobility. Farther down the road, a large-scale trial will pair rTMS with a specific rehabilitation procedure to gauge how the therapy might work in real-life situations. "Positive results at this stage may eventually lead rTMS enhanced rehabilitation into a regular clinical practice," says Butler.

**15 minutes of fame and counting**

Steven Wolf and colleagues' breakthrough research on constraint-induced therapy (CIT) for stroke patients has captured the nation's attention. Since *Extension* reported on the study in spring 2006, it has been featured as the lead article in the Nov. 1, 2006, issue of *JAMA*, in *Lancet Neurology*, on CBS Morning News, and on CNN, to name just a few.

The Emory neuroscientist and physical therapy professor's primary outcome paper reflected a year's worth of data gathered from 222 patients throughout the nation, all of whom were three to nine months post stroke with some degree of movement in their affected limbs. In the randomized blind trial, half the patients received CIT, during which their unaffected hand was immobilized with a mitt while they performed a series of tasks with their affected hand. The other group received usual and customary care.

Both groups improved significantly in the Wolf Motor Function Test (15 timed tests of increasing complexity) and in motor activity logs (self-reports of how much and often the affected limb was used at home). However, the CIT group showed significantly greater improvement.

For Wolf, these results are just the beginning. "Next we want to see if the improvement persists for the CIT group after they leave therapy," he says. "We will follow this group for a second year to see.

"We're also going to start the group that got usual and customary care on CIT to see if patients one year or more post stroke benefit as much—or more or less than—those who start therapy sooner," Wolf continues. "Finally, some Emory grad students are going to look at the relationship between the intensity and the outcome of the therapy. We've got a lot more to do, and before all is said and done, there will probably be 30 publications to come out of this study."



**Steven Wolf's research has been a hot news item.**

**Walking, talking, and falling**

It's common to lose the sense of balance with aging. Therapists long have believed this stemmed from physical problems such as impairments in the motor and/or sensory systems. Recent studies point to a mental component: People unable to allocate attention to walking while performing another task are at high risk of falling.

Courtney Hall, Emory assistant professor and research health scientist at the Atlanta Veterans Affairs Medical Center, has received an advanced career development award through the VA to determine whether the inability to walk and talk at the same time is mental, physical, or both. First she will put subjects



through cognitive tests—memory, attention, problem solving—to assess their mental abilities. Then she will test balance and gait: walking, balancing with eyes open, and balancing on a moving surface. Finally, she will combine physical and mental: walking while counting by threes, while holding a tray of glasses, or both.

"If the problem is in the intersection of the physical and cognitive domains, then we would expect to see a much bigger impairment when we put the thinking and physical tasks together," she says.

In the second part of her study, Hall will test two interventions. One group will undergo balance training, and the other will get balance and multitask training. "We are trying to see if we can train the ability to balance under divided attention."