

U N I V E R S I T Y O F P I T T S B U R G H

FACETS

SCHOOL OF HEALTH AND REHABILITATION SCIENCES SPRING/SUMMER 2009



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Practice What You Preach

On the cover of the fall/winter 2008 issue of *FACETS*, we used a photo that depicted two seniors having a great time on a tandem bicycle, but inadvertently ignored the principles we preach like wearing a helmet and holding on to the handle bars. We apologize.



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Dear Alumni and Friends of SHRS,

The current climate of economic uncertainty and yet-to-be-determined impact(s) of the *American Recovery and Reinvestment Act of 2009 (ARRA)* pose a number of questions for higher education institutions. While there are divergent opinions on the effectiveness of the current, and perhaps future, stimulus provisions enacted by Congress, the “stimulus” increase in the budgets of major federal agencies such as the NIH and NSF appear to bode well for research-intensive universities – and particularly those with comprehensive Health Science programs. These additional funds have created a flurry of activities as prospective investigators prepare applications to compete for substantial additional research awards. As the University of Pittsburgh, including SHRS and other Schools of the Health Sciences, can

be expected to compete favorably, there is reason for optimism for research funding over the next two years. Forecasting further into the future would seem problematic, as our continued successes will likely be linked quite closely to the general state and extent of recovery of the national and world economies.

For the present, applications for admission to SHRS programs continue to be robust with substantial increases in excess of applications received last year by the end of February. I believe that this can be attributed at least partially to the national and international recognition we have received for the quality of our programs. Even with this continued and growing demand, the rising costs of education cannot be ignored in the face of economic difficulties that now affect nearly all families. Our ability to contain costs and provide financial assistance has become an increasingly critical concern.

In light of the increasing financial burden of education, I am pleased to acknowledge the success of our SHRS Alumni Endowed Scholarship Fund. This scholarship fund was established by the SHRS Alumni Society Board in recognition of the school’s 35th anniversary in 2005. Our initial goal has been met and in fact has been exceeded. As a result of the success in this effort we are now awarding scholarships from this fund. Students from all SHRS programs are eligible to apply and criteria include a combination of merit and need. As I am sure you know, need for support continues to grow and we urge donors to continue to contribute to this fund.

“Our ability to contain costs and provide financial assistance has become an increasingly critical concern.”

I would also like to take this opportunity to direct your attention to a particularly relevant article in this edition. Dr. Cynthia Puranik, who joined the faculty of the Department of Communication Science and Disorders, has established a research program on the more neglected of the duality of communication dimensions in the early stages of education for children. This investigation to explore development of writing proficiency provides a unique and appropriate addition to the research enterprise for study of communication science. I trust that you will find it both instructive and interesting.

Let me conclude by also noting the efforts of faculty in our Department of Rehabilitation Science and Technology (RST) in their outreach efforts to provide opportunities for Research Experiences for Undergraduates on Quality of Life Technologies. The article on RST activities also includes the Tech-Link outreach program that brings together minority students, students with disabilities, and other middle school students to provide educational and training experiences to promote interest in STEM activities via a 10-week robotics training program that culminates with the annual *FIRST Lego League* competition.

Thank you for your continued support of SHRS and its programs!

Cliff Brubaker
cliffb@pitt.edu



giving

Last fall, when students were busy applying for various SHRS scholarships and awards, the school quietly realized a milestone. The 2008-2009 school year marked the distribution of the first awards from the SHRS Alumni Endowed Scholarship Fund, which was created

in 2005 to commemorate the school's 35th anniversary. Because of generous and on-going support from alumni, faculty, staff, and friends, the fund provided three top-performing students with scholarship assistance. (For a listing of all SHRS award recipients, see page 5.)

It's exciting to realize that this fund grew from a communal effort... gifts, both small and large, from so many of you. Your reasons for giving, I'm sure, were varied and personal. Perhaps you wanted to make college life a little easier for one who may follow a similar career path as yours. Or maybe you gave because you're proud of the education and clinical experience you received while a student at Pitt. Or maybe you recognize how valuable your education has been and you want to see others benefit from our exceptional school.

Whatever the reason, we appreciate your commitment and dedication to your Alma Mater and encourage you to continue supporting the school or a particular program or department as you are able.

If your interest lies within a particular program or department, you can direct your gift to that program. Or you can designate your gift to a number of existing multi-donor funds (i.e. Audrey Holland, Matthews/Rubin, and Emeritus funds in CSD; Anthony Delitto, Vicki Green Memorial, and DT Watson funds in PT; Thomas J. O'Connor Memorial Fund in RST; Tim Kerin Memorial and Sports Medicine Student Resource funds in AT/SM). Or you may continue supporting the school-wide SHRS Alumni Fund.

Of course, the opportunity always exists for you to establish your own named fund. Even in challenging economic times, options for charitable giving exist. I would be happy to discuss these options with you or assist you in the straightforward, painless process that enables you to create a lasting legacy of your own here at SHRS and at Pitt.

Here's to a prosperous and fruitful Spring for all of us!

Sincerely,

Patty Kummick
Director of Development

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PASCASIO DELIVERS LECTURE

Students, faculty, and staff were treated to a once-in-a-lifetime experience on Friday, March 20. At the invitation of SHRS students, Dr. Anne Pascasio, founding dean, presented a lecture titled "Her Story: A History of SHRS" to a standing-room-only crowd. Pascasio reflected on her time at D.T. Watson (as a student and instructor), her education at Pitt, and her tenure as the first dean for what is now the School of Health and Rehabilitation Sciences. It's a remarkable tale of one woman's strength, intelligence, intuition, determination, and boundless energy.

At the very heart of the lecture was a sense of pride for what the school used to be and what the school has become. The audience walked away with a greater appreciation of the school's heritage and a greater understanding of the accomplishments, challenges, and opportunities that serve as the backbone of SHRS.

Many thanks to Dr. Pascasio for accepting the students' invitation and for being her gracious, giving self. And kudos to students Rachel Blasko and Leanne Ganter for suggesting the forum and organizing the event.



Dean Cliff Brubaker (left) and Dr. Anne Pascasio (right) thank Rehabilitation Science seniors Leanne Ganter and Rachel Blasko for organizing the "Her Story: A History of SHRS" lecture.

To view the lecture, go to www.shrs.pitt.edu and click on "Alumni" on the left, then click on "MediaSite" on the right. Click on the "SHRS Public Presentations" file and go to "Her Story" under presentations.



ACCESS

DR. KATE SEELMAN

It is estimated that there are over 20 million deaf and hard-of-hearing children and adults in the United States. I am one of them. However, unlike other physical disabilities, ours is virtually invisible. Unfortunately, this invisibility seems to extend to government and the health care community as well. For example, deaf people have not been counted in the U.S. Census since 1930. The last known count was privately conducted by the National Association of the Deaf in 1971. Even the most essential assistive technology – a hearing aid – is not paid for by most government and private insurers. Recently, I paid \$6,800 for new hearing technology – totally out-of-pocket. Many insurers view the devices as cosmetic. The ability to hear and communicate is not deemed a medical necessity.

Ray and Jennifer Spellman confronted this reality 11 years ago, when their then six-month-old son Andrew was diagnosed with deafness. I've asked them to share their experience.

Andrew was our second child. He was a happy baby, alert and always smiling. At the time, newborns were not screened for deafness, so it was not until he was six months old that we first suspected a problem. And only then, it was because of our dog. Andrew would always turn his head toward us when we walked in the room. We know now that he felt our vibration. But one day when we were playing with him we noticed that he didn't react when the dog barked. That was our "aha" moment.

That realization set us off on weeks of testing, retesting, and consultation. One specialist intimated that there was probably more involved than deafness. Retardation, he suggested, was also a possibility. Another physician insisted on a medical "fix" – a cochlear implant. While ultimately, Andrew did have the procedure, at the time, no one could explain to us why surgery was the only answer. And because we had no experience with deafness – no one in either immediate family had any hearing problems – we had no idea where to turn for answers, and no advocates to point us in the right direction. We were on our own.

Through trial, error, and tenacity, we identified resources and pieced together a support system. We learned to sign, and taught others as well. Speech and hearing professionals supplied by the Allegheny Intermediate Unit came to our home to work with Andrew on his communications skills. It was one of these professionals who alerted us that starting at age three, Andrew would need to begin attending classes at the Western Pennsylvania School for the Deaf (WPSD). We were told it was our only option if we wanted Andrew to have access to special services until age 18.

While we were not opposed to Andrew attending the WPSD, we were concerned about the distance between Moon Township, where we live, and Edgewood, where the school was located. Both of us worked, our older daughter was in school, and

another baby was on the way. Bus transportation was our only option. But who wants to entrust their three-year-old to a stranger for an almost 50-mile roundtrip commute five days a week? A three-year-old who can't talk and can't hear.

Our concern was justified. Within a short time, we received a telephone call from the police. Our son was in their custody. The bus driver had taken Andrew to a nearby bar whose name was similar to our street name. He asked a complete stranger if she was there to pick up Andrew. Fortunately, the stranger was the owner of the establishment, and she called the police. Our son came through the incident unscathed; however, this experience ignited another fight – this time for safe, reliable transportation. It was a battle that played out in the media and ultimately was won through a painstaking fight with the school district.

Andrew continued at WPSD until the third grade. While it was an excellent school and provided Andrew with a solid communications foundation, we felt that if he were to reach his full academic potential, he needed to be in a different setting. Our first choice was a private Christian school that our three other children attended. Here again, we were told "no" – not if we expected the state to pay the cost of an interpreter and other support professionals. It didn't matter that we could demonstrate that costs at the Christian school would be lower, or that there was value in keeping our children together in the same school. Church and state, we were told, had to remain separate. Funding for services was available only in the public schools. No exceptions.

Ultimately, we moved Andrew and our other children into a public school setting. We've learned the ins and outs of creating a detailed individualized education plan, and a lot more about our rights. Andrew now has a committed team of speech and language professionals, and is thriving in his new environment. Next year, he enters the middle school, and already the elementary school principal is advocating for him to ensure he continues to receive the best possible support. We're optimistic about his future.

But would the outcome have been the same had we not been so willing to fight for his rights? We knew nothing about his disability, the pros and cons of the various treatment options, or the rules and regulations that govern support services. We had to learn as we went. We refused to take "no" for an answer. Yet "no" was the answer we heard most often from people who either didn't know, or didn't care.

Parenting a child with a hearing disability is a challenge. But the difficulties are compounded when you're forced to become a full-time advocate as well. What happens to those children whose parents or caregivers can't – or won't – do battle? We can only wonder.



Student News

Joe Olson, graduate student in the Department of Rehabilitation Science and Technology, was honored at the 4th Annual Celebration of Innovation on Oct. 6. Olson worked with a small team of researchers who developed a wheelchair convoy system that allows multiple people in chairs to safely move at one time. The technology, which won an Innovator Award, was licensed to a company in October 2007. The Celebration of Innovation was hosted by the University's Office of the Provost and the Office of Technology Management. Joining Olson (second from right) are (left to right) Dr. Arthur Levine, senior vice chancellor for Health Sciences, James V. Maher, provost and senior vice chancellor, and Chancellor Mark A. Nordenberg.



Kimberly Meigh and **April Scott**, doctoral students in the Department of Communication Science and Disorders, were awarded the 2008 New Century Scholars Doctoral Scholarships from the American Speech-Language-Hearing Foundation. They were among 20 doctoral candidates to receive the award because of their commitment to attaining the research doctoral degree and working in a higher education academic community in the field of CSD in the United States.

Rhona Galera, CScD student in the Department of Communication Science and Disorders, received the 2008 Graduate Student Scholarship from the American Speech-Language-Hearing Foundation. The award, one of seven awarded annually, recognizes graduate or doctoral students who

demonstrate outstanding academic achievement.

Lisa Guttertag Lederer, a graduate student in the Department of Communication Science and Disorders, received the American Speech-Language-Hearing Association Special Interest Division 2 Student Research Travel Fellowship. She was recognized for outstanding student research in neurophysiology and neurogenic speech and language disorders.

Lindsay Diethorn, AuD student in the Department of Communication Science and Disorders, received the Pennsylvania Academy of Audiology Student Scholarship for 2008. This state competition awards students for outstanding achievement in audiology.

Veronica Umeasiegbu, a master's candidate in the Department of Rehabilitation Science and Technology's Rehabilitation Counseling program, spent 10 weeks as an intern with the World Health Organization. During her internship, Veronica found a sponsor and spearheaded a successful fundraising effort among her intern class to send a set of essential clinical texts to a community health center in her home country of Nigeria through WHO's Blue Trunk Library program. She also won an essay contest for UN interns on implementation of the Millenium Development Goals and presented a project proposal at a panel discussion during the Dialogue on Global Governance.

Alexandra Jefferds, graduate student in the Department of Rehabilitation Science and Technology, recently self-published her first science-fiction novel. "Earlier Heaven" addresses many real-world themes and serves as a vehicle for Jefferds to expand upon one of her life's passions – helping people with disabilities (the heroine is a young girl with a disability).

Steve Gaul, a student in the Athletic Training program, became the second Pitt athletic training student in the last

three years to participate in a victorious Super Bowl celebration following the Pittsburgh Steelers dramatic 27 – 23 win over the Arizona Cardinals on Feb. 3. Steve spent the entire 2008 season with the Steelers completing one of his clinical education experiences as part of the athletic training staff. He also took part in the Steelers victory parade following the team's return to Pittsburgh.

Bailee Miller, a student in the Athletic Training program, was selected as one of three athletic training students from Pennsylvania to participate in the first iLead Conference in Washington, DC. The program, sponsored by the National Athletic Trainers' Association, promotes student leadership development and offers opportunities to attend workshops and meetings as well as spending a day on Capitol Hill meeting with legislators to discuss and promote the profession of athletic training.

Michelle Petraglia, master's student in the Department of Communication Science and Disorders, was selected by the CSD faculty to receive a student honors award from the Southwest Pennsylvania Speech and Hearing Association (SWPSHA). The award was presented at the SWPSHA Honors meeting in March.

Rhona Galera, a doctoral student in the clinical science in speech language pathology program, participated in a medical mission in Quito, Ecuador, at the Nueva Tierra Hospital through Faces of Tomorrow. Galera worked as a team with pediatricians, dentists, surgeons, social workers, and translators to aide children with cleft lip and cleft palate deformities and their families.

Melissa Stauffer, MOT student, was awarded the Greek Room Committee Scholarship from the University of Pittsburgh Nationality Rooms. It will support her participation in the Experiential Learning International's Program in Greece.

Wikar Kadhim, MOT student, was awarded the Fred C. Bruhns Memorial Award from the University of Pittsburgh Nationality Rooms. It will support his participation in the Experiential Learning International's Program in Jordan.

Michelle Anderson and **Stephanie Young**, MOT students, and **Drs. Ketki Raina**, assistant professor and **Denise Chisholm**, associate professor, presented Promoting Occupational Therapy Through International Experiential Learning at the 31st Annual Pennsylvania Occupational Therapy Association Conference. **Young** and **Raina** also presented The Cultural Impact on Disability in Tanzanian Children.

Michelle Anderson, **Benjamin Gross**, and **Wikar Kadhim**, MOT students, were selected as 2008 – 2009 Jewish Healthcare Foundation Jonas Salk Fellows.

Betsy Boyce, **Alisha Cousins**, **Cortney DiVito**, **Caitlin Feeney**, **Ellen Malinoski**, **Shelley McCauley**, **Renee McDade**, **Amanda Miller**, **Angela Pasquarelli**, **Sarah Petrus**, **Lori Sopko**, **Anne Marie Sweeney**, **Carla Tcruz**, and **Jeanna Thomas**, MOT students, were inducted into the Beta Tau Chapter of Pi Theta Epsilon, the national honor society for occupational therapy students.

Natalie D'Angelo, **Benjamin Gross**, **Shelley McCauley**, **Amanda Miller**, and **Sarah Petrus**, MOT students, and **Yu Yun Huang**, MS student, represented the Department of Occupational Therapy at the National Disability Day event and provided assistance to students with disabilities.

Betsy Boyce, **Benjamin Gross**, and **Caitlin Feeney**, MOT students, presented Occupational Therapy as a Career to

9th – 12th grade students at the School to Career Day sponsored by the Oakland Planning and Development Corps. **Boyce** and **Gross** also presented a hands-on workshop, Occupational Therapy as a Career to 10th – 12th grade students at Career Connections Charter High School of Pittsburgh.

Andi Saptono, doctoral candidate in the Department of Health Information Management, presented an instructional course on Telerehabilitation: A Viable Method Wheelchair Prescription at the 25th International Seating Symposium in Orlando, Fla., in March. **Saptono** will also present User Roles, Needs, and Information Management Features in Telerehabilitation at the American Telemedicine Association 14th Annual International Meeting and Exposition in Las Vegas in April.

2008-2009 SHRS Scholarship and award recipients

The following is a listing of SHRS scholarships and awards granted to students during the 2008-2009 academic year.

Bruce Baker Travel Award (school-wide)

Gustavo Almeida (PT)
Keara Chestney (HIM)
Maria Dietrich (CSD)
Caitlin Feeney (OT)
Amanda Gillespie (CSD)
Patrick Lambert (EM)
Palma Liberto (HIM)
Danielle Maloney (RS)
Michael Morgan (RS)
Ana Souza (RST)
Paulo Teixeira (PT)
Matthew Weaver (EM)

Anne Pascasio Scholarship (school-wide)

Sarah Chunko (PT)
Shelley McCauley (OT)
Alyssa Meisenhelter (RS)

SHRS Alumni Endowed Scholarship (school-wide)

Alexandra Jefferds (RST)
Ka Hei Karen Lau (CDN)
Sven Lynch (PT)

UPMC Scholarship (school-wide)

Meghan Jablonski (CSD)
Sarah Petrus (OT)
Kristin Robb (CDN)

Mildred Wood Student Resource Award (school-wide)

Suzanne Adjogah (CSD)
Tessa Utz (CSD)
Mohamed Hagahmed (EM)
Mark Murphy (EM)

AVADA Book Award (CSD)

Gregory Genna
Jennifer Powers
Megan Hannon Vargo

Bruce Baker Student Training Award (CSD)

Thomas Kovacs

Emeritus Award (CSD)

Kathleen Hodges

Lisa Levy Memorial Award (CSD)

Inbal Vellucci

Dorothy Bradley Brown Scholarships (PT)

Christa Bauer
Jefferson Holm
Jillian Kosinski
Jessica Miller
Kristin Orenchuk

Pat Croce Scholarship (PT)

Timothy Zelch

Joseph M. David/David PT & Sports Medicine Center Scholarship (PT)

Laura Fawcett

Victoria Green Memorial Resource Award (PT)

Samantha Waller

Patti Leahy Memorial Award (PT)

Zabrina Langer

Pearl Cricco Mann Scholarship (PT)

Ralph Hoerner

Alice Chagnot Oulette Scholarship (PT)

William Buchala

Paul and Judy Rockar Scholarship (PT)

Christin Donofrio

D.T. Watson Scholarship (PT)

Andrea Wysochansky

Rory A. Cooper/Dion Johnson Student Award (RST)

Sara Sibenaller

Sean and Stephanie Shimada Student Award (RST)

Hyunwook Ka

Freddie Fu Athletic Training Scholarship (SMN)

Stephen Gaul
Kimberly Stoner
Doug Zaruta

Freddie Fu Sports Medicine Graduate Research Award (SMN)

Yung-Chien Chu
Anthony House
Hung-Chun Huang

Tim Kerin Athletic Training Scholarship (SMN)

Jennifer Lucy



Faculty News

SHRS welcomes the following new faculty to its ranks:

Joanne Merante Baird has joined the Department of Occupational Therapy as an assistant professor. She is also responsible to the Centers for Rehab Services (CRS) as the occupational therapy coordinator of clinical education and professional development. In this role, she will oversee placement of occupational therapy students from a variety of academic programs at CRS clinical sites. Baird received her Bachelor of Arts degree in OT at Pitt and her Master of Arts in OT from the University of Southern California. She has clinical experience from across the health care continuum including acute and inpatient rehabilitation as well as community-based outpatient and skilled nursing care. She is the Pennsylvania Occupational Therapy Association District II secretary.

Dr. Sajeesh Kumar has joined the Department of Health Information Management as an assistant professor. Kumar received his doctorate in Telemedicine from the University of Western Australia, and his research interests are related to the design and development of telemedicine technology, rural and remote health care service, and assessment of medical technology. Prior to coming to Pittsburgh, Kumar conducted research and service activities in Australia, Singapore, the Netherlands, Seychelles, United Arab Emirates, and India. He also recently edited the first books on teleradiology and telepathology (published by Springer). He is continuing his innovative research in telemedicine and e-health at SHRS.

Communication Science and Disorders

Dr. Katya Hill, associate professor, received the Department of the Army Certificate of Appreciation for her contribution to the education of staff at Walter Reed Army Medical Center. Hill was also a presenter at iCREATE's 3rd International Convention in Singapore. While there, she consulted on AAC service delivery and research needs at various special schools and rehabilitation organizations.



Dr. Abdelhak, front row, second from left, is joined by the dean of the International University and the chair of the Health Information Management program and representatives from the Japan Hospital Association.

Dr. Sheila Pratt, associate professor, was named a Fellow of the American Speech-Language-Hearing Association, recognizing her outstanding professional and scientific achievements in the field. She also received the ASHA Editors' Award for the *American Journal of Audiology*.

Dr. Scott Yaruss, associate professor, was named the 2008 Speech-Language Pathologist of the Year by the National Stuttering Association.

Health Information Management

Dr. Mervat Abdelhak, chair and associate professor, presented recently at a symposium by the International University of Health and Welfare in Tokyo. The symposium addressed formal education as well as workforce issues for health information and cancer registry.

Abdelhak was also invited to present the keynote address, "Advances in e-HIM: From Vision to Reality" at a conference in Saudi Arabia in March. During her visit, she also evaluated the Health Informatics graduate program at King Saud Bin Abdulaziz University of Health Sciences and consulted with other academic institutions with interest in health information.

Dr. Sajeesh Kumar, assistant professor, is coordinating all research initiatives of the Center for Telehealth, an informal group of peers involved in telemedicine services at Pitt and UPMC.

Dr. Leming Zhou, assistant professor, presented a poster, "SPARK – A Systems Biology Framework for Agent-Based Biomedical Modeling," at the Computational Cell Biology Meeting in March at Cold Spring Harbor Lab, NY.

Occupational Therapy

Dr. Denise Chisholm was promoted to associate professor.

Mary Lou Leibold, assistant professor, authored two chapters of the newly initiated American Occupational Therapy Association's Fieldwork Educator Certificate Program.

Joanne Baird and **Leibold**, assistant professors, were selected as one of 15 teams nationwide to participate in a three-day Train-the-Trainer Institute and will, in turn, provide multiple two-day workshops, locally and regionally, for occupational therapy practitioners who supervise students during fieldwork. The

two also presented at the Pennsylvania Occupational Therapy Association and the Pittsburgh Fieldwork Council's Conference for Occupational Therapy Practitioners. Also, **Baird** is representing the American Occupational Therapy Association on the Short Term Alternatives for Therapy Services (STATS) Contract Project administered by the Computer Sciences Corporation (CSC) and funded by the Centers for Medicare and Medicaid Services.

Drs. Ketki Raina, assistant professor, **Joan Rogers**, professor, Terence Starz, professor, and **Amalie Andrew**, research occupational therapist, presented *Patients' Perceptions of the Meaning of the FIQ Activity Items* at the American College of Rheumatology/Association of Rheumatology Health Professionals 2008 Annual Scientific Meeting.

Dr. Elizabeth Skidmore, assistant professor, was invited to present a talk on *Life After Stroke: Long-term Issues for Stroke Survivors* at the 4th Annual Acute Stroke Management Conference. She also presented *Developing Clinical Practice Guidelines for Rehabilitation* at the Pennsylvania Association of Rehabilitation Facilities Annual Conference.

Dr. Nancy Baker, assistant professor, and MOT student **Abby Sipp** presented *The Association Between Impairments Due to Rheumatoid Arthritis and Typing Skills* at the American College of Rheumatology/Association of Rheumatology Health Professionals 2008 Annual Scientific Meeting. **Baker** also presented *Observational Studies of Non-Pharmacologic Interventions: Methods to Measure Performance* at the ACR Clinical Research Conference: Session I: Methods for Non-Pharmacologic Interventions.

Drs. Denise Chisholm, associate professor, **Margo Holm**, professor, **Ketki Raina**, assistant professor, **Joan Rogers**, professor, **Elizabeth Skidmore**, assistant professor, **Min-Mei Shih**, postdoctoral associate, **Joanne Baird** assistant professor, and SHRS alumnae **Drs. Razan Hamed** and **Sana Abu-Dahab**

presented peer-reviewed papers at the 31st Annual Pennsylvania Occupational Therapy Association Conference.

Rehabilitation Science and Technology

Al Condeluci, adjunct faculty, served as guest editor of the latest edition of the *Journal of Vocational Rehabilitation*.

As part of a national campaign organized by the Veterans Administration, VA Canteen Service, and General Mills, Cheerios® released a cereal box featuring several veteran athletes from the 28th National Veterans Wheelchair Games including **Dr. Rory Cooper**, distinguished professor and chair. Cooper signed cereal boxes and "sports hero cards" at various VA Canteen Service Stores in the Pittsburgh area as part of the campaign.

Cooper, an Army veteran, also competed this past fall in the 33rd Marine Corp Marathon, finishing fourth. Cooper was closely followed by a Marine he teamed up with and the two fought in friendly inter-service rivalry as they climbed the hill to the Iwo Jima Memorial in Washington, DC.

Deborah L. Endres, instructor, received a Postsecondary Education Programs Network (PEPNet) grant to support her attendance at the "Addressing Needs of Students Labeled Deaf and Low Functioning At-Risk or Deafblind" held in Houston last fall. PEPNet's goal in this support was to explore the development of a program based upon the Cognitive Skills Enhancement Program developed and implemented by RST faculty and students in cooperation with the Hiram G. Andrews Center, Johnstown, Pa.

Dr. Katherine Seelman, associate dean of disability programs, professor, Department of Rehabilitation Science and Technology, was named to the Community Advisory Board of WQED, the public broadcasting entity in Pittsburgh. The board reviews programming goals established, the services provided, and the significant policy decisions rendered by the WQED Corporation.

Sports Medicine and Nutrition

Dr. Kevin Conley, assistant professor and program director, Athletic Training Education Program, was named the assistant dean for undergraduate studies for the School of Health and Rehabilitation Sciences.

Judy Dodd, adjunct assistant professor, Clinical Dietetics and Nutrition, was named to the American Dietetic Association Board of Directors as the chairman of the ADA Foundation. She was also elected to the Adagio Health (formerly Family Health Council) Board of Directors.



General Mills is supporting military families and featuring gold medal winners of the 2009 National Veterans Wheelchair Games, including Dr. Rory Cooper, chair, Department of Rehabilitation Science and Technology, on special edition Cheerios boxes. They will be sold in military markets and Veterans Canteen Service retail outlets.



Alumni News

Emergency Medicine

Turki Alhamid (EM '04) is a paramedic for the Royal Clinic/King's Palace in Riyadh, Saudi Arabia. He is also part of the King Abdullah Medical Team establishing a non-emergency medical transport program. Alhamid met with Dean Cliff Brubaker during the dean's trip to the Kingdom in November.



Cliff Brubaker during the dean's visit to Riyadh and assisted in meetings with Saudi educators.

HIM alumni joined faculty and guests at a reception held in conjunction with the AHIMA Conference in Seattle, Wash., in October. Gathering for a Class of 1981 reunion photo were (left to right) **Barbara Rosen Knight** (HIM '81), **Jill Sell-Kruse** (HIM '81), **Dr. Mervat Abdelhak** (HIM '73, SIS '81), HIM chair and associate professor; **Denise Dunyak** (HIM '81) and **Mark Dietz**, AHIMA director.



Health Information Management

Meagan Sampogna (HIM '00) was promoted to director of client solutions and implementation for the Reimbursement Access Services Division of McKesson Specialty. The new position involved relocating to Scottsdale, Ariz. Previously, Sampogna served as director of pharmacy operations and director of strategy and program development for the company.

Meredith Flack (HIM '08) accepted a position as implementation specialist with McKesson Provider Technologies, Alpharetta, Ga.

Julie Rudolph (HIM '08) has accepted the position of implementation specialist with NextGen Healthcare Information Systems, Horsham, Pa.

Sarah Smith (HIM '08) recently accepted the position of medical records coordinator with Precision Therapeutics, Pittsburgh, Pa.

Dr. Bakheet Aldosari (HIM '00, '03) was promoted to chairman of the Department of Health Informatics in the College of Public Health and Health Informatics at King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia. In November 2008, Aldosari met with Dean

Jill Sell-Kruse (HIM '81), coding compliance coordinator for Memorial Health System, Colorado Springs, Co., is a 2008 ACE member of AHIMA and is a routine presenter for the Southern Colorado Health Information Management Association. She's also the proud mother of three children (two in college).

Physical Therapy

Charlotte Carey (PT '65), a competitive ballroom dancer, competed in the recent America's Ballroom Challenge and placed 1st (world champion) in American Smooth Style World Pro-Am in the senior (60 and older) level, and 2nd in the American Smooth "C" level (50 and over). She and her partner also took 2nd place in the International Standard World Pro-Am in the senior level and 5th place in the Standard "C" level.

Dr. Ahmad Alghadir, (PT '02, '06) is chair and assistant professor, Department of Rehabilitation Sciences in the College of Applied Medical Sciences at King

Saud University, Riyadh, Saudi Arabia. He is also serving as president of the Saudi Physiotherapy Association (SPTA). Alghadir provided Dr. Tony Delitto, chair and professor, Department of Physical Therapy, a tour of SPTA headquarters during Delitto's recent visit to Riyadh in November.



Rehabilitation Science and Technology

Maggie Casteel (RST '07) contributed a chapter in a recently published book on deafness, *ACCESS – Multiple Avenues for Deaf People*. Casteel provided a description of the latest innovative hearing assistive technology. She also contributes to *Hearing Loss Magazine*, distributed to members of Hearing Loss Association of America. Casteel, with her master's degree in rehabilitation counseling, serves as a vocational rehabilitation counselor with the VA.

Athletic Training

Ryan Grove (AT '93, '96), triathlon competitor, performed his personal best in the 2008 Ironman Austria in Klagenfurt, Austria, recording a 10-hour 17-minute time in the grueling triathlon. Grove competes in at least four Olympic distance, Half-Ironman, and Ironman Distance races each year. Next up is the Kinetic Half-Ironman in Lake Anna, Va. In addition, Grove, athletic trainer for the Pittsburgh Steelers, witnessed his second Super Bowl win and victory parade with the NFL team this past February.



Alumnus Named Legacy Laureate

Dr. David Perrin (AT '85), pictured with Chancellor **Mark A. Nordenberg**, was named a University of Pittsburgh Legacy Laureate last October. Recognized for his outstanding personal and professional accomplishments, Perrin was among 12 honorees for 2008.

Renowned in the field of sports medicine and athletic training, Perrin received his doctorate in Exercise Physiology from the University of Pittsburgh in 1985. He currently services as provost and vice chancellor of academic affairs, and a professor of Exercise and Sports Science at the University of North Carolina at Greensboro.

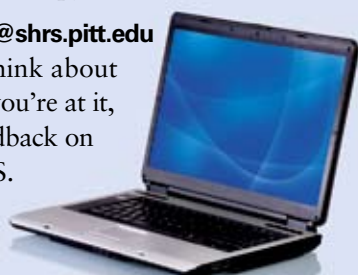
As a member of the National Athletic Training Association (NATA) Professional Education Committee, Perrin helped establish accreditation guidelines for both undergraduate and graduate athletic training programs. He has published over 130 research articles and textbook chapters. Perrin is a recipient of NATA's Most Distinguished Athletic Trainer Award and is a member of the NATA Hall of Fame. He was named the SHRS Sports Medicine/Athletic Training Distinguished Alumnus in 2005.

EZINE ANYONE?

Everyday, virtually all of us receive an e-mail newsletter or other electronic communication. At SHRS, we are exploring ways to make our information more appropriate for the on-line world. That's why we're considering an Ezine version of FACETS, one you can browse to your heart's content, just like the hard-copy version.

Please drop us a line at: facets@shrs.pitt.edu and let us know what you think about an Ezine version. And while you're at it, by all means give us your feedback on this current issue of FACETS.

We'd love to hear from you.



Calendar of Events

A P R I L

Saturday, April 18, 2009

Health Sciences Alumni Reception, Phoenix, Ariz.

The Schools of the Health Sciences will host an alumni reception at the University Club Phoenix, 10 a.m. – 2 p.m. Please RSVP to 412-647-8983.

April 23 – 26, 2009

AOTA 89th Annual Conference, Houston, Texas

J U N E

June 17 – 20, 2009

NATA 2009 Annual Meeting, San Antonio, Texas

The Athletic Training and Sports Medicine programs will host a welcome reception for their alumni. Date, time and place TBA.
Sponsored in part by the SHRS Alumni Society.

June 23 – 27, 2009

RESNA Annual Conference, New Orleans, La.

The Department of Rehabilitation Science and Technology will host an alumni event coinciding with the conference. Details TBA.
Sponsored in part by the SHRS Alumni Society.

O C T O B E R

October 5 – 7, 2009

AHIMA Annual Meeting, Grapevine, Texas

The Department of Health Information Management will host a reception for HIM alumni, Monday, October 5, 6 – 7:30 p.m.. Location TBA.
Sponsored in part by the SHRS Alumni Society.

Tuesday, October 13, 2009

Fifteenth Annual Endowed Scully Visiting Lecture Program

Details to follow

October 30 – 31, 2009

32nd Annual Pennsylvania Occupational Therapy Association Conference, Station Square Sheraton Hotel, Pittsburgh, Pa.



Speech Therapy *and Then Some* Recent Graduate Takes the Reins as Clinical Instructor

Clinical education – the hands-on learning that occurs when students leave the classroom and practice their craft in the real world – is a valuable part of students’ learning experience at SHRS. Not only does it ensure that students are putting their learning into practice, it helps students weigh what experiences and environments they value most, smoothing their transition into a career.

The Department of Communication Science and Disorders’ (CSD) 16-week clinical practicums allow students to put themselves in the shoes of the clinician, learning the intricacies of prevention, screening, evaluation, and treatment. Not only are they a learning ground for clinical competencies and core clinical skills, they also allow students to get to know the fundamentals behind clinical decision-making – the true “whys” as well as the “hows” of their future jobs.

Jennifer Black, a 2003 master’s level graduate of CSD, completed her clinical practicum like so many others while at SHRS. “It was the type of experience I needed to really understand where I could best put my skills to use,” she says of the practicum. “I experienced a wide range of settings in a short amount of time, working with adults and children. There was no better way for me to hone in on where I would fit best over the long-term. It was one of the most valuable components of my education.”



Turning the Tables

It wasn't that long ago that Black was the student with other, more experienced, speech therapists as mentors. But now, just six years after having graduated from the University of Pittsburgh, Black is in the role of tutor and her mentees, first-year graduate students in CSD, are learning the nuances of being speech therapists.

Black is just one of many professionals who participate as clinical instructors for SHRS. She works as a speech therapist for K-5 at Highlands School District in Natrona Heights, Pa., giving her time to more than 60 CSD students each semester.

Interestingly, it was the clinical practicum itself that set Black on her current career course. While she was confident in the fact that she had chosen the right profession, she was a bit hazy while still a student about what working environment would suit her best. Her vision for the future became clearer after her first steady dose of helping children.

"I never thought I would be working with children," she explains, "But one of my last experiences in the practicum was in early intervention in the Pittsburgh Public Schools. It was an amazing experience – really life-changing for me. I fell in love."

After graduation, Black took a job almost immediately working with kids and, while she describes the experience as a big change initially, it didn't take long for her to find a comfortable groove. "The work is more enriching than I would have ever imagined, but at first it was a big change," she concedes. "Working with children in a school environment can be challenging."



Winning Hearts and Minds

As part of the program, graduate students come to work with Black one day each week per semester. The main duty of both mentor and mentee is to provide therapy and guidance to the children with whom they work. But the relationships that develop and the trust that evolves between therapist, graduate student, and child can provide long-lasting lessons in and of themselves.

"I develop long-term relationships with my young students as their primary speech therapist, but the addition of a graduate student clinician into the mix leads to extra opportunities for development both with the children and with my grad students," she notes. "Any way you look at it, it's a win-win for everyone involved."

She adds that her students also benefit from having two people, not just one, show interest in their progress and

growth. "Their confidence is really elevated knowing that so many people are involved in their personal growth. It's unspoken, but it's there. My students really feel good about all the attention they get as part of the practicum."

But the good feelings are far from one-sided.

"The bonds that the graduate students form with the children in my caseload are very strong. During the last day of therapy, it's often my SHRS students who are more upset about ending the practicum and moving on than are the children. It's notable how close the graduate students become with my students. It's the special part of the program that can go unnoticed but, in reality, it is where a good part of personal growth occurs. Graduate students can really recognize the value of their work when it's time for them to move on." ❖



It isn't surprising that throughout the past 40 years the people who have made the biggest strides in disability research and rights have been people with disabilities themselves. Until the Americans with Disabilities Act was signed into law in 1990, the U.S. had a less than stellar track record of addressing the rights of this group. And it has only been within the last 25 years that funding, research, and academic instruction into disabilities have come together to make significant headway in addressing problems and discovering solutions.

It took early pioneers to begin shaping the disciplines that we now know as occupational therapy, rehabilitation science and technology, and rehabilitation counseling. Not only do young fields need scientists and researchers, they also need advocates and devoted educators – people to push the boundaries of the current knowledge and begin training the next generation of leaders. In the field of rehabilitation counseling, Dr. Robert Chubon, an early alumnus of the rehabilitation counseling program at Pitt, is one of those leaders.

An Early Start

Chubon became disabled at a relatively early age after a freak trampoline accident left him with a spinal cord injury in his senior year of high school. The year was 1954 and little was known about how to treat spinal cord injuries. But Chubon slowly overcame the challenges it posed. It took nearly 10 years.

He remembers, "I went from an athletic 16-year-old with a Navy ROTC scholarship nearly in hand to someone struggling with the challenges of a disability. While the treatment for my spinal cord injury was better than it would have been 10 years before, due largely to the advances that came out of

LIFELONG ADVOCACY

Pitt Alumnus Dr. Robert Chubon
a Shining Example of Education
and Advocacy at Work



World War II, it was still a long road. At that age, emotionally, it was a nightmare; but in the end I made it.”

Much of his initial rehabilitation was accomplished at the Kessler Institute for Rehabilitation in West Orange, NJ, and the Woodrow Wilson Rehabilitation Center in Fishersville, Va., pioneers in the rehabilitation field. However, the real breakthrough occurred in 1960 at St. Francis Medical Center’s Department of Rehabilitation Medicine in Pittsburgh.

He was unable to finish his senior year in the months following his injury because, in those days, Chubon was considered too disabled to benefit from even homebound instruction. Despite the lack of a high school diploma, his rehab therapists – who by now had become his advocates – urged him to apply to Pitt. “To say they treated me like family is an understatement.” His SAT scores and solid high school grades won him acceptance. With the support and encouragement from the St. Francis and Pitt staffs, he started at Pitt in the fall of 1961.

The schooling went well for Chubon, despite his limited ability to write. But, he says he studied relentlessly and relied on in-class focus and a good memory. The first two years were a struggle, having to cope with the physical barriers and a deficient high school education, but he was able to raise his grades to a level acceptable for admission to graduate school. The biggest challenge, he explains, was getting to class.

“There were no accessible entrances or elevators in many of the buildings at Pitt in those days and certainly no ramps. So for example, I had to rely on the football team to get me up and down the dorm steps. At that time, I was the first residential student in a

wheelchair to have ever attended Pitt so you can imagine how that situation made me feel. I was well aware that my success or failure would determine if others with disabilities like mine would follow.”

By his junior year, the University had built three wheelchair-accessible dorms and by the time he graduated, 13 residential students using wheelchairs were attending Pitt.

“I was well aware that my success or failure would determine if others with disabilities like mine would follow.”

Experience that Counts

Chubon continued on to earn a Master’s degree from Pitt in rehabilitation counseling and began working with people with disabilities at St. Francis Medical Center. Within two years, he became the administrator of the Rehabilitation Medicine Department where he used his background and experience to refine and expand the program. As a result of guest lecturing at Pitt, he was persuaded to become a full-time educator and earned a doctorate from Pitt in 1979. In 1980, Chubon and his wife, Sandra (NURS ’66, GSPH ’69), moved to Columbia, S.C., where he was an educator-researcher at the University of South Carolina School of Medicine for the next 21 years.

Chubon has written a well-known text book on rehab counseling entitled “The Social and Psychological Foundations of Rehabilitation,” and has authored dozens of peer-reviewed articles on the subject. He also has received wide

recognition and praise for a keyboarding system he invented for people with disabilities. Chubon reorganized the keys on a standard computer keyboard so that the most frequently typed letters are arranged close to the middle of the keyboard, making it easier for people with limited finger dexterity or for those who use a typing stick as he does. He also has gained international recognition for his work in the area of quality of life assessment. And his most current passion, as an author and playwright, has been consuming him in retirement. He’s written numerous plays and short stories and is working on an Internet Web-based memoir.

But in the end, his life’s work has been in helping people with disabilities to live better lives – and educating both professionals and the public at large to do the same for others.

His long road toward full rehabilitation as a young person shaped him as a man and shaped him as a teacher. “Adapting to my disability was a challenge and I’ve committed my whole life to helping others in the same way that I was helped, with compassion and with a total commitment to understanding the challenge, while at the same time challenging the individual,” he explains.

He also credits the opportunity he was given at Pitt for making all the difference in his life and his career. Without it, he admits, his path could have been quite different.

“I’ve always been deeply indebted to the University of Pittsburgh for the education and the opportunity, and I’ve done my best throughout my life to extend that opportunity to others with disabilities. In the end, that’s what counts the most. I have been both proud of and grateful for the leadership Pitt demonstrated by accepting me.” ♣



The Real Wo

Now in the home stretch toward graduation, Thompson is completing fieldwork at The Children's Institute. Her previous experiences at the Western Pennsylvania School for Blind Children affirmed her love of working in pediatrics, which continues with her assignment at the Children's Institute. Additional experiences have included working with stroke patients and those with spinal cord injuries on an outpatient basis at UPMC Southside Centers for Rehab Services (CRS).

On this day, she is working with Colton, a two-year-old who was born with Arnold-Chiari Malformation, a compression of the spinal cord or brain stem. This



rd When Collin Thompson was a sophomore at Juniata College in Huntington, Pa., a friend suggested she might make a great occupational therapist. Thompson did some investigation and volunteer work and decided the profession was right for her.

congenital anomaly consists of elongated peg-like cerebellar tonsils that are displaced into the upper cervical canal. One of the symptoms of the disease is difficulty swallowing or dysphagia.

“Colton has difficulty eating and was severely undernourished,” says Thompson. “Rather than inserting a feeding tube, he was admitted to the Functional Feeding Program about a month ago. We introduce him to a variety of foods, different textures, in an effort to get him to eat more and gain weight.” As an example of some of Colton’s eating issues, she notes he has late dumping syndrome, so he doesn’t feel hungry. On a more personal note, he doesn’t like to get messy so pudding didn’t appeal to him,

although now, after participating in the Functional Feeding Program, he delights in pushing it around his plate.

“One of the first things I did with Colton was to make funny faces out of the food. We’ve also added pasta to the repertoire because it has a different texture,” she imparts. Playing with food is one way to help make eating fun, something that is often missing for children with eating disorders.

The Children’s Institute takes an integrated team approach with patients like Colton. Before he arrived for his rehabilitation session with Thompson, Colton had breakfast with his mother and a behavioral psychologist, who helps

the family understand Colton’s therapy so they can continue with it when he goes home. “Children can fall back to their old eating habits once they leave therapy, so it’s important that we teach Colton’s mother to reinforce what he’s learned once she’s back in the driver’s seat,” says Leslie Paat, an occupational therapist at the Children’s Institute and a co-supervisor and mentor to Thompson.

Colton’s meals have been prescribed by the team clinical dietician, who makes sure his daily nutritional and caloric intake are optimal. Colton also sees a speech-language therapist and the entire team works under the direction of a pediatrician.



Another side effect of Arnold-Chiari is ataxia, the lack of coordination and unsteadiness. Unlike average kids who love to swing, spin, and twirl, Colton does not like these sensations. To help Colton feel more comfortable with these motions Thompson puts him in a swing, “We want him to feel comfortable in the swing and help improve his vestibular movement,” she notes.

“They can throw the food, they can eat the food, they can play with the food, the sky’s the limit.”

As part of Thompson’s fieldwork, she has devised a new twist for Functional Food Therapy, Play Picnic. She remarks that Play Picnic is based on earlier European work designed to make children comfortable with food. “The ‘picnic’ lasts about an hour and is totally directed by the kids, most of whom are two-year-olds – with adult supervision of course,” she smiles. “It’s anything goes for 60 minutes. They can throw the food, they can eat the food, they can play with the food, the sky’s the limit.”

But Thompson’s fieldwork at the Children’s Institute hasn’t all revolved around the Functional Feeding Program. “I’ve had the opportunity to work with young patients with brain injuries, burns, tumors, and those in the RND (reflex neurovascular dystrophy pain) program.”

Before graduation, Thompson has one final fieldwork assignment at UPMC Presbyterian Hospital in acute care. “I’m looking forward to the experience because it will be so much different from my current fieldwork.” But count on Thompson to end up in pediatrics. “I really find working with children incredibly rewarding.” ●



A NEW BRAND OF CAREER BUILDER

There are some careers even young children dream about: a doctor, a teacher, a musician, or actor. These are professions we are exposed to from early in life. School or scouts can broaden our horizons. Literature and film expose us to the legions of possibilities available. The sky's the limit.

But working to help people with disabilities isn't generally at the top of the list. Unless you have family or friends with disabilities, chances are it's not even on the radar screen. So how do students discover careers in rehabilitation science and technology?

Almost since its inception in 1994, the Department of Rehabilitation Science and Technology (RST) has offered undergraduate students the ability to test drive the discipline through a series of internships and undergraduate research programs. "The Research Experience for Undergraduates (REU) began as an informal program to expose students to the subject," says Mary Goldberg, education and outreach coordinator for the Quality

of Life Technology (QoLT) Center and the University of Pittsburgh Department of Rehabilitation Science and Technology. Goldberg is also responsible for the facilitation of the REU, an offspring of the American Student Placements in Rehabilitation Engineers (ASPIRE) Program with grant funding from the National Science Foundation. Students come to REU from a variety of disciplines.

"They may be students in engineering, rehabilitation science, physical therapy, or occupational therapy," Goldberg notes.

Students in the 2009 program will have an opportunity to choose among several research projects including investigating transfer techniques to minimize shoulder joint-loading in wheeled mobility users, building and testing a smart controller for electrical powered wheelchairs, or the development of a Virtual Job Coach for veterans with traumatic brain injury.

"I think it's important for students to work on issues that are real and whose outcomes might really make a difference to a person with a disability," states Dr. Dan Ding, assistant professor of RST and a rehabilitation scientist at the Human Engineering Research Laboratories (HERL). As part of the program, participants also visit the Center for Assistive Technology where they interact with clients.

"The students said they appreciated the experience of interacting with the end users, something they would never have the opportunity to do during their undergraduate years."





The young researchers work hard, putting in 40-hour work weeks running from late May through August. “Students receive travel expenses, a stipend, and housing in the university dorms,” Goldberg points out.

“Nearly 60 percent of the students who ‘graduated’ from REU went on to graduate school, 32 percent of whom pursued advanced practitioner degrees such as physical therapy, occupational therapy, or medicine.”

“At the end of the summer, we hold a research symposium with both internship programs so students can showcase their research in posters and make presentations,” Ding notes, indicating that this year, they plan to

extend invitations to the advisors from the students’ home universities. “If the student comes from the University of Florida, for example, we would invite that student’s advisor or close faculty mentor so they would get to see firsthand the work that the students are doing.” She notes that strengthening relationships with faculty around the country is also important for the program.

Goldberg says all students are required to write a technical paper based on their research experience. They are also encouraged to submit their work to a conference of their choice, such as the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA). “If their paper gets accepted, we underwrite their attendance at the conference.”

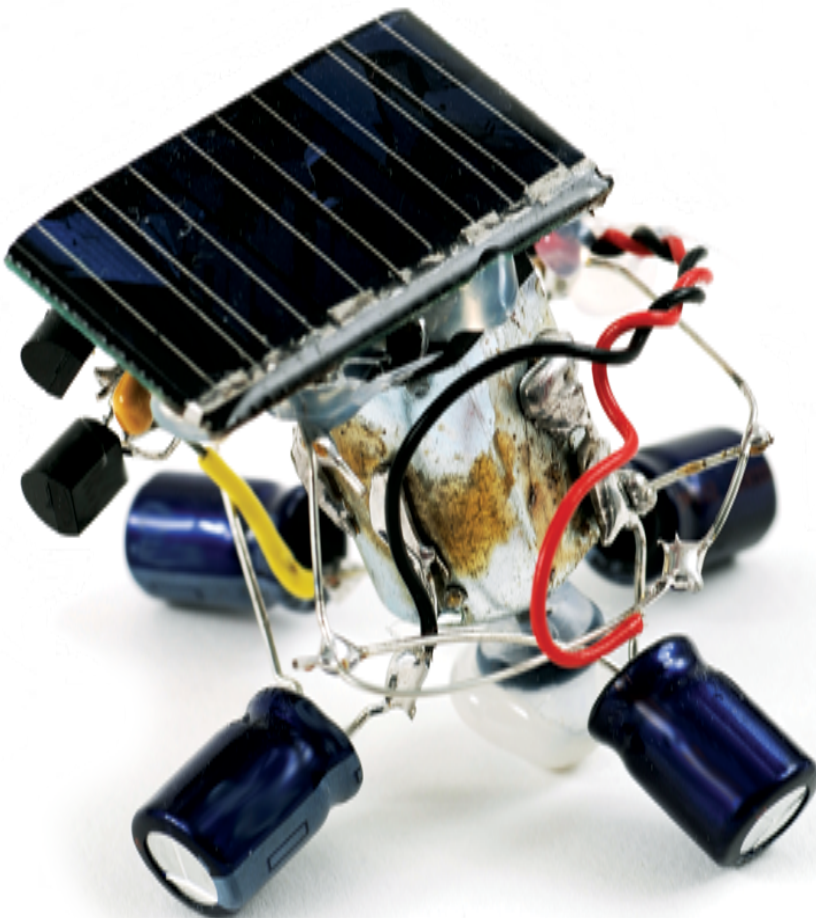
Goldberg has been using modern technology like Facebook to determine how previous participants have incorporated their experiences into their professional or educational lives. “Nearly 60 percent of the students

who ‘graduated’ from REU went on to graduate school, 32 percent of whom pursued advanced practitioner degrees such as physical therapy, occupational therapy, or medicine.” She also notes that her research indicates that nearly 30 percent work in a field related to assistive technology.

The REU program has become more popular as students become more familiar with it. “Over the past three years, we’ve received more than 100 applications, which is triple what we used to get,” says Ding, “So we are definitely more selective.” Goldberg adds, “We just passed the deadline for the 2009 program and received more than 175 applications.”

Encouraging STEM Studies

Programs like the REU rely on undergraduates with a love of science and technology, although they may not start out that way. Many students are challenged by science, technology, engineering, and math, known as STEM subjects. But imagine you’re a middle or high school student with the additional challenges caused by a physical, visual, or hearing disability. STEM subjects may seem even farther out of reach. Enter Tech-Link, whose mission is to encourage students with disabilities to consider careers in technology. Sondra Balouris, RST instructor, is founder and executive director of the program. “We think that it is fundamentally important for young people with disabilities to be able to live functional and independent lives, and careers in technology and the sciences can put them on that road.”



“One way to increase diversity among STEM professionals is to actively recruit students with disabilities at a young age. Tech-Link’s fall robotics camp engages middle school-aged children with disabilities to join teams with their non-disabled peers,” Balouris comments.

“We think that it is fundamentally important for young people with disabilities to be able to live functional and independent lives, and careers in technology and the sciences can put them on that road.”

The 10-week Tech-Link program culminates with the regional FIRST Lego League Competition, in which more than 1,000 students from around the area compete. Fittingly, the event is hosted by Carnegie Mellon’s National Robotics Institute. The FIRST Lego League is a global robotics program that ignites an enthusiasm for discovery, science, and technology in kids ages nine to 14, or 16 outside of the U.S. and Canada.

Each year, world-wide, a theme is selected and participants construct and program robots to fit the theme.


Tech-Link competitors go an extra step in that they conduct a research project relevant to the theme. “One year, the theme was Ocean Odyssey, and the students investigated beach accessibility for people using wheelchairs,” says Goldberg.

Tech-Link students also ‘shadow’ professionals in the sciences and have interned with organizations and companies including HERL, Highmark, and the National Weather Service.

One student with cerebral palsy who participated in Tech-Link is going on to engineering school. “Her mother said that if it were not for this experience, she wouldn’t have had the interest in engineering that she does, and she’s now been accepted to a number of engineering programs,” says Ding. That same student submitted a poster to a QoLT competition and her entry won. Another “six-year veteran” of Tech-Link will complete his first year of engineering at Carnegie Mellon University this May.

Balouris points out that, more and more, Tech-Link students are matriculating into the REU. “We believe this demonstrates that if you can expose students early to STEM subjects – and make them fun and applicable – they can become enthusiastic learners.”





Being literate in modern society means being able to read and write. Yet, “There has been so much attention paid to helping children read that I think we have all but ignored the origins of good writing,” says Dr. Cynthia S. Puranik, assistant professor, Department of Communication Science and Disorders. According to the National Assessment of Educational Progress (NAEP), 75 percent of school-age students only achieve partial mastery of grade-level writing, and just one percent write at a proficient level.

“Just as we can predict which children are at risk for reading disabilities, we should be able to spot the student for whom writing may be a challenge.” And that is what Puranik’s research is designed to address. Thanks to a \$1.1 million grant from the National Center for Education Research, Puranik will soon begin assessing preschool children, ages three to five years. They will be representative of the nation with respect to age, gender, and ethnicity, and will include children from different types of preschools and family socioeconomic backgrounds. Puranik’s research is designed to establish criteria for assessing children’s written language. Her current studies follow a line of research she initiated at the Florida Center for Reading Research, Florida State University, which was supported by a postdoctoral fellowship from the Institute of Education Science, US Department of Education.

**BUT, CAN
JOHNNY
WRITE?**

"I was originally looking at older children when I realized that the origins of writing in young children have not been studied that intensely. Most of the research that had been conducted has been more observational or case study-based but not something that has been quantified," Puranik continues.

Puranik notes that children enter school having had different qualitative and quantitative encounters with print through their experiences at home. She also indicates that it is well known that children living in poverty are disproportionately more likely to be referred for special services such as speech and language therapy or learning disability classes due to poor reading and writing skills and academic performance.

"Perhaps these children come from homes where no adult reads a newspaper, receives a personal letter, or reads books out loud," notes Puranik, who indicates that these children enter kindergarten classrooms with low levels of emergent literacy skills in the areas of language, phonological processing, and print knowledge. "Unfortunately, these children may also attend preschools that don't provide optimal support for the development of literacy skills."

When Does Writing Begin?

Virtually every parent of a young child has turned the refrigerator into a museum, adorned with the latest art created by a budding van Gogh or Warhol. These seemingly meaningless scribbles are an early precursor to the written word. Do you remember the first time you wrote something legible? Probably not, but chances are it was your name – or at least the first letter of your name. Research indicates that this is the case because one's name is important to developing a sense of self and feelings of control.

"This demonstrates again why parents or caregivers are so important to emergent literacy," states Puranik.

Parents attach meaning to the spoken word and that's how children learn to talk. Similarly, parents, caregivers, and teachers attach meaning to early scribbles and that's a first step in learning to write. But it's more complicated than that. "You have to remember that writing also has a motoric component to it, so asking a three-year-old to write his or her name might not be reasonable," she points out.

...75 percent of school-age students only achieve partial mastery of grade-level writing, and just one percent write at a proficient level.

Just as children do not begin to talk by speaking in complex utterances, children do not begin writing in complete sentences. Similar to the development of oral language, the acquisition of writing skill progresses in stages. As children's writing develops, certain features are manifest in their written output. These writing features can be grouped into universal and language specific features. Universal features of writing include linearity (writing units/marks are organized in straight lines), discreteness or segmentation, and lack of iconicity (writing units are abstract) that all languages share. Language-specific features of writing include directionality – left to right – symbol shapes, and spacing between words.

For example, in English we write from left to right, but in Arabic one writes from right to left. "Linearity is a feature that is learned early, which children seem to pick up from watching adults write or from noticing the orientation of print," she points out. "Segmentation, understanding that writing is somehow made up of discrete separate units, comes a bit later. Research suggests that children begin displaying some knowledge of the universal properties

of writing as early as age three, and by four, most children have written output that is linear and discrete," says Puranik. But she adds that it's not really writing as we conventionally know it, but rather scribbles containing made-up letters.

In her earlier research results, Puranik explains, "Our results point more toward a linear progression of learning; development of writing takes place in sequential steps. Early features are mastered first, and these early features, in turn, contribute to the acquisition of later developing skills. As applied to writing, what this means is that children will demonstrate the universal features of writing before they demonstrate knowledge of the language-specific characteristics of their writing system."

Numerous Gaps Remain

Puranik notes that although previous research on emergent writing has been instrumental in the identification of early writing behaviors in young children, numerous gaps remain in our current understanding about early writing. "First, there is no common theory of how writing develops," says Puranik. "Whether the writing of very young children shows superordinate features, ordinate features or both has not been the subject of thorough investigations."

She continues, "Second, with a few exceptions, studies examining early writing have generally involved a small number of participants from select socio-economic groups or have been descriptive case studies."

And finally, Puranik notes that a major shortcoming in research on emergent writing is the lack of consensus on how it should be measured and quantified. Puranik points to the National Early Literacy Panel, which identified 10 studies on writing. "But no study used a similar scoring system and as a result, each child's score varied depending on the criterion used for a particular study."



Consequently, comparisons among studies are difficult and generalization of findings is almost impossible.

In her current research, Puranik is building on her work at the Florida Center for Reading Research. “In the current testing and development stage, we’re looking at what skills are important to writing. How do children learn there are different kinds of print and that print serves different functions? How do they come to the point of recognizing symbols and print? I think

that’s one aspect of it. And then there’s the physical act of writing, and finally being able to put words together and make a coherent sentence.”

Home Environment Key

Just as with reading, young children who have parents, caregivers, or older siblings actively involved with their emergent literacy appear to do better than those who do not. “We don’t really know what specific home literacy behaviors might be responsible for the growth of writing,”

says Puranik. “But it’s safe to say that when children are allowed to explore with writing utensils, when parents actively engage a child in ‘writing’ projects, the kids do better. We don’t know specifically what is more important; is it that parents actually make their children write, teach them the letters of the alphabet, play games with sounds, or is it just sufficient that they point to words in a book.”

Young children mimic what they see their parents doing or something they’ve seen on television. They might pretend to create a shopping list or answer a toy telephone and take a message. Puranik points out that very young children, around two-and-a-half, just know they need to fill in an empty space on paper, and it’s usually with scribbles. But parents help children in other ways. “A baby points and says something undecipherable, but the mother says ‘he wants his bottle.’ Children learn from the meanings that adults assign to what they say. They learn spoken language like that, and they actually learn written language the same way. Adults give meaning to their early scribbles.”

CSD Grant Provides Student Scholarships

The Department of Communication Science and Disorders (CSD) has been awarded a \$600,000 grant from the U.S. Department of Education (DOE) to provide scholarships to qualified students enrolled in the Doctor of Audiology (AuD) program. Students currently being recruited for the Fall 2009-2010 term may receive scholarships that will cover the majority of tuition costs over the three pre-extern school years. Several students currently

enrolled in the AuD program are being selected to receive support.

The DOE program is intended to bring increased attention to the growing nationwide need for practitioners of pediatric and educational (“ped-ed”) audiology. Selection of awardees favors students of high scholastic achievement, strong undergraduate CSD backgrounds, and an expressed career goal of joining the ranks of audiologists working in these fields.

According to Dr. John Durrant, professor and vice chair of CSD and project director, students will be educated under an intensified plan that aims to meet general audiology

competencies and provide a pediatric/educational audiology emphasis.

“Students will receive ped-ed enhanced didactic study, clinical practicum, clinical research, special conferences, and, ultimately, pediatric and/or educational externship placement.”

“Students will also become partners with faculty, working together to focus efforts and resources across specialties on this important area of the audiologist’s practice,” he points out. The program will also strive to bring together audiologists, speech-language pathologists, and educators to increase attention to links across auditory processing, speech-language, and literacy development.

Puranik relates the story of a teacher who tells her young students to write their names and one little girl became excited and proud that she had written her name telling the teacher, "Look, that says my name!" "An untrained person might wonder what the fuss is all about because all the child had was a wavy line on the paper. However, the teacher made those early attempts at writing meaningful and attached significance to a wavy line. I think it was an example of understanding by the little girl that what she writes actually carries meaning."

On-line Environment Creating Shifts

There is no question that the computer has revolutionized our lives in a good way. But it may have also led to a decline in our handwriting skills. "Today, kids are already typing and spending a lot of time on the computer at a young age and we don't understand the long term influence of very little writing on penmanship and writing. There is a good amount of research that shows having handwriting fluidity and speed, not penmanship, is actually a very important component of writing and composing," Puranik cautions.

There is also the question of the 'new' language being created by an overabundance of text messaging, which has led to deterioration in spelling skills. Furthermore, "We have already become reliant on the spell-checking feature on our computers. Even I often have trouble spelling words. I know I can type a word that closely resembles the target word and the computer will

do the rest for me. I don't want to imagine the impact of this on the current generation," Puranik concludes. 🌐



The academic coordinator of the project, entitled "Preparation of Audiologists to Serve Children with Auditory Disorders," is Dr. Deborah Moncrieff, assistant professor. She notes that the grant submission was the concerted effort of the entire audiology faculty and strongly supported by the CSD faculty at large. This is the first grant of its type to be awarded to CSD.

Durrant notes that, although a great deal of successful research has been conducted to develop universal newborn hearing screening and early intervention of hearing impairments, the AuD degree has been strongly driven by advances in the

diagnosis and treatment of hearing problems in adults, especially in the aging population. Technical advances and information growth have similarly greatly benefited the diagnosis and treatment of children, even young infants, yet, according to Durrant, the growth rate of audiologists going into pediatric and educational audiology is rather flat.

"Encouraging students to pursue ped-ed will help ensure a continuing pool of trained professionals." 🌐





Health Care Delivery in Far Away Places



It is said that necessity is the mother of invention. Sometimes this cliché even helps plot the course we take in life. That's what happened to Dr. Sajeesh Kumar, assistant professor, Department of Health Information Management. As a young boy in rural India, Kumar's grandfather was working in the fields when an accident caused a serious eye injury. While the general practitioner did his best, by the time they traveled to the city to consult an eye specialist, Kumar's grandfather had lost his eyesight.

"I thought, why should we have to go to the city? Why did we have to wait for hours and hours and hours in the clinic?" says Kumar. As he grew older, he realized that when Neil Armstrong walked on the moon in 1969, NASA scientists were able to monitor his heart rate from 250,000 miles away. "Telemedicine isn't new; we just needed to adapt it to the various medical disciplines."

So began Kumar's educational sojourn, first with a degree in vision science from the Medical Research Foundation

in India, to a master's in medical informatics from Erasmus University in The Netherlands, and finally a doctorate in telemedicine from the University of Western Australia.

"Telemedicine uses telecommunications to deliver health care, often over great distances, with potential cost savings, particularly in remote and rural areas. It is a multi-disciplinary undertaking requiring expertise from the telecommunications, health care, and information technology sectors," Kumar explains. "However, there are also concerns about liability, confidentiality, and other policy and regulatory issues." So the discipline is working to adopt sound policies and strategic plans that guarantee the provision of high-quality, sustained, and integrated health care services.

And Kumar has studied the practicalities of telemedicine around the world. No more profound an example of where it is successfully being used is the Republic of Seychelles, an archipelago of 115

islands 1,000 miles east of Africa in the Indian Ocean. The total number of inhabitants in the island chain is just 82,300.

There is one primary hospital in the capital of Victoria, some private clinics, and community health centers on just four of the islands, making regular medical care and screenings for the average resident very difficult. Patients need to be transported by boat to the main island for specialist care. Therefore, the Seychelles represented an enormous opportunity to demonstrate the importance of telemedicine.

"With my personal interest in vision-related diseases, I focused on glaucoma, the second leading cause of blindness today after diabetic retinopathy.

"I wanted to do further investigation of telemedicine and I found Western Australia to be ideal," Kumar points out. Western Australia is the second largest subnational entity in the world – almost a million square miles – yet has a population of just 2.1 million.

As an example, he points to the northern town of Kununurra, with just 3,700 inhabitants, some 1,900 miles from the capital of Perth. Kununurra is too small to support its own hospital, yet too remote for citizens to regularly travel to health care facilities in the capital.

Traditionally, ophthalmologists and other medical personnel would travel to far-flung sections of Western Australia once or twice a year. But this was an expensive undertaking, Kumar points out, often costing \$8,000 per week.

But the idea of tele-ophthalmology was appealing to the Australian Department of Health. "Web-based eye care makes incredible sense," says Kumar, noting that it increases efficiency, results in digital, quality images, and newer technology has mitigated band-width problems.

"We can train non-professionals, including retirees, to operate the equipment, which is very user friendly." Images taken with new, portable devices are stored on a laptop and then uploaded to a centralized server. When a patient is screened, an e-mail is automatically sent to an ophthalmologist who can provide the patient with a diagnosis within 24 hours.

Kumar comments that early in the process, around the year 2000, there was some concern about patient confidentiality. "But today, we have excellent firewalls and secure systems that insure all information is protected."

The Evolution of Medicine

Telemedicine is just the next step in a medical care system that has evolved over the last century. "There has been a shift in medical care delivery – away from the hospitals and into the community." In fact, \$155 million from the American Recovery and Reinvestment Act (ARRA) has been released to establish more than 5,500 community health centers across the nation.

"People now want quality health care in their neighborhoods, or even in their homes," says Kumar. "They ask their physician for certain treatment or medications. There is extensive information available on the Internet and patients are becoming much more savvy about their care."

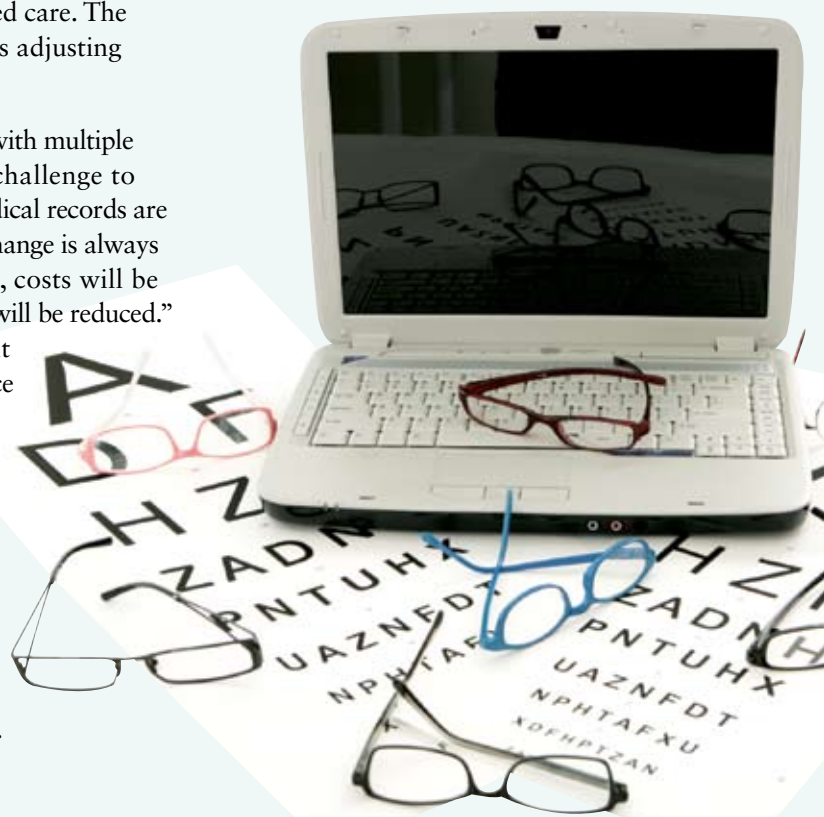
"Electronic medical records are the way of the future. Change is always difficult, but in the end, costs will be reduced, medical errors will be reduced."

"I think the shift in the current century will be toward even earlier diagnosis and prevention rather than treating the disease," he continues. Continuing advances in genotyping could allow more individualized treatment. "But at the same time, the population is aging, and there will be more morbidity and multiple diseases to treat. I witnessed this in Singapore, where patients required more specialized care. The medical establishment is adjusting to the new paradigm."

And of course, patients with multiple diseases are a greater challenge to manage. "Electronic medical records are the way of the future. Change is always difficult, but in the end, costs will be reduced, medical errors will be reduced." The federal government recognizes the importance of electronic records. The ARRA includes \$19.2 billion to jumpstart the task of EMR expansion, and President Obama's proposed budget allocates \$76.8 billion over 10 years to continue the process.

As telemedicine becomes more common, the importance of electronic health records will grow. The accessibility of up-to-date information on diagnosis and medications, for example, will be paramount to success. Just as importantly, the records will be updated quickly and easily, ensuring that the next health care professional will have access to the new data. Kumar also points to a green benefit to electronic medical records, "Think of the trees that we'll save by switching from paper records."

He takes it a step further, "Offer carbon credits for people who use telemedicine. The health care industry is already one of the biggest users of energy in this country. If we can eliminate the need for patients to drive to see their physicians or health care professionals, we can improve health care delivery and help save our resources." ☉





No doubt at some point in your life, mom admonished “Don’t play with your food!” Be honest, a serving of peas scattered around the plate just might have been missed.

But for Judith L. Dodd, adjunct assistant professor, Department of Sports Medicine and Nutrition, and some of her students, playing with food is learning about food – with a serving of nutrition on the side. During March, National Nutrition Month, Dodd and the students took their “food play” to the Children’s Museum of Pittsburgh for what the museum dubbed, “Get Moving, Get Healthy!” The activity was part of the We Can! series, promoting healthy, physically active play, sponsored by UPMC Health Plan and the Giant Eagle Child Development Series.

“...they frequently can’t identify a real carrot, which is not too surprising since most kids today eat short-cut carrots.”

“The Children’s Museum is a great place to conduct this kind of activity,” says Dodd. “They have a young clientele who are generally accompanied by parents or caregivers, which is great for exposing the whole family to good nutrition and health.” She further notes that parents take their children to the museum because they are interested in an educational experience so the kids are generally predisposed to learning.

Dodd and her students see a lot of home-schooled children and school groups, as well.

“We always bring hula hoops and jump ropes because we want to highlight how important it is for kids to be active,” Dodd continues. They also offer interactive games that help children learn about foods and the food pyramid. Common items like apples are placed in a bag and children have to identify them just by touch. The kids are given clues, ‘it’s a fruit, it’s a vegetable,’ which vary depending on their age.

And how do the children do? “Surprisingly well,” Dodd reports, “Although they frequently can’t identify a real carrot, which is not too surprising since most kids today eat short-cut carrots.” There are also the occasional unfortunate errors, like mistaking healthy low-fat mozzarella sticks for beef jerky.

“We like to get a discussion going about food and nutrition. One game children seem to enjoy is fishing for food,” she points out. Once they’ve ‘caught’ the food, they have to place it in its food group or identify where it lands on the food pyramid.

For Dodd’s graduate students, this is part of the course Supervised Practice in the Community, which places students in settings that span the life cycle. “It’s an opportunity for the students to see that these are good venues to take nutrition education and to watch the interaction with the parents, who, of course don’t want their children to fail.” It could prove embarrassing for a parent if his or her child can’t identify a common, healthy food.

Nutritional Knowledge Decreasing

Despite the fact that more people, including young children, are obese, our knowledge of good eating habits seems to be on the decline. Even children’s knowledge of actual food and where it comes from is on the decline. “For some kids, they think a fruit comes in a little plastic container that you drink with a straw or you find peas in the supermarket in a can or the freezer,” laments Dodd. “And lemon juice comes from a squeeze bottle.”

She also notes that we have given people permission not to cook. “In my estimate, we are on the third generation of food illiterates. We gave up home economics in schools. We gave up the idea of home cooking. The finger that activates the microwave is the same one we use for the TV remote and, for some people, that’s probably the most exercise they get in a day.” But Dodd and her colleagues and students are trying to reverse the trend.



Helping K

They are out in the community, not just in museums, but in schools and even grocery stores trying to spread the importance of good nutrition for children. "This course takes the students into various community settings," she notes, including childcare centers, senior centers, a WIC program. They are required to go to certain core places, but at the same time, students have the option of volunteering at certain events and locations."

She cites student support of a collaborative research project designed by Carnegie Mellon University School of Design and UPMC Saint Margaret Family Health Centers called FitWits™. Created to help primarily inner city kids and their families achieve healthy lifestyles, FitWits includes fun characters like Elvis Pretzley, Monty and Jack, and Sunny Yoke to help children learn about the difference between healthy and not-so-healthy foods.

As part of Nutrition Month awareness, participants were invited to the Shadyside Market District supermarket for a scavenger hunt to track down the FitWits and the NitWits, including the Fry Girls, Lolly Parton, and Chip and the Little Dipper Crew.

"We offered the same games and activities as we did at the Children's Museum," says Dodd. "We also closed down the café, which didn't endear us to the senior community who consider it home."

Because most of the kids involved in the program already had the advantage of their FitWits education, they were fairly knowledgeable about healthy foods and the importance of activity.

Don't Overlook an Opportunity

Books can help even the youngest children learn the ABCs of nutrition, Dodd points out. And she and her students have held story hours at local libraries and supermarkets, even developing lesson plans surrounding books like *Green Eggs and Ham* and *The Berenstain Bears and Too Much Junk Food*.

"Green Eggs and Ham is a great way to teach kids about trying new foods," according to the lesson plan that comes complete with a recipe.



But she acknowledges that it's often the parents who make food decisions for their children with little or no input. "A parent might say 'Oh, they won't like that food' when in fact, they like it very much once they've had a chance to sample it," declares Dodd.

In all, Dodd is more than satisfied with the community-based activities in which she and her students participate. "There's so much more we could do but there just aren't enough entry points and people to get the job done. Wellness is a commodity that isn't reimbursed and the assumption is everybody knows how to eat and everybody knows good nutrition. We know that's just not so, and the research proves it," Dodd concludes. ☸

Kids Eat Right



Aging affects us all differently. Depending on lifestyle, diet, and genetics, the aging process can vary greatly. In the same way, our brain changes as we age and has profound effects on mood, memory, and motor function. While there has been a great deal of research in recent years on the changes in the brain of the elderly, in many ways, we have yet to connect all the dots.

Dr. Patrick Sparto, associate professor, Department of Physical Therapy, has been interested in the correlation between changes in the brain in the elderly and the loss of balance, posture, and mobility for several years. He recently began preparing studies he will conduct as part of a new four-year \$800,000 National Institutes of Health (NIH) grant. His primary focus is on the study of the degeneration in white matter pathways of the brain.

Sparto initially became interested in the brain while working at a balance disorders clinic. After treating a wide range of older adults, including those with excellent strength and sensation, it occurred to him that the central nervous system had to be responsible for a slow-down in motor skills as people age. As he took a closer look, he felt sure these changes were directly related to the brain. As Sparto began to examine the issue more closely, he honed in on white matter as the root cause; specifically, he hypothesized that as white matter degenerates as we age so does our balance and ability to walk.

Brain Anatomy 101

To truly understand the potential impact of Sparto and his team's research, it's important to first know the physiology.

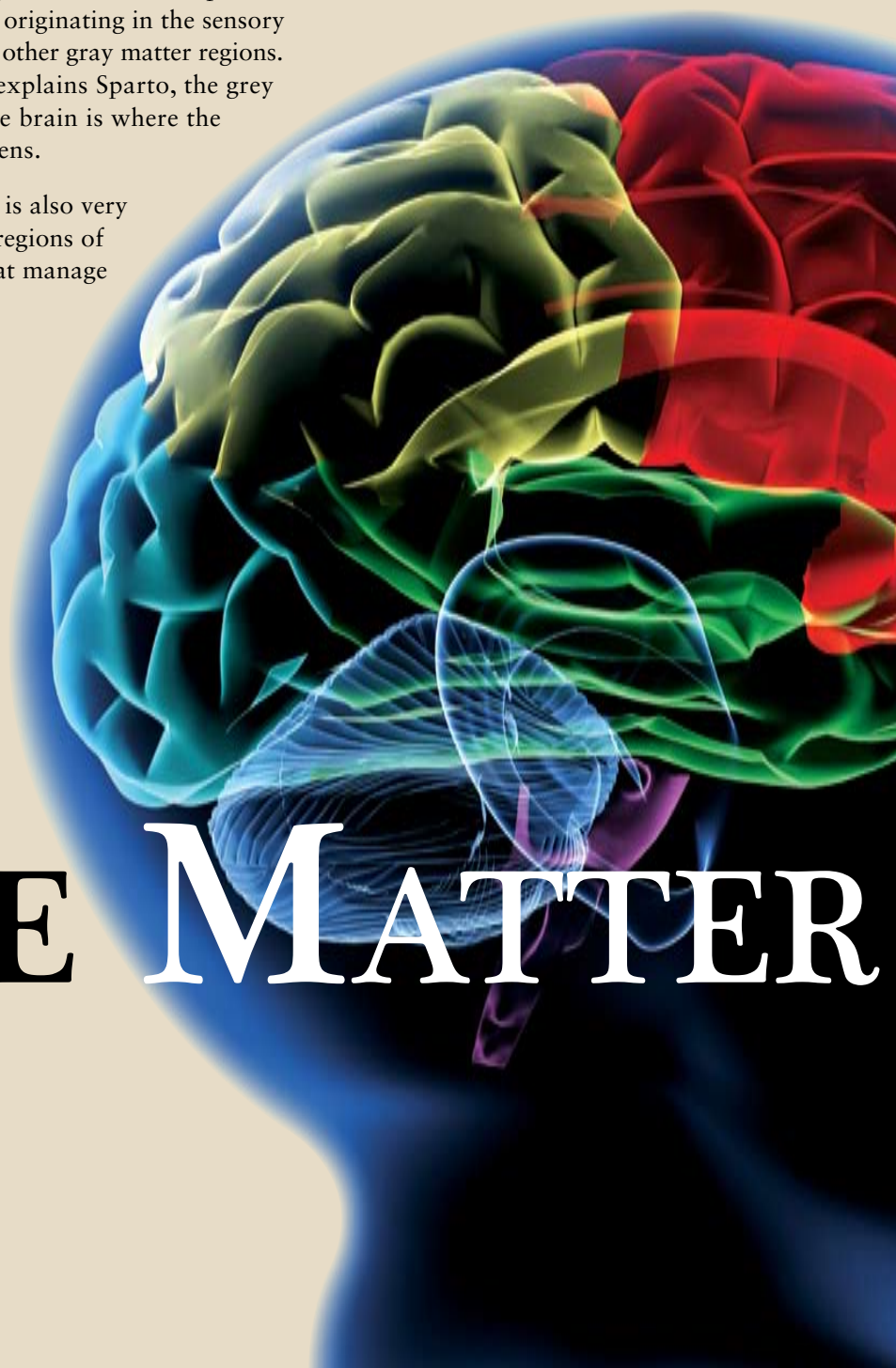
Grey matter is a major component of the central nervous system, consisting of nerve cell bodies, glial cells, capillaries, and short nerve cell extensions/processes – axons and dendrites. Its function is to route sensory or motor stimulus to inter-neurons of the central nervous system, the part of the nervous system that consists of the brain and the spinal cord, in order to create a response to the stimulus through chemical synapse activity. Gray matter structures process information originating in the sensory organs or in other gray matter regions. Put simply, explains Sparto, the grey matter of the brain is where the action happens.

Grey matter is also very involved in regions of the brain that manage

muscle control, sensory perceptions like sight and hearing, as well as memory, emotions, and speech.

White matter, on the other hand, is composed of bundles of axons, and is the connector between various grey matter areas, carrying nerve impulses between these areas. Says Sparto, "When one part of the brain communicates with another part, that message is directed along a pathway which, in essence, is the white matter in our brain."

Using a common analogy, Sparto says that if our brain were likened to a computer network, the grey matter



WHITE MATTER

would be the individual computers while the white matter represents the network cables connecting the computers together.

It is the white matter that is of particular interest to Sparto.

Dissecting the Problem

Aging can lead to degradation of the white matter in the brain. As the pathways that connect the grey matter areas erode, they lead to the reduction of a host of functions, including cognition, mood regulation, and most notably to Sparto, balance, walking, and other motor skills dealing with mobility.

“We know that a loss or degradation of gray matter leads to a number of conditions, including dementia, Alzheimer’s disease, and Parkinson’s disease, and it seems clear that

similar neurological functions also are spawned by a loss of white matter. But the specifics remain unclear,” he posits.

Perhaps the most common disease that affects white matter is Multiple Sclerosis (MS). In this devastating disease, which usually occurs in young adulthood to middle age, white matter is destroyed by inflammation and motor skills decrease over time. The white matter degeneration that occurs in older adults is a different disease process. It is thought to be caused by a reduction in blood flow to certain areas of the brain, in a similar way that clogged arteries reduce blood flow to the heart and extremities.

Sparto continues, “Getting to the bottom of how white matter loss affects us remains one of the big mysteries of the brain – especially as it’s tied to aging.”

Sparto and his team will recruit, meet, and work with 120 adults over the age of 70. There are no specific criteria each person must meet to qualify for the study other than age. Sparto says, “The only criterion is that each person can still move about in the community – it’s pretty inclusive.” Most of the recruitment has been done through the University of Pittsburgh Claude D. Pepper Older Americans Independence Center, but Sparto and the team have also been recruiting participants in the community.

Each individual will be guided through a series of balance and physical therapy-related skill activities and

evaluated based on their performance. Then each will be given an MRI to examine the quality of the white matter in the brain. “We’re hoping that a close look at mobility and balance testing compared to white matter changes will lead to some stronger conclusions about the connection between the white matter loss and loss of mobility,” he says.

Getting to the bottom of how white matter loss affects us remains one of the big mysteries of the brain – especially as it’s tied to aging.

While the study is still a long way from completion, Sparto feels that the connections between mobility and white matter loss are too strong to ignore. In addition, he believes it is important to understand the relationship because it may impact the rehabilitation process. For instance, other studies have shown that white matter degeneration affects learning – a critical component for any rehabilitation.

Ultimately, helping people to maintain motor skills and balance longer will prevent injuries – keeping them out of the health care system and saving money. But beyond this, there’s the more obvious motivation: helping older people everywhere lead more healthy and productive lives. ☐



DOES MATTER



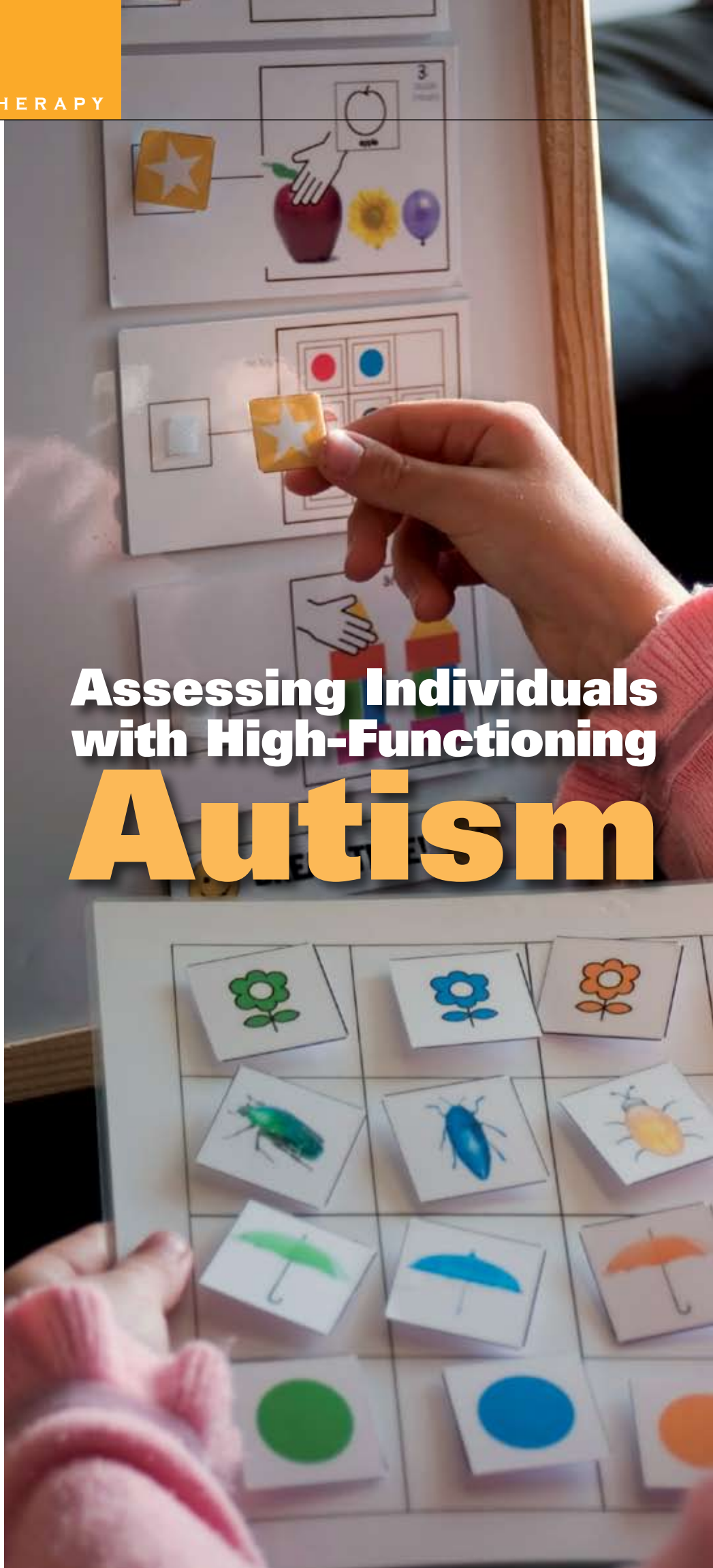
There are more than 1,700 international students enrolled at the University of Pittsburgh. They come from developing nations and member countries of the G8, representing every continent and region of the world. Some come from wealthy families who recognize that an American university education is essential to advance in a global economy. Others have been singled out by their governments to come to the U.S. and learn science, medicine, engineering, and other disciplines so they can return home and aid their countries and fellow citizens.

Such was the case with Dr. Sana Abu-Dahab, currently chair and assistant professor of occupational therapy (OT) on the Faculty of Rehabilitation Sciences at the University of Jordan in Amman. After receiving her undergraduate degree from Jordan, she was tapped to travel abroad to study pediatric occupational therapy. It became her charge to study the latest methods for OTs working with children with autism. Globally, one in 166 children is born with autism, and in Jordan, diagnosis of autism is on the rise. In the U.S., it is estimated that one in 150 children is born with autism.

Autism is a developmental disorder characterized by qualitative impairments in socialization and communication, and by repetitive and restricted patterns of behavior. It is the result of disturbances in the development of brain connections. Rare cases have been associated with abnormalities in genes that code for the formation or maintenance of contacts between brain cells. Some cases are the result of other neurologic, metabolic, genetic, or infectious diseases. The cause of most cases though is not yet known.

So began Abu-Dahab's venture into SHRS and the Department of Occupational Therapy, where she first earned a master's degree. "When it came time for Sana to begin her PhD dissertation, we asked Dr. Nancy Minshew if she would serve on the committee," says Dr. Margo Holm,

Assessing Individuals with High-Functioning Autism





professor and director, Post-Professional Education in OT. Minshew, an international authority on autism research and treatment, is director of the NIH-funded Autism Center of Excellence at the University of Pittsburgh–Carnegie Mellon University.

“Sana came forward with four different proposals for her dissertation, which were all excellent. But given the timeframe, we believed they were unworkable,” says Minshew.

Holm and Abu-Dahab suggested a secondary data analysis, using Minshew’s existing research databases. Holm points out that every person in the database has undergone an Autism Diagnostic Interview and an Autism Diagnostic Observation Schedule. “Both of these tools are used to ensure that there’s standardization across research sites, and that there’s reliability and validity in the diagnosis,” says Minshew. In addition, each individual has an IQ score greater than 80, classifying them as high-functioning.

Using the databases, Abu-Dahab set out to explore motor, sensory-perceptual, and executive functioning skills in individuals with high-functioning autism (IHFA). “Executive functions allow us to anticipate outcomes and adapt to changing situations. The ability to form concepts and think abstractly are often considered components of executive function,” according to Minshew.

Three’s a Charm

Abu-Dahab conducted three studies: in the first, she examined simple motor skills, such as grip strength and the Finger Tapping Test, and complex motor skills, as measured by the Grooved Pegboard test. The data included IHFA and IQ-matched typically developing individuals (TDI), ranging in age from 5 to 21 years old. Simple sensory-perceptual skills and complex sensory-perceptual skills were also examined within the same two groups.

Says Abu-Dahab, “The IHFA were found to be significantly impaired, when compared to TDI, on all motor measures across the age continuum with one exception: the speed of tapping revealed no differences between the two groups at a young age (8 – 9 years old),” but for older IHFA (14 – 15 years old) the impairments were significant.

“In children from 5 to 8 years old, the study found that grip strength was significantly weaker than their typically developing peers, which has not been reported in the literature anywhere,” Holm points out.

Globally, one in 166 children is born with autism, and in Jordan, diagnosis of autism is on the rise.

Minshew states that the grip strength differences that were demonstrated provide additional evidence that the basal ganglia might be involved in or responsible for some of the motor symptoms of autism. “Sana’s research documented the motor problems, sensory problems, and of course, the widely known executive functioning problems. The presence of motor and sensory abnormalities means that what’s different about the brain of a person with autism has to be much broader than just the social, language, and communication systems. We now have to address motor and sensory skills.”

In her second investigation, Abu-Dahab developed a statistical model that explained relationships among factors that predicted or were associated with good and poor complex fine-motor skills or skilled motor movements (psychomotor speed, hand-eye coordination, and manipulative dexterity), as measured by the Grooved Pegboard test.



There were several factors that played an important role in complex fine motor skills in the IHFA model, such as educational level, memory, attention, and visual-spatial skills. “But in the TDI model, age, fine motor skills of the non-dominant hand, memory, and problem-solving skills were the influencing factors,” says Abu-Dahab. This means that IHFA may need to rely on structured experiences, such as school, to acquire the complex fine motor skills that are simply or automatically acquired with age in a typically developing individual,” she continues.

Her third investigation also developed a statistical model to delineate relationships among factors predicting good and poor executive functioning skills, as measured by the Wisconsin Card Sorting Test. Says Abu-Dahab, “In general, we found similar factors predicted performance: complex language/concept formation and memory were important factors in both of the models, one for IHFA and one for TDI. However, the order of importance of each factor for contributing to good executive functioning skills was not the same for IHFA and TDI.”

Findings May Alter Interventions

“These findings are of significant clinical importance for guiding assessment and intervention planning for IHFA,” Abu-Dahab continues. “While memory

skills appear to enhance the capacity of executive function skills, their influence for IHFA seems to be secondary to complex language/concept formation skills that are usually challenging for high-functioning individuals with autism.”

“We used to believe that rote learning was appropriate for complex motor skill development for IHFA” interjects Holm. “Letters like b, d, p, q are similar, so we would have the children practice copying them over and over again.”

Given Abu-Dahab’s findings, therapists need to focus on attention and problem-solving in addition to practicing complex motor skills. “For example, therapists need to have the child focus on the b and the p in isolation, and point out that both are made of circles and lines, but ask ‘how does the b differ from the p?’” she continues.

“I think that Sana’s work suggests there are many reasons IHFA have difficulty with complex motor skills, and the models she developed provide guidance for therapists – which skills to focus on first, and how to build on those skills. It

encourages therapists to think outside the box and determine why they can’t write letters, and offer a functional analysis of behavior,” Holm maintains.

Minschew offers, “I think it’s very important that the occupational therapist, who can be the entry point into the health care system, isn’t just confined to evaluating and working with the motor system or the sensory system, but sees that in relation to all the other impairments. They need to have a holistic view of the child, to tackle more than one challenge at a time.”

In summary, Abu-Dahab’s findings support the importance of motor and sensory skills in the assessment and intervention of individuals with autism of all ages. Her results provide guidance about how to intervene in a tiered approach to build skills in the motor and sensory areas in connection with building skills in language and problem solving. “Sana’s research and return to Jordan exemplify how the training of one person in an area of need – in this case autism assessment and intervention – can introduce improvements to the entire health system of a country,” Holm asserts. 🌐





Cindy Miles with associate
Andrew Sutphin (PT '05)

Dialogue

*A Conversation with
Cynthia Miles*

Cynthia Miles

Cindy Miles is a 1977 graduate of SHRP, now SHRS, with a degree in physical therapy. Today, she directs a successful pediatric therapy practice in the Lehigh Valley. She is Board Certified by the American Board of Physical Therapy Specialties as a Pediatric Clinical Specialist, and serves on the executive committee for the Section on Pediatrics of the American Physical Therapy Association (APTA).

After you received your PT education, what were your career plans?

My initial interest was in pediatrics and sports medicine, so I took a position at an acute care hospital thinking that was the place for me, and it was. A shift in my personal life led me to find more flexible employment so I joined United Cerebral Palsy (UCP) of Northeastern Pennsylvania. It was then I discovered a passion for working with children of all abilities. After several years, I decided to strike out on my own, offering private physical therapy. In 1993, we opened a facility we designed and built. The growth of the practice has been very rewarding.

You now offer a full range of therapies and other programs. How did that come about?

We began adding services to accommodate our clients. A mother requested speech therapy for her child, so I called on a former colleague to provide the service. The addition of an occupational therapist followed suit. We expanded to provide early intervention for infants and toddlers, engaging an early childhood education teacher. We saw a need for fitness programs to encourage children to participate in cardio and strengthening activities. Therapeutic aquatics was the next logical step, so we built a pool.

How many clients are you currently serving?

We currently serve about 275 clients in 300 visits per week, which is low for a private practice of our size. With the exception of swimming, each child is seen one-on-one for an hour each session. A traditional therapy practice could be coordinating as many as four patients in that time. Children of all abilities require individualized therapy.

Please describe the children you see in your practice.

Our primary focus is children, birth through young adult, including young athletes with sports injuries and children of all abilities for fitness programs. We strive to build on each individual's strength so they can achieve maximum ability. We provide an accessible area where individuals can work independently on their performance including muscle strength, cardio endurance, functional ability, and mobility. When I lecture on fitness, my mantra is 'Fit for Life.' I believe that physical therapists can provide training and fitness for their challenged clients and encourage children of all abilities to be active. Parents are among their children's best advocates. The therapist just needs to provide the tools and encouragement to find activities that interest their whole family.

Tell us about Fun & Fitness Day, celebrating its 10th anniversary.

A few young boys challenged me to run in a race at the local UCP; but when that race was cancelled, we staged our own. We secured a local park and provided a day full of fitness and fun for our clients and families. That year, we had about 50 children participate and seven sponsors. Last fall, we had more than 250 participants, 40 volunteers, and 30 sponsors. It's evolved into a great family event.

The Lehigh Valley seems to be very supportive of children with disabilities.

In 2006, a local father wanted to start a Miracle League – baseball played on a rubberized field so that ALL children can play. He pitched the idea to a group of local donors, and within five months, they prepared a \$750,000 complex for opening day. They

came to us for assistance in fielding teams. Our staff and volunteers continue to participate as "angels in the outfield," and I joined the board.

We began a chapter of AmTryke, a subsidiary of AMBUCS, an organization dedicated to creating mobility and independence for people with disabilities. AmTrykes are therapeutic tricycles designed for kids unable to ride traditional bikes. Our goal is to raise \$12,000 to purchase 20 bikes by June. We started the ball rolling, but we're turning the leadership over to the community. Camelot House and Dream Come True are two other organizations here that support children with disabilities.

Are there 'alumni' of yours who still stay in contact?

Absolutely, there are many who stay in touch, some have come back and volunteered. One young man, born without bilateral femurs, went on to win two gold medals, one silver and one bronze in swimming at the Paralympics in Atlanta, Barcelona, and Athens. He came back last fall to share his experiences. He's just one of the reasons I love my job.

What are you doing to help the profession and future therapists?

We accept interns from across the country, and volunteers from colleges and high schools throughout the area. It's a win-win for everyone. We are also planning a residency for physical therapy graduates. Personally, I'm seeking a doctorate in pediatric physical therapy and hope to contribute to much-needed research. I'm pleased to play a role in helping future therapists and children and their families, and I am grateful for my education and the opportunity to have attended the SHRS physical therapy program!



I got rhythm, I got music...

...and I got a great feeling when I made a gift to SHRS. Whether it's an annual gift, a pledge to be paid over time, or a planned gift to be completed at some point in the future, your donation to the School of Health and Rehabilitation Sciences will ensure that our proud tradition of educating talented and caring therapists, clinicians, and researchers continues. So dance the night away, but don't let another day go by without putting your best foot forward with a gift to SHRS.

For more information, contact Patty Kummick, director of development, at 412-383-6548 or pkummick@pitt.edu.

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