

FACETS

School of Health and Rehabilitation Sciences
Spring 2001



University of Pittsburgh

FACETS

SCHOOL OF HEALTH AND REHABILITATION SCIENCES — SPRING 2001 — CONTENTS

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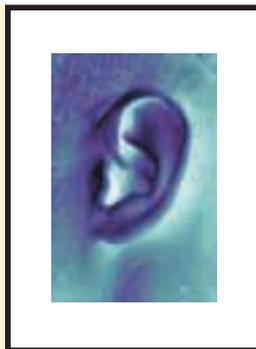
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Words





W

elcome to the inaugural edition of *FACETS*, the new SHRS Magazine.

We are all very excited about this new adventure in communication. We believe that it affords us new opportunities to tell our extended family and community about people and events at SHRS. As you will see, there is indeed much to share. More about this in a moment.

The concept of *FACETS* fits SHRS particularly well. We are indeed a multi-faceted community. SHRS presently is host to six departments, including seven (soon to be eight) academic health and rehabilitation disciplines and professions. We also are host to several noteworthy research and clinical centers of excellence. As anyone with experience in the practical world of health care knows, with extensive professional diversity comes the risk for compartmentalization. I believe that it is indeed a credit to the members of our social and academic community that we have been able to develop programs of individual excellence and to recognize and promote diversity in its many forms while functioning effectively as a cohesive family of complementary programs and centers.

By now, you probably have heard about the *U.S. News & World Report* rankings for “best graduate schools” that were released early in April. Once again our programs for which rankings were compiled (Physical Therapy, Occupational Therapy, Speech-Language Pathology, and Audiology) fared very well, ranking from 3rd to 23rd among programs nationally. It is noteworthy that these SHRS programs were the highest ranked among Pennsylvania universities in these disciplines.

Spanning the disciplines of SHRS is a new undergraduate major in Rehabilitation Science. In the same manner that our then unique Ph.D. program in Rehabilitation Science established opportunities for study and research over a common continuum of rehabilitation and disability when it was launched in 1995, we now have a program of study to open these areas to undergraduates. Students entering this program are presented

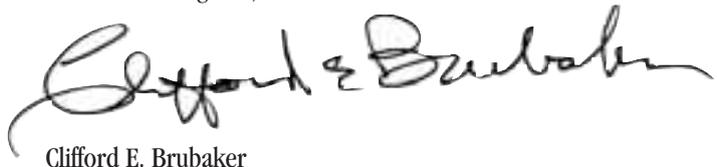
with a common curriculum that not only lays the foundation for careers in Rehabilitation Science, but also provides for options to qualify for admission to the entire range of health and rehabilitation professions. Among these is our newly-conceived program in Sports Medicine and Nutrition.

It is not possible to note even briefly all the developments and the spectrum of events that have taken place here at SHRS — but then that is part of the reason for *FACETS*. I believe that it will provide you with a new look at the multi-faceted and multi-talented community of SHRS. I believe you will like what you see.

Finally, I want to acknowledge the addition of two new stars to our firmament. Dr. Scott Lephart, Director of the Sports Medicine and Athletic Training program and Director of the multi-disciplinary Neuromuscular Research Laboratory in the Sports Medicine Center at the new UPMC Southside Complex, has joined SHRS as a result of the transfer of the Sports Medicine program to our school. SHRS also has the extraordinary good fortune to welcome Dr. Katherine (“Kate”) Seelman as the newest member of our faculty. Prior to her arrival at Pitt and SHRS, Kate was the Director of the National Institute for Disability and Rehabilitation Research (NIDRR), the most substantial and influential agency for rehabilitation and disability research and development in the Federal government. Kate will serve SHRS as Visiting Professor of Rehabilitation Science and Technology and Acting Associate Dean for International and Government Relations.

Please stop by to see us when you can. Also remember to visit our website: www.shrs.pitt.edu. We all hope to see and hear from you soon!

With kindest regards,



Clifford E. Brubaker

The public phase of the Capital Campaign for the University of Pittsburgh was launched in October 2000 with the lectures, tours, dinners and eye-popping pyrotechnics of Discovery Weekend. To date, the School of Health and Rehabilitation Sciences has raised close to \$3.5 million. When the Campaign ends in June 2003, we hope to reach our goal of \$4.5 million.



Karen Khan

The generosity of you — our alumni and friends — has contributed to our success thus far, and YOU are critical to our success in the future. Your gift to the annual fund provided us with unrestricted funds to increase financial aid, support student research, develop innovative programs, and meet other needs not fully covered by our annual budget. Your contributions to our scholarship endowments have made it possible for us to attract the best students, and to reward academic excellence.

However, the competition for the best and the brightest — both students and faculty — depends on the level of support a school can offer a candidate. We can never have enough endowments. Not only do they create scholarships for deserving students, endowments support faculty recruitment, faculty development, advance cutting-edge research, and enable us to provide valuable clinical and community services.

With your support, the School of Health and Rehabilitation Sciences will remain an international leader in the field of rehabilitation, disabilities, and assistive technology.

For more information on how you can become part of the future of SHRS, contact Karen Khan, Director of Development, at 412-383-6548 or via e-mail at ktkhan@shrs.pitt.edu.

FACETS

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University of Pittsburgh

U.S. News & World Report Gives High Marks to 4 SHRS Programs

Four graduate programs of the University of Pittsburgh's School of Health and Rehabilitation Sciences (SHRS) have earned top spots in *U.S. News & World Report's* 2002 annual graduate school ranking guide.

The Department of Physical Therapy once again finished third among Physical Therapy departments across the nation. Two programs under the Department of Communication Science and Disorders, Speech-Language Pathology and Audiology, also maintained their rankings of 18th and 23rd, respectively. A strong new addition to the list of ranked programs was the Department of Occupational Therapy, ranked 17th.



A SITE TO SEE

If you haven't stopped by the SHRS website recently, you're in for a surprise. After a complete content and navigational overhaul, the site is easier to use, has a look and feel that is consistent with our other materials, and is ADA compliant.

The revamped site provides detailed information about programs, admissions, research, alumni, development, current news, faculty, staff, student groups, and continuing education offerings at SHRS. It also offers links to selected clinical education sites, as well as university-based information technology and instructional resources.

Log on to the site at www.shrs.pitt.edu.

www.shrs.pitt.edu

The Tec

The Internet Has Forever Changed How Professors Teach and How Students Learn

With the help of some of the latest technologies and the World Wide Web, the classroom experience has been radically altered. Notes are now online. Assignments can be e-mailed in the blink of an eye. And students can participate in class lectures with scholars half a world away.

The School of Health and Rehabilitation Sciences has been in the forefront of this education revolution. Dr. Ellen Cohn, Director of Instructional Development and Clinical Assistant Professor, Department of Communication Science and Disorders, points to Dr. Cliff Brubaker, SHRS Dean, as the reason. “We are fortunate that Dean Brubaker has been such an active proponent of teaching excellence,” she says. “He was among the first of many SHRS faculty to take extensive web-based training and uses web-based course management software in his own graduate course.”

According to Cohn, web-augmented courses are slowly making their way onto college campuses across the country, but at SHRS, the transition has been quick and painless. The school already has 76 web-augmented courses.

A Helping Hand

So far, 30 SHRS faculty members have completed training in *Blackboard* software. This cutting-edge program allows SHRS faculty to post class syllabi, handouts, PowerPoint lectures, grades — even quizzes — directly on their home pages.

Blackboard also enables faculty to list hyperlinks to related material, providing students with extensive background resources.

Technology of Teaching

To open channels of communication, students can discuss problems or ask questions of faculty via e-mail. Also, if homework is assigned online, it can be transferred upon completion to a designated "drop box."

"Web-based software provides a way for faculty and students to communicate more frequently between classes," Cohn says. "In essence, the 'classroom' can be open 24 hours a day."

Learning by Example

Videoconferencing is another advantage the Internet offers SHRS faculty.

"It was tremendously exciting to begin a discussion on a craniofacial syndrome and

then, via videoconferencing, invite the foremost expert in the world into my classroom to talk of his latest findings," Cohn explains.

In this case, a graduate class in Communication Science and Disorders was linked via videoconference with a similar class at Syracuse University. The Syracuse instructor presented research and clinical updates concerning a congenital malformation syndrome that he was the first to identify and describe.

These technological innovations are already yielding positive results. Students report that it is easier for them to see how

a particular course is organized. Downloadable PowerPoint presentations have lessened the need for note taking.

Classroom time, they say, is being better spent on active learning and small group problem solving. The students learn more and retain it longer.

Says Cohn, "Our faculty never hesitates to assume leadership in instructional technology. In fact, this summer, we will beta test a new version of the web-based course management software that will be used by the entire university at the beginning of the next academic year."



Ellen Cohn

WheelchairNet:

A Virtual Community Celebrating Wheelchair Technology and Its Application

The School of Health and Rehabilitation Sciences pioneers research and technologies that assist in improving the lives of people with disabilities. Usually, these advances help the hearing impaired to speak more clearly or the victim of an automobile accident to regain motor skills. But, one of SHRS's latest clinical advances is less "hands-on."

WheelchairNet, a virtual community of wheelchair users, advocates, and professionals, aids people with disabilities in an entirely new way – it brings them together to share ideas, disseminate information, and solve mobility device-related problems.

Conceived by Dr. Douglas Hobson, Associate Professor, Department of Rehabilitation Science and Technology, and created by Mary Ellen Buning, a doctoral student in Rehabilitation

Science and Technology, in January 1999, WheelchairNet links people with disabilities to information that can assist them in their daily lives - an unparalleled resource for wheelchair users. The virtual community boasts a town hall, a university, a general store, and a discussion area. Residents have access to a variety of resources related to wheelchairs, including seating and mobility professionals.

A popular feature of the cyber community is Wheelchair University. Campus visitors can obtain detailed information on education, research, and standards development related to wheelchairs and their usage. Wheelchair University also offers bibliographic references on wheelchair technology, information on international activities related to wheelchairs, and links to sites where members can learn more about potential funding sources in support of wheelchair research. Wheelchair

service providers can find links to continuing education and slide lectures aimed at improving their skill level. In the Community Living Resources section, visitors can access information and resources for living, managing, and enjoying everyday life while using a wheelchair. From accessibility in public places to sports and recreation opportunities, this section of the virtual community has it all.

Want to volunteer or become a resident of WheelchairNet? It's easy. Simply fill out the registration form - all residents' personal information is secure - and you can immediately become involved in town management decisions.

To become a resident of WheelchairNet, log on at www.WheelchairNet.org.



A PT Dream Team

This June, Dr. Anthony Delitto, Associate Professor and Chair, Department of Physical Therapy, will deliver the sixth annual John Maley Lectureship on Innovations in Clinical Practice. Each year the lectureship, established by the Barra Foundation in honor of noted



physical therapist John Maley, addresses a particular aspect of clinic practice. Delitto will discuss “Choosing a Physical Therapy Dream Team.”

Anthony Delitto

Delitto will challenge the audience to think back to their days on the playground, when pick-up sports teams were chosen by “captains” who selected members based on performance in past games. A physical therapy team, he will assert, should have similar roots.

Delitto will describe the performance characteristics he sees as the hallmark of the exceptional physical therapist. Foremost, he will argue, should be patient outcome. Using a model in which patient outcome drives everything from performance appraisal to professional development, Delitto will help participants develop and assemble their own physical therapy “dream team.”

VOICES

Dr. Mervat Abdelhak, Associate Professor and Chair, Department of Health Information Management, was a Visiting Professor at the University of Puerto Rico, where she delivered lectures to faculty, students, and practitioners, as well as provided consultation on curriculum design and faculty development.

Dr. Anthony Delitto, Associate Professor and Chair, Department of Physical Therapy, will travel to Taipei, Taiwan, for a workshop on evidence-based practice and clinical decision-making in physical therapy. The workshop, to be held at National Yang-Ming University, will bring together scholars and physical therapists from the area to discuss topics related to evidence-based practice principles in clinical practice and the continuing education of physical therapists. Delitto also was the keynote speaker during Research Day at the Department of Physical Therapy, University of Maryland. His topic was “Clinical Research and the APTA’s Agenda for the Future.”

Dr. John Durrant, Professor, Department of Communication Science and Disorders, was a presenter at the Second International Congress on Objective Measures in Cochlear Implantation in Lyon, France. Durrant also presented a research paper at the biennial congress of the French Society of Audiology in Tours, France.

Dr. Malcolm McNeil, Professor and Chair, Department of Communication Science and Disorders, will be the keynote speaker at the Fourth International Speech Motor Conference at the Max Plank Institute in Nijmegen, the Netherlands. In October, McNeil will travel to the Erasmus Medical Centre in Rotterdam, where he will keynote at the “Semantic Therapy for Persons with Aphasia” conference.

Dr. Katherine Verdolini, Associate Professor, Department of Communication Science and Disorders, spoke on “Paradigm Changes in Voice Therapy” at the New York State Speech-Language-Hearing Association Convention in White Plains, NY.

SHRS appointees to the UCLID Center at the University of Pittsburgh were **Dr. Jennifer Angelo**, **Dr. Thomas Campbell**, **M. Kathleen Kelly**, **Dr. Regina Onda**, and **Dr. Diane Sabo**. The UCLID Center was established in 1995 as an interdisciplinary training program to develop leaders in the field of disabilities. The program receives funding from the Federal Maternal and Child Health Bureau and is a LEND (Leadership Education in Neurodevelopmental and Related Disabilities) program.



Dr. Mervat Abdelhak, Associate Professor and Chair, Department of Health Information Management, was recently elected to a three-year term on the Board of Directors of the American Health Information Management Association, a national association with nearly 40,000 members.

Kim Crawford, Clinical Coordinator and Instructor, Department of Clinical Dietetics and Nutrition, was elected President of the Pittsburgh Dietetic Association.



Dr. Christine Dollaghan, Associate Professor, Department of Communication Science and Disorders, began a three-year term on the American Speech-Language-Hearing Association's national Research and Scientific Affairs Committee in January 2000. She also became a University Senate faculty representative to the Board of Trustees Investment Committee, and co-Chair of the University Senate Admissions and Financial Aid Committee. Dollaghan will continue her service as a member of the NIH study section, Biobehavioral and Behavioral Processes 3.

Dr. Margo B. Holm, Professor, Department of Occupational Therapy, has been elected to the Academy of Research by the American Occupational Therapy Foundation in recognition of her research accomplishments. In addition, Holm has been named a member of the Research and Scientific Affairs Committee of the American Speech-Language-Hearing Association, and is a faculty representative on the University Senate, Board of Trustees Investment Committee.

Dr. Catherine Palmer, Assistant Professor, Department of Communication Science and Disorders, was elected to a three-year term on the Executive Board of the American Academy of Audiology. Palmer is also Editor-in-Chief of *Seminars in Hearing*.

In recognition of her contributions to gerontological research and practice, **Dr. Joan C. Rogers**, Professor and Chair, Department of Occupational Therapy, was recently elected a Fellow in the Gerontological Society of America. Rogers also was awarded a 2001 Health Professional Summer Preceptorship by the American College of Rheumatology Research and Education Foundation.

Dr. Connie Tompkins, Professor, Department of Communication Science and Disorders, was named to the Communication Disorder Review Committee of the National Institutes of Health.

Dr. Katherine Verdolini, Associate Professor, Department of Communication Science and Disorders, was named a Fellow of the American Speech-Language-Hearing Association.

Integrating EBDM into Curricula

In March of this year, Denise Chisholm, Assistant Professor, Department of Occupational Therapy and Shari Novalis, Research Associate, Department of Occupational Therapy, participated in an Institute, "Integrating Evidence-Based Decision Making into Curricula," at the University of Southern California in Los Angeles. Use of an evidence-based approach has emerged as a national priority in health care in response to the need to improve the effectiveness, appropriateness, and quality of health services. The



Denise Chisholm



Shari Novalis

Institute was designed to support faculty from the professions of Dental Hygiene, Occupational Therapy, and Physical Therapy in integrating an evidence-based

decision making approach and active learning techniques into courses. The project was sponsored by the National Center for Dental Hygiene Research through a grant from the Bureau of Health Professions.



Dr. Gina E. Bertocci, Assistant Professor, Department of Rehabilitation Science and Technology, was awarded the Rehabilitation Science and Technology Distinguished Teaching Award for outstanding teaching and leadership in research and education.

Dr. Rory A. Cooper, Professor and Chair, Department of Rehabilitation Science and Technology, was the recipient of the Rehabilitation Engineering and Assistive Technology Society Service Award 2000 for his long-standing and ongoing participation in the ANSI/RESNA Standards Committee and the RESNA Technical Guidelines Committee.

Dr. Anthony Delitto, Associate Professor and Chair, Department of Physical Therapy, received the Catherine Worthingham Fellows of the American Physical Therapy Association Award for lasting and significant advances in the science, education, and practice of the profession of physical therapy.

Dr. G. Kelley Fitzgerald, Assistant Professor, Department of Physical Therapy, was awarded the 2001 Dorothy Briggs Memorial Scientific Inquiry Award for an article entitled "The Efficacy of Perturbation Training in Non-Operative Anterior Cruciate Ligament Rehabilitation Programs for Physically Active Individuals." The article was published in the February 2000 issue of *Physical Therapy*. Fitzgerald received a grant from the Western PA Chapter of the Arthritis Foundation for his work on "Quadriceps Femoris Muscle Inhibition in Patients with Knee Osteoarthritis." **Dr. James J. Irrgang** was the co-investigator. Fitzgerald also received a grant from the American Physical Therapy Association, Orthopaedic Section, for a research on "Gait Adaptation in Individuals with Knee Osteoarthritis." **Dr. James J. Irrgang**, **Dr. Patrick Sparto**, **Mario Bizzini** and **John Childs** were co-investigators.

A Cut Above

For practicing his profession with compassion and dignity, **Dr. James J. Irrgang**, Assistant Professor, Department of Physical Therapy, was awarded the SHRS Dean's Distinguished Teaching Award.

A VA research team headed by **Dr. Catherine Palmer**, Assistant Professor, Department of Communication Science and Disorders, received a second three-year grant to study the functional and physiological plasticity of the adult auditory system.

Dr. Bambang Parmanto, Assistant Professor, Department of Health Information Management, received an IT Workforce Development I-Grad grant from the Commonwealth of Pennsylvania to enhance information technology content in health information management programs.

Dr. Valerie Watzlaf, Associate Professor, and **Dr. Patti Anania Firouzan**, Assistant Professor, Department of Health Information Management, were awarded a grant from the American Health Information Management Association, Foundation of Research and Education, for research on "Standards for the Content of Electronic Health Records."

Dr. Susan Whitney, Assistant Professor, Department of Physical Therapy, received the Lucy Blair Service Award, given by the American Physical Therapy Association to members whose contributions have been of exceptional value.

Bookmarks

Dr. Mervat Abdelhak, Associate Professor and Chair, Department of Health Information Management, was the Managing Editor of the 2nd edition of *Health Information: Management of a Strategic Resource*.

Dr. Thomas Campbell and **Dr. Christine Dollaghan**, Associate Professors, Department of Communication Science and Disorders, will have a paper entitled "Reducing Bias in Language Assessment: Processing-Dependent Measures" published in the collection *Clinical Issues When Assessing African-American Children: ASHA Readings*, American Speech-Language-Hearing Association.

Karen J. Golding-Kushner, a 1977 graduate in Speech Pathology and now an Assistant Professor of Speech Pathology at Kean University, Union, NJ, has authored *Therapeutic Techniques for Cleft Palate Speech and Related Disorders*.



Valerie J. Kogus, a 1989 SHRS graduate in Clinical Dietetics and Nutrition and currently Allergy/Nutrition Coordinator, University of Pittsburgh Physicians, co-authored a chapter on Anorexia and Cachexia in *Nursing Management of Symptoms Associated with Chemotherapy*-5th Edition, which was released this year.

Dr. Katherine D. Seelman, Acting Associate Dean for International and Government Relations and Acting Professor, Rehabilitation Science and Technology, was co-editor and chapter author of the recently published *The Handbook of Disability Studies*. In development for over six years, the handbook incorporates a range of disciplines, including the social sciences and public policy, rehabilitation medicine, technology, and employment.

University of Pittsburgh Named Model Spinal Cord Injury Center

The University of Pittsburgh received a \$1.6 million grant from the National Institute on Disability and Rehabilitation Research (NIDRR) to establish the University of Pittsburgh Model Center on Spinal Cord Injury (UPMC-SCI). The center, the first of its kind in the region, will conduct research into a new generation of wheelchairs and assistive devices to improve mobility and independence for persons with spinal cord injuries.

Supported by the internationally known clinical and research resources of UPMC Health System and the University of Pittsburgh, the UPMC-SCI establishes a continuum of care that begins with emergency response at the scene of an injury, continues with acute care at a UPMC Health System hospital, and then rehabilitation at UPMC Rehabilitation Hospital.

“The distinction of our program as a model center is the gold standard in rehabilitation,” says Dr. Ross Zafonte, Chair, Department of Physical Medicine and Rehabilitation at the University of Pittsburgh and Vice President of Clinical Rehabilitation Services. “The University of Pittsburgh and UPMC Health System have long been at the forefront of rehabilitative care and mobility research, and this designation further demonstrates our commitment to improving academic rehabilitation programs and treatment of persons with disabilities. No other regional program is more comprehensive or complete for the treatment of spinal cord injury.”

Under the direction of Dr. Michael Boninger, who also is Director of the Center for Assistive Technology at the University of Pittsburgh, the UPMC-SCI will implement several different research projects that will concentrate on how innovations in assistive technology can reduce the extent of a person’s disability. Model centers are awarded only to programs that can demonstrate excellence in the treatment of persons with spinal cord injuries. As one of only two new model centers designated by the NIDRR this year, UPMC-SCI will work independently and in collaboration with 15 model centers across the United States to improve care for patients with spinal cord injury.

“As a Center of Excellence, we’ve made remarkable advances in the treatment of persons with spinal cord injuries and are excited that this grant will allow us to expand our research and become a nationally recognized resource for information on mobility assistive technology,” says Dr. Rory Cooper, UPMC-SCI Engineering Director and Chair, Department of Rehabilitation Science and Technology at the School of Health and Rehabilitation Sciences (SHRS).

UPMC-SCI will incorporate and be supported by a number of programs at the University of Pittsburgh and UPMC Health System, as well as organizations within the greater Pittsburgh area, including the Center for Assistive Technology (CAT) at the University of Pittsburgh, which is dedicated to enhancing the lives of persons with disabilities through the use of appropriate assistive technology devices. The CAT was established in 1995, and since has grown to serve more than 200 clients a year. Other partners include the Human Engineering Research Laboratories (HERL), a joint venture between UPMC, the University of Pittsburgh and the VA Pittsburgh Healthcare System and a Center of Excellence for Wheelchair and Related Technologies that is renowned for its technical expertise and associations with AT manufacturers; the certified spinal cord injury unit at UPMC Rehabilitation Hospital, and the University of Pittsburgh’s Rehabilitation Engineering Research Center (RERC) on Wheeled Mobility, a program within SHRS.

“Having a model center with this level of clinical and engineering resources in assistive technology will enable large, multi-center trials that will contribute substantially to improving the quality of life of patients with spinal cord injuries,” adds Boninger.

I N M E M O R I A M

Dr. Jack Matthews

(June 17, 1917 – December 18, 2000)

“His life was one of caring, service, dedicated commitment and great achievement.” These are the words of his colleagues and are a fitting reflection of the life and work of a special man, Dr. Jack Matthews.

Matthews began his career at the University of Pittsburgh in 1948 as an Assistant Professor in the Psychology Department. In 1955, he was appointed Chairman of the Speech Department, a post he held until his retirement in 1987.



It was Matthews who established the Graduate Program in Speech-Language Pathology/Audiology and led it to national prominence. Originally housed within the Communications Department, the program moved to the School of Health and Rehabilitation Sciences in 1996, where it was renamed the Department of Communication Science & Disorders.

Matthews’ commitment and leadership were not limited to the Speech Department. He served two terms as President of the University Senate and was acting Dean of the Humanities in 1967 and 1968. Matthews also was active on a number of university committees and was a driving force in the creation of its Cleft Palate Center.

Outside the university, Matthews served a term as President of the Speech-Language-Hearing Association and the American Cleft Palate Association, as well as Chair of the National Advisory Committee on Handicapped Children for the U.S. Office of Education. He was an editorial board member for six major medical journals and was included in a number of study sections at the National Institutes of Health, Vocational Services Administration, U.S. Office of Education, Education Commission of the States, and the Veterans Administration.

Upon his retirement, his colleagues and friends created an endowment in his honor that funds an annual lecture series. While Matthews is missed, he will not be forgotten.



Sean Shimada has always been on the fast track. Always working toward the next degree. Always looking for the next teaching position. And with the success of his Biomechanical Consultants of California, a lawsuit consultancy, he is on the fast track once again. Only this time the fast track doubles as a crash track.

Shimada's unconventional use of his SHRS doctorate in Rehabilitation Science and Technology started in 1997 while he was on the faculty of California State University in Sacramento. He began working part-time as a consultant at Biomechanical Consulting, a firm providing litigation support in court trials. Part-time became full-time, and in 1998, he became a partner in the firm.

Then in July of last year, Shimada struck out on his own and formed Biomechanical Consultants of California.

Dr. Sean Shimada

Crash Scene Consultant

"Young people, especially today, need to explore the options that a degree from SHRS presents. The degree offers the kind of fundamentals that will lead to success in any field."



Sean Shimada

Today, the firm supports over 200 clients, most of which are law firms. When injuries reported by the victim of a car crash appear inconsistent with the crash scene, Shimada reconstructs the accident. Based on his findings, he provides expert testimony, attesting to the viability of the accident victim's reported injuries.

Shimada stresses that an SHRS degree provided him with a solid foundation that has led to success in his field. "Young people, especially today, need to explore the options that a degree from SHRS presents.

The degree offers the kind of fundamentals that will lead to success in any field." He encourages students to look at self-employment opportunities as a realistic career path. "Any student with an entrepreneurial drive should explore that drive. You can do more than you know with a degree from SHRS."



LTC Ophelia Munn-Goins

Data Warrior

Lieutenant Colonel (LTC) Ophelia Munn-Goins could well be the poster girl of the U.S. Army in the 21st century. She possesses confidence, commitment, a strong work ethic, and a keen intelligence. She also works on one of the most advanced — and potentially significant — projects related to battle-field readiness in history.

Since obtaining an SHRS degree in 1993 in Health Information Management/Health Information Systems, Munn-Goins has been working to ensure that the U.S. Army maintains its technological superiority. More specifically, from 1993 to 1996, she was the Patient Administration Consultant with the Army Defense Medical Information Systems, Washington, DC. From 1996 to 1999, she was the Director of Medical Records and Coordinator of Utilization Management at Martin Army Community Hospital, Fort Benning, GA. In 1999, she was reassigned as the Medical Representative in the Department of Defense Smart Card Technology Office, now known as the Access Card Office (ACO).



Ophelia Munn-Goins

In layman's terms, the Common Access Card (CAC), or "smart card," is a credit card-size hardware token that does everything from storing a soldier's personnel and medical data to permitting access to some of the U.S. Army's most confidential computer systems.

To fully understand the impact the CAC could have on the deployment of U.S. Army forces, Munn-Goins offers this example.

Before 1998, troops could spend close to five days performing readiness processing prior to deployment. After incorporating "smart card" technology, prep time has been reduced to a single day.

Abbreviating the mission readiness preparation time alone might be enough to warrant the new technology. The cost-savings of the process, however, may prove more significant. The Army estimates that in five years it could realize a 429 percent return on its investment.

Munn-Goins contends that her education at SHRS helped set the stage for her career. She explains, "My studies at SHRS provided the baseline in technology that I needed to embark on a satisfying career."

She says that while technology has evolved steadily since her time at SHRS, the background she received was invaluable. "SHRS gave me a solid foundation in computer technology. That foundation definitely allows me to learn new technology with greater ease."



YEARBOOK

'70s

Donna Ramusivich – SHRP '79 is Senior Vice President of Monongahela Valley Hospital, Monongahela, PA.

'80s

Christine Chase – PT '74, HRP '80 is President of Cardinal Concepts Consulting Services, Pittsburgh, PA.

Frances Jones Blackwell – SP '82 is a Regional Vice President of Comprehensive Medical Imaging, Inc., Plantation, FL.

'90s

Michelle Zamieroski – HIM '90 is a Regional Sales Manager for Wilson-Cook Medical, Inc., Winston-Salem, NC.

Mark A. DiCello – HRA '92 is Regional Director of Commercial Operations for Healthsouth Corporation, Sewickley, PA.

Ellen M. Hickey – SP '92 is an Assistant Professor, Department of Communication Disorders, at the College of St. Rose, Albany, NY.

Lori Shofran – CDN '93 is a sports nutritionist for Sport Specific Training Group, Orlando, FL.

Page Lindsay Babbit – HIM '94 is Director of Health Information & Regulatory Affairs for West Penn Hospital, Pittsburgh, PA.

Jamie Prothro – HRS '98 is a web designer for the Pennsylvania Office of Vocational Rehabilitation, Pittsburgh, PA.

Rebecca Harmon - HIM '98 is a business analyst in Business Planning Services for VHA, Pittsburgh, PA.

Amanda Ryan – CDN '98 is a clinical dietitian specialist at Johns Hopkins Hospital, Baltimore, MD.

Daniel Pothen – HIM '99 is a consultant at Deloitte & Touche in the Integrated Health Group, Los Angeles, CA.

In Memoriam

Velma Locke Gallaber, SHRP '47

Ruth Scranton Hayden, SHRP '51

Donna Williams, HIM '90

Kelli Maceyak Dzambo, HIM '96

Ringmaster Extraordinaire

Alumni News



Therese Willkomm



After glancing at Therese Willkomm's resume, one might think she missed her calling. The number of pressure-packed positions she juggles suggests she could have been a talented ringmaster. If anything, she stays busy.

Willkomm heads a thriving assistive technology organization as the Executive Director of New Hampshire's heralded ATECH Services. In addition, she co-directs the New Hampshire Technology Partnership Project at the University of New Hampshire and teaches in the Occupational Therapy Department. Admits Willkomm, "I do wear a few hats, but that's what makes life exciting and interesting." She is also a national leader in the field of rural assistive technologies as Technical Director for the National AgrAbility Project at the University of Wisconsin – Madison.

According to Willkomm, much of her success is due to the education she received at SHRS. "SHRS promotes a unique interdisciplinary approach that values the expertise of engineers, clinicians, policy-makers, and researchers in maximizing abilities of all people through the application of assistive technology," she explains.

Since graduating from SHRS, Willkomm has dedicated herself to developing better assistive technologies services for people with disabilities. As the Executive Director of ATECH Services, she is working diligently toward this end.

ATECH (An Alliance for Assistive Technology, Education, and Community Health) Services is a New Hampshire-based non-profit organization that provides assistive technology services to people with disabilities throughout the state. It boasts six divisions that work in tandem to make the lives of individuals with disabilities easier and more productive: ASSET, or Assistive Services to Schools for Education, Technology and Training, helps students with sensory or communication impairments achieve education success through applied assistive technology solutions; the Technology Exploration Center gives consumers an

opportunity to explore different technology solutions to determine which one is right for them; the REM, or Refurbished Equipment Marketplace, refurbishes and redistributes assistive equipment to individuals who cannot afford new technology; the Training and Technical Assistance Division hosts over one hundred workshops related to assistive technology; the Information and Resources division helps people with disabilities through dissemination of assistive technology information; and, the New Hampshire Assistive Technology Evaluation and Consultation Division offers direct clinical assistive technology services provided by occupational therapists, physical therapists, and speech and language pathologists.

As one might imagine, ATECH, alone, would keep anyone busy. However, Willkomm's background at SHRS also led her to become involved with systems change initiatives through the New Hampshire Technology Partnership Project, which she now co-directs. The Tech Act Project, as it is widely known, deals with state-wide issues pertaining to access to services, alternative funding sources to pay for needed technologies, and legislative initiatives that impact consumers' abilities to fully utilize assistive technology at home, school, work, or play.

Willkomm also taps her roots at SHRS in her involvement with the University of New Hampshire, where she continues to conduct research at the Institute on Disabilities and teaches the Assistive Technology courses as an Assistant Professor in the Occupational Therapy Department.

She insists that her success is due in part to the academic rigor and the interdisciplinary approach SHRS promotes through its doctoral program. "I wouldn't be where I am now without the comprehensive skills I obtained while at SHRS," Willkomm claims. "A Ph.D. from SHRS also provided me with the skills to be an effective leader in the field of assistive technology and to teach and conduct quality research at the University of New Hampshire."



Rewards

Joe Belyusar

Pat Croce Endowed Scholarship, to entry-level students in the first year of study in good academic standing.

Martin Brodsky

SHRS Research Development Fund Award, to support a study entitled "Serial-Position Effects for Information Unit Production: The Role of Memory in the RAPP Story Retell Procedure for Normals and Persons with Aphasia."

Cara Brown and Abby Cunko

Dorothy Bradley Brown Endowed Scholarship Fund, for outstanding final-year Physical Therapy students.

Thomas Corfman

Winner of the Rehabilitation Engineering and Assistive Technology Society and Whitaker Foundation Student Scientific Paper Competition.

Abby Cunko

The Herbert G. Feldman Charitable Foundation Scholarship.

Abby Cunko

D.T. Watson Scholarship, to an entry-level Physical Therapy student in the final year of study with academic merit.

Abby Cunko and Alicia Genco

Anne Pascasio Scholarship Fund, to entry-level students for outstanding academic achievement.

Melissa Evers

Alice Chagnot Oulette Endowed Scholarship, to an entry-level student in first year of study with academic merit.

Brian Fay and Alicia Koontz

American Society of Biomechanics Graduate Student Grant-in-Aid Program 2000, for fabrication of a digitization probe for use in wheelchair propulsion studies.

Jennifer Friedman

Patricia Leahy Memorial Scholarship, to an entry-level Physical Therapy student in the final year of study with outstanding academic merit.

Sharon Gwinn

Jewish Health Care Foundation 2001 Coro Pittsburgh Health Sciences Fellowship.

Sharon Gwinn

National Institute on Aging: Technical Assistance Workshop Poster Award, for best pre-doctoral poster presentation in NIA Geriatrics Program Division.

Mindee Heidrich

Appointed to the state board of the Pennsylvania Occupational Therapy Association.

Amanda J. Hinds

Lisa Levy Memorial Award, for outstanding achievement by a graduate student in Communication Science and Disorders.

Wafaa Kaf

SHRS Research Development Fund Award, to support a study entitled "Contralateral Suppression of Otoacoustic Emissions: Preliminary Study to Determine Optimal Stimulus and Recording Parameters."

Timothy Kelly and Minhnhat (Margarita) Tran

UPMC Prehospital Care Scholarship, for leadership, community service activities, candidate academic records, career goals, extra curricular activities, and recommendations.

Irah King

Pearl Mann Scholarship Fund in Physical Therapy, to entry-level Physical Therapy students in the final year of study in good academic standing.

Kristi Kovacyk and Suzanne Yoder

Central Institute for the Deaf Travel Grant, to attend a conference in St. Louis on "New Frontiers in the Amelioration of Hearing Loss," March 2001.

Anna Poladian

Annual Giving Fund in Physical Therapy, to a first-year Physical Therapy student.

Melissa Ruscetta

SHRS Research Development Fund Award, to support a study entitled "Internal Consistency Reliability of a Localization Disabilities and Handicaps Questionnaire."

Susan Stark

Appointed to the Governor's Committee on Renal Disease.

Susan Stark

Received a research grant from the National Kidney Foundation.

Jennifer Stivers

Western Pennsylvania Health Information Management Association Student Project Award, for outstanding achievement on a senior project.

Kelley Yoder

CRS Scholarship Fund, for outstanding leadership qualities and a demonstrated potential for excellence in the profession of Physical Therapy.



PI THETA EPSILON

Students News



On October 25, 2000, the Department of Occupational Therapy was honored to induct its charter members into Pi Theta Epsilon, the national honor society of the American Occupational Therapy Foundation.

Annamarie Dobson - President

Amanda Tatum - Vice President

Andria Scalise - Secretary

Mandy Montgomery - Treasurer

Alicia Geneo

Clorinda Lio

Melanie Potanko

Pi Theta Epsilon recognizes and encourages superior scholarship among students enrolled in professional entry-level programs at accredited schools across the United States. Its mission is to promote research and scholarship among Occupational Therapy students. Members of each chapter contribute to the advancement of Occupational Therapy through special projects. An annual meeting is held for all chapters to provide a vehicle for students enrolled in accredited programs in Occupational Therapy to exchange information and to collaborate regarding scholarly activities.

To be eligible for election into the society, students must demonstrate superior scholarship, including ranking in the top 20 percent of their class and having a GPA of at least 3.5 on a scale of 4.0 since entering the Occupational Therapy program. They also must be second semester juniors or have completed the equivalent of nine semester hours in a professional master's program in Occupational Therapy.

The following students were inducted into Pi Theta Epsilon in Spring 2001:

Kathryn Butcher	Mindee Heidrich
Crystal Crosby	Amanda Kane
Cara Golish	Jessica Lipsett
Keri Hawranko	

Additional information on PTE can be obtained from the PTE website (www.kreative.net/pte).

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In A Row?

Students in the SHRS Department of Physical Therapy have a strong track record when it comes to fundraising. Their efforts have won the Foundation for Physical Therapy's Marquette Challenge three years running. And they are poised to win it again.

With over \$20,000 raised, their total exceeds the record of \$16,000 set just last year.

This year's fundraising campaign was led by second-year student Kelley Yoder and first-year student Irah King. The proceeds were earned from three continuing education courses the two have organized.

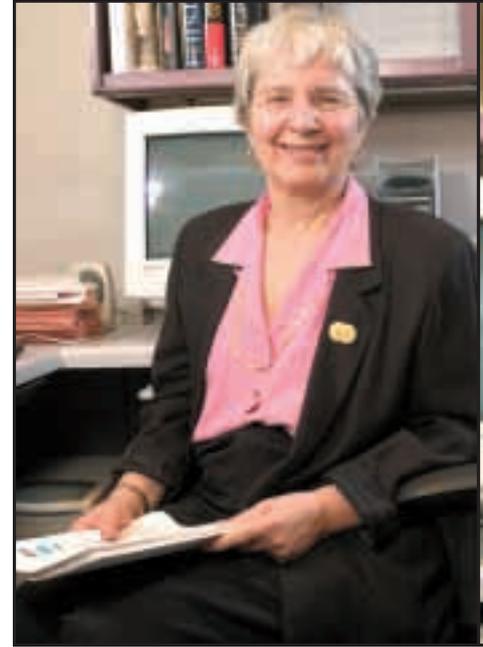
The winner of the contest will be recognized at Physical Therapy 2001: The Annual Conference & Exposition of the American Physical Therapy Association, to be held in June.

Since SHRS students began entering the competition in 1998, they have won it each year — raising some \$50,000 in the process. By every indication, their hard work will pay off yet again.



Dr. Kate Seelman

Dr. Katherine D. “Kate” Seelman, Director of the National Institute on Disability and Rehabilitation Research (NIDRR) during the Clinton administration, is the new Acting Associate Dean for International and Government Relations and Visiting Professor of Rehabilitation Science and Technology at the School of Health and Rehabilitation Sciences. During a recent interview, she discussed her working style, what she sees as the role of technology for improving the lives of disabled individuals, and the part the United States will play in the expansion of this field in the international arena.



“One can be disabled by a condition, by the absence of a ramp into a place of employment, or,” she adds with an infectious laugh, “the lack of a good speakerphone.” Kate Seelman has a disability – she is severely hard of hearing – and she is amused by this inadvertent self-reference. Because of her hearing difficulty, this telephone interview had to be postponed until she obtained a speakerphone for her new office.

The new paradigm of disability assumes that disability is not a medical problem alone. It is also an accessibility problem. If people with disabilities are to learn, work, and live in the community, they must have adequate health care as well as access to buildings, information technology, transportation, and consumer products. Disability is a relationship between the individual and his or her environment.

“Often the condition can be ameliorated by rehabilitation, personal assistants, interpreters for the deaf, readers for the blind, or technology,” she explains. “And I mean technology in its broadest sense. Not just hearing aids or wheelchairs, but also TV captioning and web browsers that can be accessed by those who are deaf or blind.”

Seelman sees SHRS as ideally suited to her work style as well as the needs of people with disabilities in the community. “I have always worked very collegially. My approach is interdisciplinary. I have great respect for disciplines other than my own, and I truly believe the result is better when disciplines work together. This orientation will help us to foster and maintain strong ties to business, professional organizations, funders, and consumer groups. We want to forge partnerships.”



As she did at NIDRR, Seelman will continue to focus on global disability issues and rehabilitation research at SHRS. At NIDRR, she represented the United States at conferences and programs in Europe, Israel, Brazil, Taiwan, Japan, New Zealand, and India. She rejuvenated NIDRR's involvement in India, especially in the area of spinal cord rehabilitation, professional training, and assistive technology. Under her direction, SHRS will further its involvement in developing what she calls "appropriate assistive technology," such as a bicycle for use in India that is propelled by hand rather than foot. SHRS has real expertise in wheelchair and other assistive technologies. She looks forward to working with SHRS in Saudi Arabia as well as other areas around the world that request and can support assistance from the school.

Seelman speaks eloquently about the importance of directing research toward real-world problems. She cites NIDRR's Robotics Consumer Engineering Lab as an example, where researchers and engineers are working together to invent a remote-controlled vacuum cleaner for use by people with quadriplegia. She stresses, however, that both health professionals and consumers with disabilities should be active participants in the process. "People with disabilities should have a place at the science and technology decision-making table. The United States, mainly through

NIDRR's support and the benefits of the Individuals with Disabilities Education Act (IDEA), has developed a cadre of physicians, engineers, social scientists, and other professionals with disabilities, along with knowledgeable consumers."

Soon SAGE Publications will publish the *Handbook of Disability*, of which Seelman served as one of three editors and a chapter author. She hopes that this handbook will be useful as the university and SHRS further develop the new Disability Studies certificate program.

Seelman has noticed the special needs of the Pittsburgh region. "With the second largest population of the elderly in the United States, Allegheny County demonstrates the tremendous overlap between the disabled community and its seniors."

How will you tell that she's been successful in her efforts?

"You'll be able to tell that we're doing what we hope when you see more students and more professors with disabilities as active members of our community.

"All in all," she says, "we are searching for ways to make sure all people, young, old, or in-between, are able to be all they can be, giving them support to live, work, and participate in the lives of their families, neighbors, and communities. The full life is when you're engaged in it all. Work is very important to all of us, disabled or not."

And of Pittsburgh, Seelman says, "You can tell right away it's a very friendly town. There is great culture here, and great food. Except for a few palm trees, what more could anyone want?"



Off the Couch

Exercise and Nutrition for Children with Disabilities

It's a fact. American children are becoming less fit and more overweight. Fed by a combination of larger food portions and a sedentary lifestyle dominated by television, video games, and the Internet, childhood obesity grew by six percent between 1998 and 1999.

But the problem is even more acute for an often-overlooked segment of society - children with severe mental or physical disabilities.

For these children, the situation is more complicated than too much snacking or not enough exercise. The side effects of their disabilities often exacerbate the problem. Medications, for example, can affect appetite or taste perception, causing the children to avoid otherwise healthy foods. Physiological problems can inhibit swallowing, chewing, or even self-feeding. The disability itself may limit physical activity.

It was this complicated mix of issues that served as the impetus behind "Off the Couch," a nutrition and exercise program targeted to school-age children with disabilities.

Funded by a grant from a local Pittsburgh foundation, "Off the Couch" was created by Joe Schreiber and Gregory Marchetti. Kim Crawford, Clinical Coordinator and Instructor, Department of Clinical Dietetics and Nutrition, conducted the four, six-week sessions.



Getting Started

The first step was to establish a baseline of information about each child that included quantitative data — such as the child's body composition, flexibility and strength, and cardiovascular health — as well as qualitative data gleaned through interviews with each child's parents.

"It was important to get the parents involved right in the beginning," explains Crawford. "They oversee the foods the children eat, they set schedules for the children, and they provide the transportation to activities."

"I met with all the parents and asked them to complete a two-day record of what their child would typically eat both during the week and on the weekend," Crawford continues. "I then analyzed this information to determine the child's intake of fat, calories, vitamins, and minerals."

Crawford says that some common themes emerged. "These kids had a dislike of fruits and vegetables. And they drank large quantities of soft drinks."

According to Crawford, the parents didn't realize how many calories their children were consuming each day. "Some of the parents were distraught," she remembers. "Their doctors had told them their children needed to lose weight, but hadn't provided any guidance as to how this was to be accomplished."



Exercise Can Be Fun

Once each child's baseline had been established, Crawford was ready to work directly with the young people.



Kim Crawford

Each one-hour session included a warm-up followed by an aerobic activity like walking on a treadmill, step aerobics, riding a stationary bicycle, or simply running around the building.

Because many of the children had never participated in organized sports such as Little League or youth soccer, each session also included a specific activity, like soccer. “We wanted to make it more comfortable for them to join in established social situations involving sports,” Crawford explains. “We would have each child practice ball handling, passing to other players. Some of the basic skills of the game. This was not only fun for the kids, but it touched on a lot of things outside playing the game — things like balance and motor coordination.”

Eating Healthy

On the nutrition side, Crawford led her students through a series of

hands-on lessons that helped them understand the importance of eating healthy foods.

“Many of the children had a real aversion to certain foods that were traditionally part of home or schools meals,” Crawford says. “They avoided foods that were good for them.”

One technique was to involve the children directly in food preparation. “Anything they helped to make they seemed inclined to try,” Crawford notes. “The recipes were basic - as simple as dipping bananas in granola - or involved a new fruit, like kiwi. But the parents reported that at least for that day, their children were much more receptive to new foods.”

Broadening the Reach

While “Off the Couch” was created specifically for children with disabilities, Crawford hopes to make the program available to all children.

“I really hope to take this program to kids in a larger audience, and use it to encourage children to set healthy patterns for themselves,” Crawford concludes. “If you start when you’re young and establish healthy lifestyle habits, it’s far more likely you’ll have those habits as an adult.”

For more information, e-mail
Kim Crawford at
kcrawfor@pitt.edu.



“It’s a more complicated set of circumstances than simply not wanting to exercise.”



Fitness Program for Patients on Dialysis

Lack of regular exercise can be a problem for anyone, but the impact is particularly acute for patients undergoing dialysis to treat end-stage renal disease. Not only has their overall health deteriorated as a result of the disease, the life-saving dialysis treatment can have its own set of side effects, including abnormal blood pressure, depression, low bone mass, depleted muscle mass, and fatigue.

It was these health consequences that prompted Kim Crawford, Clinical Coordinator and Instructor, Department of Clinical Dietetics and Nutrition, to create “Let’s Get Moving,” an exercise and nutrition program exclusively for patients undergoing dialysis. “Proper nutrition along with regular exercise can reduce the number and magnitude of side effects patients experience,” Crawford explains.

The program’s regimen included aerobic exercise to increase cardiovascular fitness, flexibility to enhance movement, and strength training to increase muscle strength and endurance as well as to improve

balance. Because patients must comply with their medical treatment, particularly the diet, in order to exercise safely, Crawford partnered with Pat Dialoso, a registered dietician, to assess and monitor each patient’s nutritional status. “If a patient retained too much fluid between dialysis treatments, exercise is not recommended,” says Crawford. “The extra fluid places additional stress on the heart.”

“Let’s Get Moving” not only included workout sessions before and after dialysis, it incorporated exercises that could be performed safely during the treatment itself. “The types of exercises best suited for an individual receiving dialysis involve the legs and the arm without the dialysis graft,” explains



“You could pick out those who exercised in a second. They were smiling and had more energy. They just looked better.”



Crawford. “The regimen included riding an adaptive stationary bike, hand weights, a stretch band, and flexibility exercises.”

The program was structured to account for the patient’s exercise tolerance and physical condition, with the level increasing as fitness improved.

Twelve patients at the Fresenius Medical Care West Penn Dialysis Center participated in the pilot program. Crawford said that the value to them was obvious. “You could pick out those who exercised in a second. They were smiling and had more energy. They just looked better.”

The health benefits included lowered body weight, improved blood pressure, and increased muscle mass.

But to Crawford, the most important benefit was the attitude shift that resulted from regular exercise. “The participants said they felt more in control of their health. Their attitude became more positive and they experienced satisfaction with their accomplishments. Over all, they said they had more energy to engage in activities in their daily lives.

“The results of combining nutrition and exercise to reduce the side effects of chronic renal disease and medical treatment were remarkable. It is exciting to think about how the integrated treatment could reduce other chronic disease complications.”

For more information, e-mail Kim Crawford at kcrawfor@pitt.edu.

at Moving



Taking It on the Road

Student Speech and Audiology Teams Reach Out to Underserved Populations

For many people living in communities where evaluation and medical care is out of reach due to distance or financial constraints, a hearing impairment can have a dramatic impact on their ability to communicate in daily activities. This is especially true for young children and the elderly. A hearing loss can impede their ability to assess their auditory environment. It can make communication and interaction difficult.

But thanks to the Clinical Network Community Screening Team (CNCST), a program operated by the Department of Communication Science and Disorders, many of the medically underserved residents of the city of Pittsburgh are receiving the speech and audiology support they need.

vised experience that is a degree requirement. And third, it provides a cross-training opportunity – speech students learn audiology skills and vice versa.”

Listening — and Responding — to Community Need

Many members of underserved communities are also uninsured. As a result, medical assistance is pursued only in cases where there is an acute need. Since the majority of speech and audiological disorders develop slowly over time, many people – particularly young children or the elderly – are not evaluated on a regular basis. Going undiagnosed can lead to diminished cognitive function, learning difficulties, and problems in social situations.

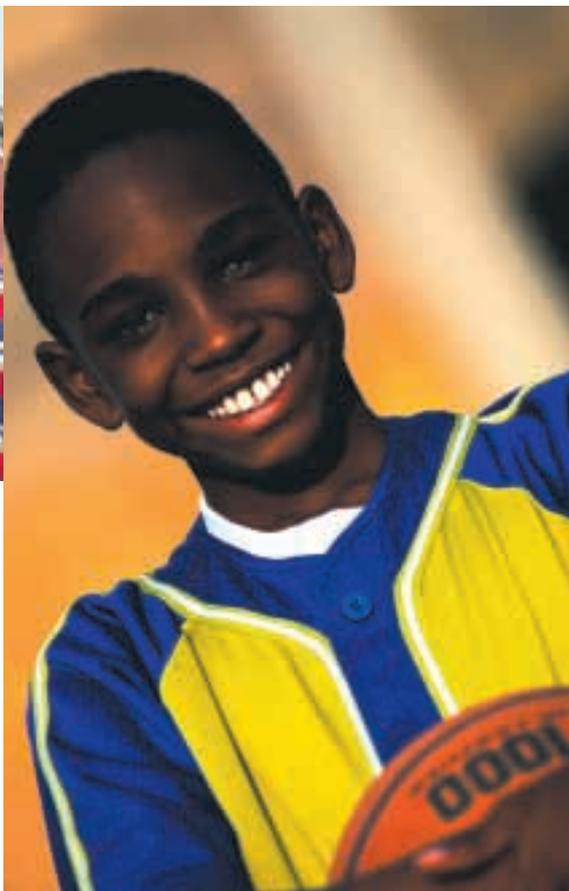
The CNCST team addresses this problem by going directly to the communities themselves. Working in cooperation with the Citiparks

preschool program and the city of Pittsburgh senior centers, the team conducts speech and audiology screenings on-site, free of charge.

“By going out into the communities instead of bringing the children or senior citizens into a controlled clinical situation, our students learn a number of valuable skills,” says Messick. “At the preschools, we frequently encounter a group of very active three- to five-year-olds. Team members need to establish a rapport with each child and help efficiently move them through the screening



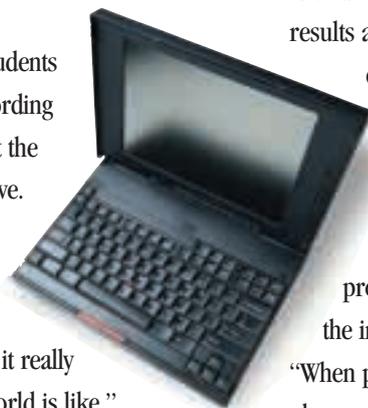
“The program really accomplishes three distinct objectives,” explains Dr. Cheryl Messick, the department’s Director of Clinical Education. “First, it addresses a vital need in the community by providing underserved populations with direct access to quality speech and audiology screening. Second, it offers students in our master’s program the opportunity to acquire screening skills as part of the 350 hours of super-



process — all while gathering the vital data that we are there to collect. Team members also have to code the results of each student, capture any comments that might be useful later if a deficiency is uncovered, and enter all data into a laptop computer that they carry to each screening site. And in cases where a child may be unresponsive or timid, team members observe the child in group sessions and evaluate his or her interaction with others.”

The program is extremely effective in acquainting students with the challenges that await them in the field. According to Messick, “It teaches them early on that kids — at the age of two or three — may not be all that cooperative. It also shows them how to evaluate the status of bilingual kids who may have dramatically different speech and language patterns and who may not respond well to traditional testing methods. Overall, it really gives our students a good picture of what the real world is like.”

Once all the children at a site have been assessed, a report on each child is generated directly from the laptop. If a deficiency is detected, a letter is given to the teacher to forward to the parent. The letter details areas of strength, areas of concern, and advises the parent to take his or her child to their primary care physician for authorization for a more thorough



A Different Wavelength

A similar approach is employed at the senior centers. “For the most part, our students are dealing with the well elderly in the senior centers,” says Messick. “They conduct assessments and have to establish a rapport with people who may be experiencing cognitive or speech problems due to auditory disorders. If the students find a deficiency, they document the results and give the test subject a letter referring them to their primary care physician. And, if they have a problem with insurance coverage or access to medical care, our program can help them get the professional help they need.”

By uncovering speech and auditory deficiencies in the elderly, the program can effectively help enhance the quality of life and ultimately, the independence for many of the Pittsburgh area’s older residents. “When people can’t hear well, they tend to withdraw from activities,” observes Messick. “We help uncover any problems and encourage them to get the help they need to continue on with fulfilling lives.”

The Donation That Builds Benefits

Messick sees the CNCST program as an effective way to give service back to the community. In operation during the second and third semesters, it places seven students in the field on a weekly basis — three from the Audiology program and four from Speech. In addition, a number of first-year students are stationed at sites around the Pittsburgh region, such as the Mathilda Theiss Child Development Center in the city’s Hill District, to provide ongoing speech therapy services.



Cheryl Messick

“By helping the underserved segments of our community and providing solid field training experiences for our students, the program is a ‘win’ for everyone involved.”

For more information, e-mail Cheryl Messick at cmessick@pitt.edu.

evaluation. Parents are also encouraged to call SHRS to discuss the results of their child’s evaluation. In cases where insurance or financial obstacles may stand in the way of getting help, the program connects children and their families with specialists in early intervention programs, at Children’s Hospital, or in the public schools.





Listening Carefully

Partnering with Patients and Manufacturers to Teach Key Audiology Concepts

There's a lot to be said for solid classroom instruction. It conveys important information, emphasizes critical points, and provides the foundation for further learning – and ultimately a successful career. However, according to Dr. Catherine Palmer, Assistant Professor, Department of Communication Science and Disorders, there's another vital part of the curriculum that must be taught – how to effectively treat patients in the real world.



Catherine Palmer

Each semester, Palmer bridges the gap between theories taught in class and the realities of clinical practice by building her class around an actual patient who is experiencing a hearing loss. Essentially structured as a semester-long hearing aid fitting, students learn how to thoroughly assess the patient, perform a full range of evaluations and testing procedures, select the correct hearing aid, fit the hearing aid to the patient, and make any necessary adjustments to achieve optimal function. Students also learn how to evaluate technologies and interact with hearing aid manufacturers in order to obtain the products and support services that are right for their patient.

“All of our students will be dealing with real people — not theories — when they graduate from our programs,” observes Palmer. “They have to know how to assess, fit, and follow up with a variety of patients using a wide range of amplification devices. They also have to know how to troubleshoot any problems that may arise with their patients, as every patient and situation is different. This class, through lectures, visits from hearing aid manufacturers’ representatives, and regular interaction with a real patient, allows them to get all of that.”

Finding the Ideal Candidate

Shortly before the beginning of each semester, the search begins for a suitable patient. To be eligible to participate in the class, patients must have a diagnosed hearing loss and must be willing to be fit with hearing aids. They also must have time in their schedules to participate in the class on a regular basis, and need to feel comfortable interacting with students and answering their questions. Each semester, a different hearing aid manufacturer is chosen to work with the class, and that company agrees to provide the necessary amplification devices. The company also agrees to supply both technical and lecture support.

To date, the program has treated patients from numerous walks of life, with ages ranging from 32 to the mid-70s. “We really don’t have a problem finding candidates, but we don’t have a set way of doing it either,” remarks Palmer. “Often, I get referrals from clinicians in the university who may know someone, or who might have a family member who has the time and willingness to participate in the class. Other times, I have literally run into patients in the community and simply asked them if they wanted to join us. One way or another, when the semester begins, we’ve always had a patient ready and willing to work with us.”

Hearing aid manufacturers, seeing the benefit of starting relationships with students while they are still in school, are also lining up to participate in the class. While the class does not promote one technology or manufacturer over another, it does show that working closely with manufacturers can result in better treatment strategies. It also shows students how to survey the market to find the technology that’s right for their patient, and teaches students to become aggressive in dissecting the various hearing aid technologies.

“The manufacturers’ reps that have worked with the class have established excellent relationships with the students,” notes Palmer. “They are really interested in helping the students understand the technologies that drive their devices, and are more than willing to show how diagnostic procedures can help students use the devices more effectively. We often have pizza and soft drinks so the manufacturer can interact with the students in an informal way once they’ve completed their lecture.”

The Moment of Truth - Meeting the Patient

The course begins with a thorough evaluation of the patient's hearing capabilities. Students interview the patient one-on-one, and conduct a wide variety of assessments under Palmer's supervision. "Before the class begins, we emphasize to the patient that they will be asked a lot of questions, and they quickly find out we were not kidding," she laughs. "Over the course of the program, the patient may be asked the same question a number of times. So far, all of our patients have been extremely cooperative. On the other hand, by having the opportunity to work with a real patient, our students also learn how to ask the 'right' questions in a manner that doesn't offend or intimidate."

Once the patient's condition has been pinpointed, the class works with Palmer and the manufacturer's representative to structure a treatment approach and select an amplification technology that's appropriate. The class examines every product the manufacturer offers and discusses how it may or may not be appropriate for their patient's case. Once a technology has been chosen, students learn how to place the order for the hearing aid and communicate vital specifications to a manufacturer. At the same time, the class works with the patient to get a preliminary ear mold - a casting of the patient's ear canal - that will be used to construct the case for the device. A few weeks later, when the hearing aid arrives, the class learns how to program the hearing aid and evaluate its functions. Shortly after that, the patient is invited back to class and is fitted with the new device. During the fitting, functional adjustments can be made to the unit's programming to accommodate the patient's hearing requirements. In addition, the unit itself may need to be modified to fit comfortably in the patient's ear. When fitting is complete, the class provides the patient with a full orientation to his or her new hearing aid and schedules follow-up evaluations to assess its function.

Follow-up sessions occur during the remainder of the semester, and students actively participate in troubleshooting any problems the patient may be having with their new device. When the class is complete, the patient is referred to an audiologist for follow-up and maintenance of the hearing aid.



Sounds of Success

"The best part about this class is the successful blending of theoretical underpinning with real-time application," explains Palmer. "Students see how things are done in the field, and become comfortable interacting with a wide variety of patients."

Aside from helping someone from the community who needs amplification assistance, the class also encourages students to take a leadership role and to be aggressive in searching out the right treatment approach for their patients. "We want our students to stand out in their professions," Palmer

concludes. "And we want them to continue their dialogue with manufacturers — conversations that frequently result in significant improvements in amplification technology."

With this direct connection with the real world, students — and ultimately their patients — can't help but hear things a totally new way.

For more information, e-mail Catherine Palmer at palmercv@pitt.edu.



Planning For Terror

Waiting for the train at the subway station, your boredom is interrupted by sudden nasal congestion. Although your symptoms are bothersome, a number of others at the platform are also sneezing and blowing their noses, so you prepare for another cold. As you ponder the possibility, you detect an odor. Mildly fruity. Not unpleasant. Suddenly, an elderly woman near the end of the platform collapses. She starts to convulse. Two children standing near her fall to the ground, bodies writhing. You run toward them to help, but find your vision becoming dim; your breathing, difficult. Suddenly, a woman to your right screams as her baby starts to vomit and convulse in her arms. Then the mother collapses. In a matter of seconds, the platform is littered with people, convulsing and vomiting. You start for the stairway, but find it difficult to control your legs. Your body becomes heavy and you collapse onto the stairs. Your final thought before slipping into unconsciousness. What's happening?

This may sound like the opening paragraph of a Stephen King novel, but it is precisely what happened to the victims of the Tokyo Subway sarin gas release in April 1995. Twelve Japanese commuters died and 3,000 were injured.

That attack was carried out by the doomsday cult "Aum Shinrikyo" under the leadership of Shoko Asahara in response to a police investigation into the cult's activities. Although seriously flawed by military standards, this attack was the first lethal targeting of civilians by a domestic terrorist group.

Many experts agree that it probably will not be the last.

Although bombs and firearms are statistically the most prevalent weapons, terrorists groups are becoming increasingly sophisticated. It is not a question of if, but when, we'll see the use of hazardous chemicals, radioactive materials, or infectious disease in a terrorist attack. As Walt Stoy, Director, Emergency Medicine, explains, "The danger is real. The potential for severe fatalities is frightening."

BIOHAZARD

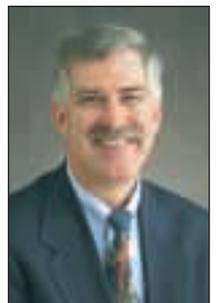


*"The danger is real.
The potential
for severe fatalities
is frightening."*

On September 9th of last year, students from SHRS's Emergency Medicine Program got to see first-hand just how frightening such an attack would be. They were among the 75 victims in a "mock" bioterrorism disaster drill staged in the Steel Plaza subway station in Pittsburgh.

The drill was part of a national effort sponsored by the Department of Defense to help municipalities prepare for such an attack by developing plans to address early recognition and response, mass fatalities, and environmental sureties. The city of Pittsburgh and the surrounding 11 counties have created one of the largest, and what some consider to be the best, response network in the country.

According to Stoy, the biological agent simulated in the drill was a colorless, odorless gas "that can result in mass fatalities."



Walt Stoy

Stoy says that the first rescuers on the scene will probably be unaware of the nature of the attack, and could become victims themselves. "Potentially, these are gases that can saturate clothing and hair," he explains, "so until full HazMat units can activate, the possibility is that anyone can become a carrier or a victim."



The victims of the drill were rescued by Pittsburgh and Allegheny County Fire, Police, EMS, and HazMat specialists wearing special space suit-type chemical protectors. But it was the mass decontamination that may prove most memorable for some of the volunteers. As the *Pittsburgh Post Gazette* described it, "For some of the 'victims,' the discomfort took on a real edge when hazardous materials crews decontaminated them by

spraying them with water on Grant Street and then had them disrobe to their underwear in a triage center set up in the air-conditioned lobby of One Mellon Bank Center."

Many of the Emergency Medicine students who participated in the drill either are training to become or already are paramedics. This drill put them in the unfamiliar position of "rescue-ee," not "rescuer." But the role reversal was more than an exercise in empathy.

If you believe the predictions of experts like former Senator Sam Nunn, one of the co-sponsors of the legislation that prompted the drill, it was a preview of an eventuality. In describing the illicit spread of biological weapons, he said,

"There is no greater threat to this nation's, and indeed the world's, national security."

For more information, e-mail Walt Stoy at stoywa@pitt.edu.





“Annie” G



courses include interactive video and audio, but the real difference is that the mannequin now features dozens of miniaturized sensors that are tied into the computer program. So now students can practice their techniques and then receive immediate, quantified feedback on how well they are doing.

Tom Platt, Assistant Professor, Emergency Medicine, who is in charge of the HeartCode program at SHRS, explains how it works. “For an adult, the CPR provider must give 80 chest compressions to a depth of 1 to 1-1/2 inches per minute, and ventilate the patient 12 times per minute with approximately one liter of air each time. A trained instructor can watch you doing that on the old-style mannequin and give you a reasonably accurate indication of the quality of your efforts. But it’s still subjective. HeartCode actually counts the number of compressions and ventilations, and measures the compression depth and ventilation volume. It will tell you if you’re not compressing fast enough, deeply enough, or providing enough air. It will suggest a specific remediation, such as how much harder to push or blow.”

This exponential increase in feedback accuracy makes a world of difference. The student can now more easily learn exactly how much effort is required for each maneuver. There’s no guesswork, no “close enough.” And as students take the time to practice, the immediate feedback raises their confidence level substantially.

One of the great strengths of HeartCode is how easy it is to use. It’s Windows-based, so, as Platt explains, “If you can use a mouse and read, you can operate it.” For the BLS module, no medical training is required. There’s no jargon to understand or terminology to decipher. The more sophisticated ACLS course requires more in-depth medical understanding.

But HeartCode’s greatest benefit may be in the time savings it offers. Students can work on the program without an instructor being present. They can go to the lab anytime it’s open and practice their techniques until



Tom Platt

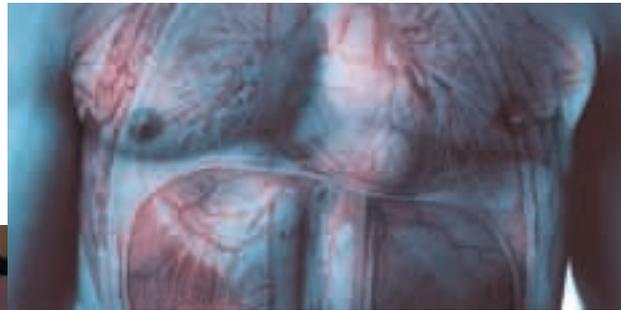
Anyone who has ever taken a CPR course is quite familiar with the training mannequin nicknamed “Annie.” She makes it possible for students to practice the techniques of chest compression and ventilation that can make the difference between life and death for human patients. Unfortunately, most people also remember the rather unpleasant experience of having the entire class and the instructor stare at you while you grappled with learning how to handle the practice device. You felt rushed, nervous; it wasn’t that difficult to do, but it was hard to learn with all eyes watching. And even when the instructor said you had it right, you still wished you could try it again until you were completely comfortable with it.

But now Annie is plugged in, and the difference for students at SHRS’s Emergency Medicine Program is dramatic. The mannequin is now part of a computerized interactive training system called HeartCode Self-Learning. HeartCode is available in two modules, one for Basic Life Support (BLS) courses and another for Advanced Cardiac Life Support (ACLS). The

oes Digital

they are truly proficient and feel completely comfortable with the prospect of using those techniques on a human being in distress. They can learn at their own pace, without the pressure of feeling rushed in a class where several students must take turns practicing on one mannequin. The HeartCode system also serves as a valuable supplement to in-class training, especially for students who might feel nervous about “performing” in front of others.

Another way HeartCode can save time is by letting students demonstrate their proficiency in order to receive certification. As Platt explains, “A typical ACLS renewal course will meet on a Saturday from 8 a.m. to 5 p.m. Regardless of your skill proficiency level, you have to be there the whole time. With this program, you can come in, demonstrate how well you have mastered the skills, and get your certificate in half an hour.”



Platt says that the Emergency Medicine Program has developed a strong working relationship with Laerdal Medical. “Laerdal lets us serve as a beta site for its new products. The students use them, test them, and report on them. They receive the benefit of working with the latest and best technology available, and Laerdal receives real-world evaluation of their upcoming products. It’s a win-win arrangement.”

Currently there are five HeartCode systems in use at SHRS. Platt thinks the simplicity and improved quality that HeartCode offers

makes it a natural for expansion to an even wider audience of healthcare practitioners. “We’d like to make it a road show,” he says. We could put the

program on a laptop, deliver the system to an EMS agency or a physicians’ group, leave it there for a week or two, and everyone there could use it during downtimes to achieve certification or just improve their skill levels.”

The new HeartCode interactive learning system has made Annie a much more valuable tool for BLS and ACLS training, one that not only improves the quality of training, but also saves time and expands its use far beyond the classroom or lab setting. Not only students, but healthcare practitioners of all kinds, can fine-tune their lifesaving skills with an efficiency and effectiveness that would have been difficult to achieve with pre-digital Annie.

For more information, e-mail Tom Platt at plattt@pitt.edu.

Because HeartCode is so simple, its use isn’t limited to students in the Emergency Medicine Program. Physicians, residents, nurses, and other medical trainees can take advantage of it. In fact, more than 100 people have already used HeartCode to obtain certification in one or both of the courses.

HeartCode actually has its roots in the Pittsburgh area. Its electronics were developed by a Pittsburgh startup company, which was then purchased by Laerdal Medical, the largest manufacturer of CPR training mannequins in the country. The HeartCode system was developed in conjunction with the American Heart Association.



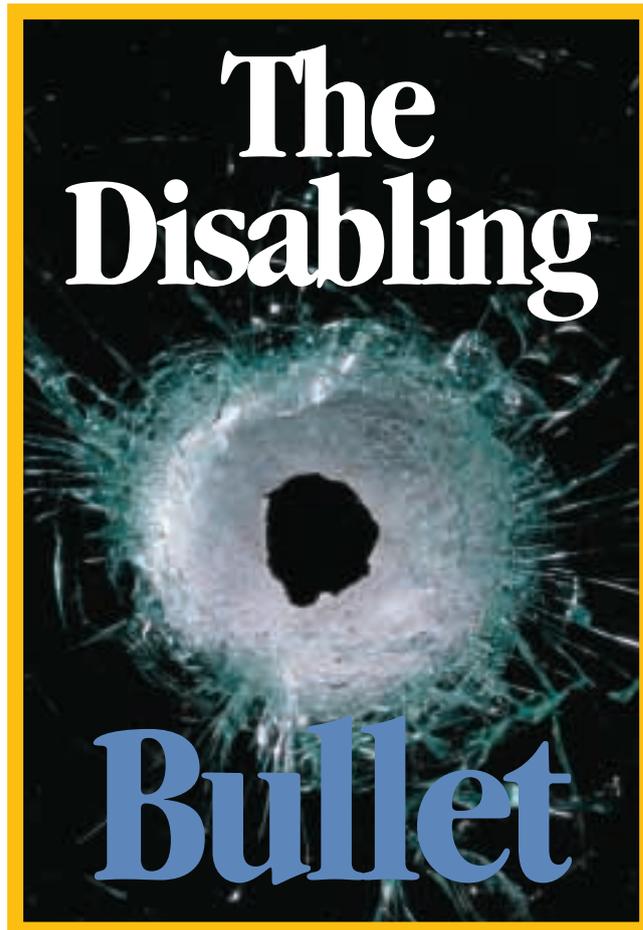
Life after Gun Violence

Tony and his brother stepped onto a bus on their way to their favorite restaurant for dinner. They had a lot to celebrate. Tony had just passed his Navy fitness test and was looking forward to a future far from the inner city, where he had spent his teenage years in a street gang.

As they sat in their seats, rival gang members boarded the bus, carrying guns. Even though Tony and his brother were not involved, a fight broke out and shots were fired. In a split second, Tony's plans for the Navy were shattered. So was his spinal cord. As a result of gang-related violence, Tony is permanently in a wheelchair. Unfortunately, he is not alone.

According to national statistics, homicide is the leading cause of death among 11-to 17-year-olds. Each day, guns kill at least 14 youths under the age of 19. Young African-Americans suffer the greatest toll. They are five times more likely to be gunshot victims than their white peers, and gun violence is now the leading cause of death among African-Americans 15- to 19-years-old.

The victims who survive street violence are often left with life-changing disabilities. Gunshot violence accounts for up to 60 percent of



spinal-cord injuries in the inner city. Young males sustain up to 70 percent of these injuries.

“Disability caused by street violence is a problem of enormous concern,” says Dr. Miriam Hertz, Assistant Professor in the Departments of Health Information Management and Rehabilitation Science and Technology. “Disability as a result of gun and gang violence is a critical medical, public health, and civil rights issue.”

A Turning Point

Hertz, a social scientist in the new field of Disability Studies, came into contact with Tony during a video research project documenting the lives of individuals disabled as a result of gang-related violence in Chicago. Through her extensive study, she and a colleague came to realize that the disabling bullet could be a turning

point that positively impacts a person's life.

For example, after his disablement, Tony began pursuing a career in social work and is now a part-time peer counselor helping other newly disabled individuals. And other former gang members who are now choosing different life paths as a result of a disability mirror Tony's story.

“Part of Tony's success can be attributed to his own personal motivation,” says Hertz. “But another contributing factor was the support services offered by his rehabilitation hospital. The hospital sponsored social events that connected newly disabled patients with people who had been disabled for some time. An informal support group developed and a mentoring relationship evolved.”

“These young men are in need of services not only because they are disabled, but also because they come from disadvantaged backgrounds,” she explains. “They are usually uninsured and unless help is provided, their future is dim.”

Hertz believes there will be more success stories like Tony’s if there were more peer mentoring and service referral programs coupled with a network of social services specifically designed to assist this unique subset of the disabled population.

Society and Disability

According to Hertz, until now, society has viewed disability as a medical relationship between an individual and his or her rehabilitative needs.

However, she believes, “we need to move beyond the person and how he or she typically relates to the disability, and look at how to bring people with disabilities into the mainstream of society and work with them to improve their lives.”

This socio-cultural model of disability is the basis of research Hertz would like to complete over the next two years. Using survey and interview methods, this field research would gather information on how persons disabled as a result of gang-related violence use public and private disability programs and services in Pittsburgh. This project would lead to recommendations for program and social service improvements that would be shared with state and private humanitarian and disability agencies.

Hertz’s long-term goal is to create collaboration among local public and private agencies in order to develop a network of referral and social services to meet the needs of this specific population. Hertz envisions a peer-mentor disability empowerment model, with people long disabled from street violence guiding those who are newly disabled. “I’ve witnessed the positive outcomes that can result from peer-mentoring combined with proper social services. I’d like to be part of making that happen here in Pittsburgh,” she says.

Hertz joined the University of Pittsburgh in 1999. She is a founding faculty member of the graduate-level certificate program in Disability Studies that is being developed at the School of Health and Rehabilitation Sciences. Hertz teaches several undergraduate

and graduate courses in this new area of scholarship as well as pursuing research. She has a chronic stutter and has seen first-hand how individuals with disabilities face stigmatization and discrimination. Her goal for the Disability Studies Program is to create a curriculum that sends people out into all arenas of life championing the rights of people with disabilities.

For more information, e-mail Miriam Hertz at mhertz@pitt.edu.



Miriam Hertz

*“Disabilities
as a result of gun
and gang violence
will be one of the
critical medical,
public health,
and
civil rights issues of
our new century.”*



Is There GOLD

The computerization of every business, every hospital, even our own homes, has left us all swimming in seas of data. Data mining - better defined as knowledge recovery - is the act of taking the huge amount of data that computer systems generate and turning it into useful information.

It's not a simple job. The vocabulary of the data miners becomes confusing rather quickly, with concerns for sequential versus associative classification and "time-series clustering." They talk about multifactor analysis of variance versus multivariate analysis and "clickstreams."

Dr. Bambang Parmanto, Assistant Professor, Department of Health Information Management, heads a team that faces the challenge of transforming tons of raw data into valuable knowledge. As he extends the mining metaphor, "It's not just gold we're mining, in the sense that it is valuable and can save money. We're also mining oil, in that this information can make entire operations run more efficiently." His team includes Dr. James J. Irrgang, Assistant Professor, Department of Physical Therapy, of whom Parmanto says, "He provides invaluable insights and clinical expertise." Fred Guo, a doctoral student at SHRS, and Dr. Anthony Delitto, Associate Professor and Chair, Department of Physical Therapy, are also on the team.

Slicing and Dicing

The amount of data is vast. Data mining experts call their job "slicing and dicing," or organizing it in many different ways, all in search of patterns that lead to improved operation. Parmanto uses the



analogy of large retail stores that have customer-buying cards. These stores mine the data they receive to determine buying patterns by store and by each customer's age and gender so that they can purchase more efficiently, distribute more accurately, and maximize inventory throughout their operation.

When it comes to hospitals, the focus is on patient progress. Parmanto explains that the data mining system his team has developed for SHRS is meant to determine the patient's level of "wellness" at each stage of his or her treatment. At the time of each "transaction" - a time when the patient interacts with the hospital either for a visit, a treatment, or an update - the clinician rates the patient's status with a score. The change in the score over time indicates the rate of improvement.

Working with the aggregate information, Parmanto's objective is to differentiate the data (slice and dice it) in ways that make it most meaningful: by gender and age (just like the retail stores), by severity of condition, and by the clinic that treated the patient at each stage of his or her rehabilitation. Administrators can then use the newly structured and organized data to compare performances of various clinics as well as treatment options, including what drugs were used at particular times. The mined data can identify new, perhaps unexpected, patterns that can help predict optimal patient flow through the system, leading to improved allocation of resources and maximization of time. The result is a more efficient operation.



in Data Mining?

Developing Predictive Models

For Parmanto and his team, the next step in the process is using the knowledge gathered from the data mining to develop a predictive model for improving therapeutic efforts. They want to determine what factors have the most influence on final patient outcome. Is it the patient's age? Gender? Their initial condition? Or something else totally unexpected? The objective is to find the best possible treatment for each individual patient who enters the system. Parmanto explains that the ability to predict success for two patients with similar backgrounds and the exact same initial condition is currently 85 percent.

"Fifteen percent," he adds with a sigh, "we'll just never know."



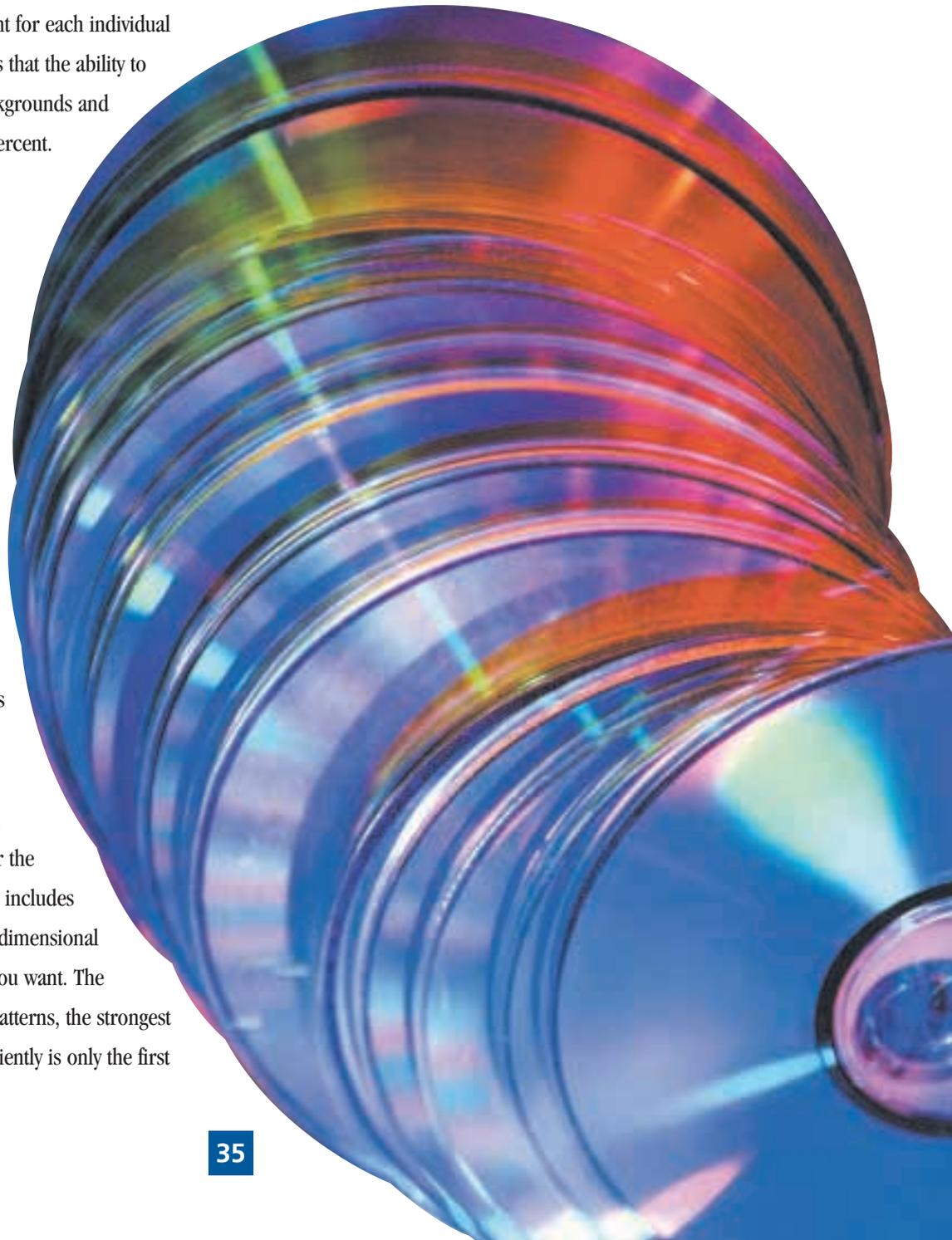
Bambang Parmanto

Most important, the system designed by Parmanto and his team puts this information at the fingertips of administrators. With one click, they have access to the data they need for planning, structuring, even purchasing and stocking.

The data is built from the past year's aggregate information and is updated weekly or monthly. It takes one day to turn three million transactions into instantly accessible information.

The step from masses of aggregate data to handy, usable knowledge is a huge one. The web site for the information Parmanto and his team have created includes the term "cube." The point is that this is a multi-dimensional undertaking; you can "slice and dice" however you want. The challenge is how do you find the most valuable patterns, the strongest predictors? Helping hospitals operate more efficiently is only the first step in the process.

For more information, e-mail Bambang Parmanto at parmanto@shrs.pitt.edu.





Dressing for Success

Self-Sufficiency among Nursing Home Residents with Dementia

One of the proudest moments of your life comes on the day when you realize you can dress yourself. Those feelings of independence, pride, and accomplishment – so important to a pre-school child – are no less important to people in their later years, particularly those with Alzheimer’s disease or other forms of dementia.

However, the morning rituals we take for granted – waking, using the toilet, bathing, grooming, and dressing – can become grueling tests that try the patience of patient and caregiver alike. The result is often confusion, anger, and sometimes, even violence.

Dr. Joan C. Rogers, Professor and Chair, and her colleague, Dr. Margo B. Holm, Professor, Department of Occupational Therapy, did not believe such turmoil was inevitable. Under their direction, an in-depth study was conducted of 84 residents in five Pittsburgh area nursing homes to answer the question: What can be accomplished by residents with dementia in terms of one morning routine - dressing?

“Individuals with dementia are regarded as unable to learn or improve in doing things for themselves,” explains Rogers. “We focused on dressing, one of the more complex self-directed activities.



Margo Holm



Joan Rogers

“Verbal skills many times are lost entirely by residents with dementia,” she continues, “but ‘how-to’ skills usually are retained. They can’t say ‘brush,’ but they know what to do with it.”

The project began with an assessment of each resident’s morning ritual. Through interviews with the nursing assistants who routinely cared for the resident, a profile of his or her habits, preferences, and potential triggers of disruptive behavior was created. Did she always dress first, then brush

her teeth? Did he always wear the blue sweater? Did she react violently if water was accidentally sprayed on her face when showering?

Next, skilled assessors took over the residents’ morning care. As much as possible, the assessor took a “hands off” approach to the routine, permitting the residents to do as much of the toileting, bathing, oral hygiene, and dressing as they could. Performing the self-directed task was encouraged through the systematic use of a hierarchy of behavioral techniques: encouragement, verbal instruction, gesture or demonstration, physical guidance, and physical assistance.

One Step at a Time

The assessor began by limiting her assistance to positive encouragement, such as “I think you can put on that shirt.” No direct physical assistance was provided.

If encouragement wasn’t effective, the assessor then offered verbal instruction, such as “Put on that shirt.”

If verbal instruction failed, the assessor then added a gesture, like tapping the resident’s arm and pointing to the shirt.

If gesture or demonstration failed, the assessor then provided physical guidance. For example, picking up the shirt and directing the resident’s arm toward the sleeve.

If that failed, then the assessor completed the task, actually dressing the resident.

By using the “prompt hierarchy,” the assessor was able to determine what the residents could or could not do. A behavior intervention plan was then created. “By selecting the least restrictive type of assistance, residents were supported in using the abilities they had,” Rogers explains. “They weren’t made more disabled than they actually were by being offered more help than was actually needed.”

The nursing assistants who normally provided care were then trained to implement the behavioral intervention. Because abilities can vary from day-to-day for people with Alzheimer's disease and related dementias, flexibility was built into the intervention plans. Plans were later modified as the residents' abilities either improved or declined.

Validation

Rogers and Holm had hypothesized that with the proper level of behavioral intervention, the residents' skill level in daily living activities like dressing would increase and there would be an attendant decrease in the incidence of disruptive behavior. The research bore this out. Within one week, their self-dressing skills increased dramatically, with an attendant decrease in disruptive behavior. Perhaps even more important, these skills were maintained for at least three weeks following the intervention.

Along the way, additional insights were gained that supported the importance of incorporating residents' habits and preferences into the behavior intervention plan.

"We were working with one lady and were trying to help her put on slacks, just like we had been doing for a few days prior," recalls Holm. "But she just wouldn't do it. She was using non-verbal communication, but the message was clear. No matter what, she would not put on those slacks.

"We learned from the staff that every Thursday she had lunch with her daughter and always wore a dress for the occasion. Once we learned that, things went smoothly and she was able to complete the activity – putting on a dress."

Time vs. Money

While the study demonstrated that nursing home residents with dementia can be more self-sufficient, the time it takes to complete such tasks is significantly longer – 22 minutes versus the almost 12-minute average.

This creates a dilemma for nursing home administrators. "In the nursing home industry, time is money," explains Rogers. "Nursing home administrators will need to decide if the additional time required for residents to achieve the level of self-sufficiency can be reconciled with the additional costs that result."

Rogers adds, however, that the administrators may have no choice but to implement the self-sufficiency protocols. "The Omnibus Reconciliation Act of 1987 mandates that patients with dementia have their functional abilities preserved for as long as possible," she says. "We know it can be done."

The study findings have been forwarded to the Healthcare Financing Administration, which pays all Medicare and Medicaid claims. It also has been included in the justification documents presented to Congress as part of the National Institutes of Health annual appropriations request. The study was cited as an example of taxpayer-funded research that has made a difference in people's lives. Rogers and Holm agree with the designation.

"We made it simpler and easier for the residents to become more self-sufficient. They became more physically active. The residents' families had to give their consent for them to participate in the study, and at first, many of them were skeptical. But as the research progressed, the families began to see the difference. They realized that what we were doing was improving the lives of their loved ones."

For more information, e-mail Margo Holm at mbholm@pitt.edu; or Joan Rogers at jcr@pitt.edu.

***"Verbal skills
many times are lost
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but 'how-to' skills
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***They can't say
'brush,' but they
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Eat Your

Deciphering the Smorgasbord of Functional Status Classifications

Quick, define “bathing.”

It means washing oneself, right?

Not necessarily.

Okay, try “eating.”

That’s feeding oneself, correct?

Well, sometimes.

All right, last one. What does “walk” mean?

Moving from one place to another under your own power?

Sort of. It depends who you ask.

simple
can mean *differe*

Words

And that's precisely the problem. When practitioners are required to complete the myriad of functional assessment forms required by Medicare and Medicaid, simple terms like bathing, eating, and walking can be defined and rated differently depending on which of four instruments are used: the Functional Independence Measure (FIM), the Minimum Data Set for Long-Term Care (MDS), the Outcome and Assessment Information Set (OASIS), or the Minimum Data Set for Post-Acute Care (MDS-PAC).

Dr. Margo Holm, Professor, Department of Occupational Therapy, recently was asked to testify before the National Committee on Vital & Health Statistics, Subcommittee on Populations, about federally funded or mandated functional assessment instruments. Holm's testimony was drawn from an article that she co-authored with Dr. Joan Rogers, Professor and Chair, Department of Occupational Therapy, and Sharon Green Gwinn, Research Associate: "Comparing Activities of Daily Living Assessment Instruments: FIM, MDS, OASIS, MDS-PAC."

Explains Holm, "Due to recent changes in reimbursement, many occupational and physical therapists are working in multiple practice settings or are moving from one type of practice setting to another. As a result, within a single setting, or a single day, they may be required to contribute data for rating a patient's function on more than one of these instruments – and the same item on each instrument may require different patient skills."

"Take bathing, for example. On one instrument it means the ability to wash oneself; on another, it means being able to get in and out of a bathtub or shower, along with washing oneself. The same is true with 'eating,' which appears on all four instruments but is combined with 'feeding' on one. Another problem, for grammarians, is that two of the instruments use 'walk' as a verb and another uses it as a noun."

According to Holm, a patient's eligibility for benefits could be affected by how practitioners rate functional status. "Patients could be denied benefits to which they are entitled if their functional status is mischaracterized."

Holm said that she and her colleagues wrote the article to increase practitioners' awareness of the problem. "It is an ethical issue for practitioners," she says. "Their codes of ethics require them to keep current with the instruments they use to rate patient function, as well as to provide accurate information about patient status."

The Assistant Secretary for Planning and Evaluation of the U.S. Department of Health and Human Services has cited the paper in a recent report and wants to use it as an impetus to examine standards. A pre-publication copy of the article was also requested by the Healthcare Financing Administration, which pays all Medicare and Medicaid claims and has funded projects related to the development or evaluation of each of the instruments. Although the initial intent for the article was to impact practice, the authors are delighted that their article may also impact healthcare policy.

For more information, e-mail Margo Holm at mbholm@pitt.edu.



If You Can't Smile, Can You Be Happy?

Have you ever watched a baby smile? If so, then you know how one smile can light up a room.

Most of us smile hundreds of times a day. Sometimes, we smile as much as twice in one minute while engaged in conversation.

Scientists report there is a clear link between facial expressions and positive emotions. When we turn up those two corners of our lips, we simply feel happier. And so do those around us.

But what if you can't smile because of a stroke, a car accident, or a disorder such as Bell's Palsy, can you still be happy?

Researchers from the University of Pittsburgh Facial Nerve Center (FNC), who work daily with patients with facial neuromuscular disorders, wanted to find out. "We noticed that at times, patients with a low level of impairment still reported a high level of disability," says Dr. Jessie M. VanSwearingen, Associate Professor, Department of Physical Therapy. "Many of our patients suffering from facial neuromuscular disorders, especially those that were unable to smile, were highly disabled. The impairment had chronically changed their lives. They did not want to leave their homes or have social interactions and they were less likely to respond to therapy."

This led VanSwearingen, along with colleagues Dr. Jeffery F. Cohn and Dr. Anu Bajaj-Luthra of the University of Pittsburgh Medical Center, to take a comprehensive look at the impact of facial neuromuscular disorders,



Jessie VanSwearingen

and specifically the inability to smile, on a patient's level of depression and anxiety. Published in the journal, *Aesthetic Plastic Surgery*, the findings reported that the specific impairment of smiling and physical disability were key predictors of depression and anxiety.

Depression More Severe

The research showed that an astounding 65 percent of patients with facial neuromuscular disorders reported depression and anxiety. Additionally, the inability to smile increased the severity of depression. This is significantly higher than patients being treated for other health concerns (five to ten percent have depression and anxiety) or the general public (five percent have depression.)

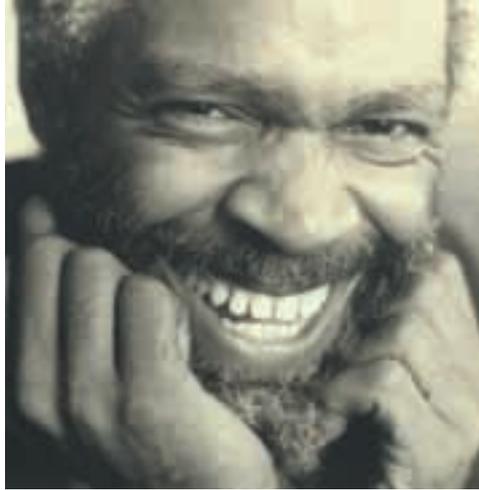
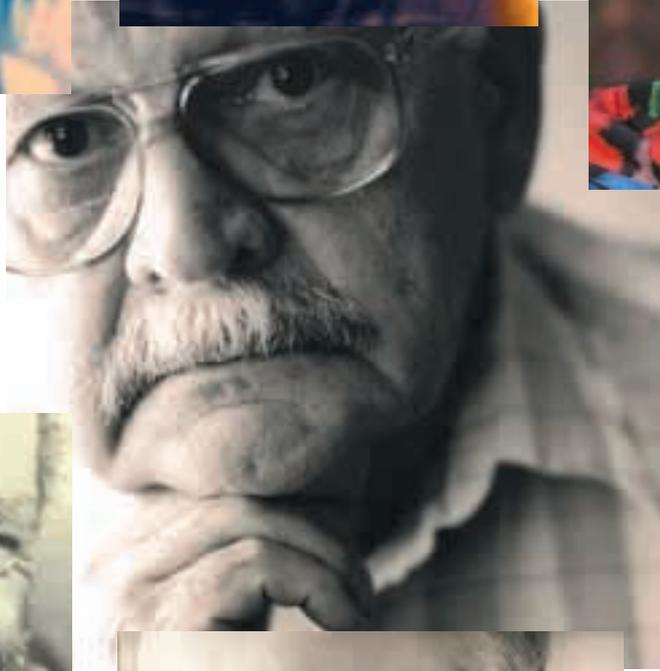
Researchers evaluated 29 patients between the ages of 18 and 81 who had a facial neuromuscular disorder. The patients underwent multiple clinical assessments of their level of impairment, as well as completing several questionnaires to assess emotional experiences and self-reported levels of depression and anxiety.

VanSwearingen reports, "From the patient's perspective, the recovery of health means not only the recovery of physical function, but also the recovery of emotional and social well-being. This study documents the importance of clinically treating depression as part of our patients' overall rehabilitation."

According to VanSwearingen, patients at the FNC have been relieved to learn that depression is common and that there is a medical explanation for their inability to feel happy. "Just knowing that they are not alone can improve their outlook," she notes.



py?



Treating the Whole Patient

Since the study's completion, the researchers have been sharing their findings with others in the field through presentations, lectures, and publications. "If we are truly focused on a patient-centered outcome, then it is extremely important for patients to receive clinical treatment for their depression along with medical treatment and rehabilitation," she says.

The findings are also leading VanSwearingen and her colleagues to pursue additional research in the field. Plans call for a clinical trial conducted by a multi-disciplinary team of researchers that would compare the rate and magnitude of recovery of patients being co-treated for their facial nerve disorders and depression with those patients being treated only with facial rehabilitation.

"We will document whether or not there is an improved recovery rate in patients who are receiving co-treatment. Our hope is to improve the quality of life for these individuals who are unable to smile," she says.

The Facial Nerve Center is one of only three centers in the country that provide medical, surgical, and rehabilitation services for patients with facial nerve disorders. It is the only facility in the country providing services for individuals with facial movement problems in which the services were offered through a single, multi-disciplinary clinic, and the facial rehabilitation is administered by physical therapists. Established in 1993, the FNC serves patients from around the world.

For more information, e-mail Jessie VanSwearingen at jessievs@pitt.edu.



Gray Matter on my Mind

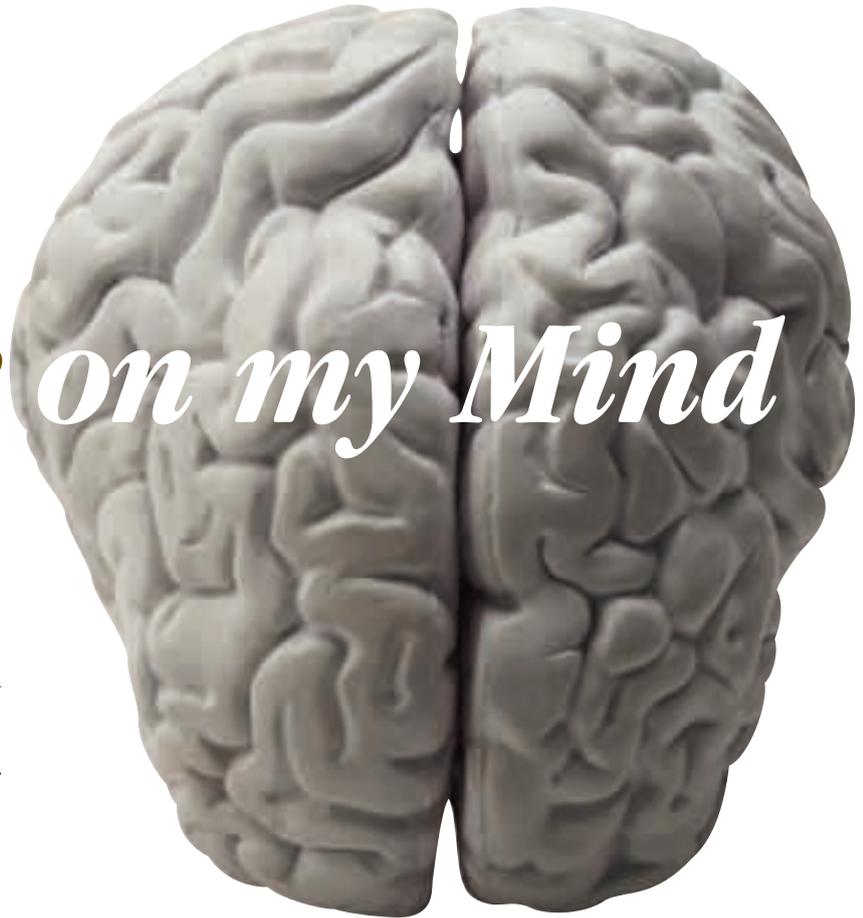
A New Dimension in Neuroscience Learning

In the future, experts say, medical students will depend less and less on the limitations of textbook and chalkboard and more and more on virtual learning. They'll learn faster and deeper by working with computer-generated models of the human body that do things that real bodies can't. How far off is this future? In more than a dozen Neuroscience classrooms around the country, it's already here.

Graduate students at the University of Pittsburgh, the University of Southern California, the University of Illinois-Chicago, the MGH Institute of Health Professions and other leading medical schools are exploring the brain in a totally new way with "Gray Matter on my Mind 2000," an interactive, multi-media learning program developed by Dr. George Carvell, Professor, Department of Physical Therapy, and Associate Dean of Graduate Research Studies. With this new learning tool, studying the brain will never be the same.

"Gray Matter on my Mind 2000" (nicknamed GMOMM 2000 by Carvell) brings to life the workings of the human nervous system in entirely new ways. Instead of racking their own brains trying to visualize complex neurological processes with only the aid of text and lecture notes, students can now see, study, and even manipulate the brain and spinal cord in three-dimensional cyberspace. The program comes complete with hypertext, pop-up study guides, and sound effects.

The new learning aid solves a problem that Carvell has wrestled with for years: making the intricacies of brain function more accessible to graduate students and doctoral candidates in one of the university's toughest four-credit medical courses, Neuroscience. "The brain is complex, multi-layered, and wired to all parts of the body. It's hard to get that across in two-dimensional classroom overheads," says Carvell.



Students use GMOMM 2000 for research through the campus computer network or in class - as an adjunct to lecture - on laptop PCs. Either way, the program is a comprehensive supplement to what's available through textbooks, lectures, the computer lab, and expensive lab work with real specimens.

Index Nervicus

GMOMM 2000 covers the entire nervous system, including sections on brain structure and function, spinal structure and function, the somatosensory system (the body's sense of touch), motor system, and cranial nerves.

Carvell has organized a massive amount of graduate- and professional-level medical content in a variety of ways, including an extensive Index Nervicus that gives students point-and-click access to a vast trove of meticulously gathered medical information. Its scores of technical diagrams are mapped with hyperlinks that pop up relevant notes. And the program features context-based "Study Buddies" that, in a low-key interactive format, help students review and self-quiz on the hundreds of names, structures, processes, and relationships that make up current medical knowledge of the nervous system. "Great care has been taken to be accurate and current," says Carvell. "This program does offer the user control of learning, and provides detailed information with a bit of zing."

Better than Real?

The zingiest part of GMOMM 2000, and what makes it a unique addition to the teaching of neuroscience, is its ability to present medical information in ways that no other medium can. Through 18 virtual reality movie clips of both actual and model brains, 3D animations, multi-layered anatomy diagrams, and many other interactive graphics, GMOMM 2000 presents the form and function of the human nervous system in ways that are equal to, or in some ways, better than the study of actual brain specimens.

“Spinal cords, for example, are only slightly thicker than a pencil, and examining them with the naked eye reveals little detail,” explains Carvell. By using virtual specimens of spinal cord cross sections, students can compare the real specimen to magnified sections that also provide details about anatomical relationships and functional correlates of the structures they are examining. “Try to get that from a 2D brain atlas,” brags Carvell.

Students can also explore and manipulate a complete, detailed 3D image of an actual brain through Apple Computer’s QuickTime VR software. Carvell said he had to create the brain photographs himself because available photography was inadequate for the task. To show the brain’s internal structures, Carvell used computer-generated brain graphics with interactive layering and translucency.

Fantastic Voyage

GMOMM 2000 animations also give students a sense of the dynamic processes of the nervous system in a way they could only dimly imagine before.

Animations give students a sense of the speed and timing of nerve impulses and muscle movements. One of the most exciting virtual models is a 3D animation of the lightning-fast journey taken by a touch sensation from fingertip to the interior of the brain. Rendered from the point of view of the impulse itself, the animation puts the viewer in the driver’s seat for a roller-coaster ride through the nervous system that happens in the blink of an eye.

“I have a feel for this since I do this work on a daily basis in the research laboratory, but students need props to bring this information alive,” says Carvell.

“Up to now, students have had to rely on their own imaginations to visualize a sequence of events that’s related to a 3D spatial construct like the brain or nervous system. You cannot get this information from a neuroscience text.”

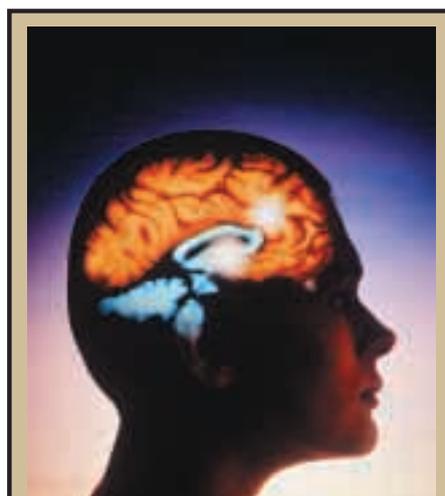
The ability to visualize these usually invisible processes is critical, Carvell believes, to success in learning neuroscience. Students will eventually put this dynamic understanding of the nervous system to work in research and in rehabilitation therapy, where they will help patients with disabilities teach damaged nervous systems to rewire themselves.



George Carvell

Bricks and Clicks

For Carvell, who was admittedly computer-impaired before embarking on the project in 1997, building GMOMM 2000 was a learning experience in itself. “Prior to this project, I’d been working with DOS PCs and mainframes. With that kind of experience, I didn’t want to touch a computer,” Carvell says. But the vision that became GMOMM 2000 motivated him to learn better ways to get the job done. The current version of the program was written, designed, and coded by Carvell, with assistants helping with graphics and photography. The name, “Gray Matter on my Mind,” is a subtle nod to Carvell’s wife, who hails from Georgia.



***“Sometimes, static,
uni-planar geometry
is insufficient to probe
the dynamic dimensions
of the mind.”***

In 1998, Carvell incorporated Small Dog Productions to lay a foundation for a commercial version of the software. It’s currently available in three versions, one designed for campus computer networks and two others that run from a CD on a laptop PC. Carvell hopes to evolve the program from its current format to HTML, the language of the Internet. “That way we can offer it in sections, update it constantly, and make it available to schools worldwide.

“Universities aren’t going to be just brick anymore. They’re going to be brick and click.”

For more information, e-mail George Carvell at gcarvell@pitt.edu.



Engineering *a Better Life*

Human Engineering Research Laboratories are Dedicated to Helping People with Disabilities

The University of Pittsburgh has always been widely respected as a pre-eminent training ground for professionals in the health-related fields. Through the advances occurring at the School of Health and Rehabilitation Sciences, the university now has emerged as a world leader in research and development that increases the mobility and function of people with disabilities.

The Department of Rehabilitation Science and Technology is the first department at any university to critically examine the science behind rehabilitation. “We have one of the strongest and most active research programs in the world,” claims Dr. Rory Cooper, Director of the Human Engineering Research Laboratories (HERL), and Professor and Chair, Department of Rehabilitation Science and Technology.

The science and research backdrop to an education in rehabilitation distinguishes SHRS from its competitors around the world. However, to Cooper, another differentiator is equally as important. “We are truly dedicated to helping people with disabilities. It is not just theoretical here,” he states proudly.

There are eight laboratories under the HERL umbrella - Assistive Technology, Biomechanics and Neuromotor Control, Human Engineering, Seating, Telerehabilitation, Physiology, Activities of Daily Living, and Design

and Prototyping - but they share the same goal. Their primary objective is to use engineering to improve assistive devices and the delivery of services to people with disabilities. This commonality of focus promotes a strong team spirit across all of the labs and with other SHRS departments.

Collaboration among all of the laboratories creates synergies that advance the productivity of each of the individual labs. It also reflects the university’s overall culture.

“It is possible to collaborate across departments at Pitt,” explains Cooper. “Such interdepartmental cooperation is foreign to many, if not most, institutions of higher learning throughout the country. For Pitt, it is simply a strategically prudent way of doing business.”

Centers of Excellence

The interdisciplinary nature of HERL’s work gives the labs a substantial competitive advantage. In recognition of its fine work, HERL is now home to two national Centers of Excellence.

HERL’s VHA Research and Development Center, one of only nine VHA Centers of Excellence in the United States, leverages the SHRS commitment to science and technology into true advances in the devices upon which people with disabilities rely heavily. The center has a nationally renowned reputation.

The second Center of Excellence, the University of Pittsburgh Model Center on Spinal Cord Injury (UPMC-SCI), concentrates on improving the treatment of persons with spinal cord injuries. Designated by the National Institute on Disability and Rehabilitation Research (NIDRR) late last year as one of its 16 Centers of Excellence in the country, this center’s research will spawn a new generation of wheelchairs and other assistive devices. Ultimately, the center’s objective is significantly better mobility and independence for people with spinal cord injuries.

“We have one of the strongest and most active research programs in the world.”



Product Innovation

As many new assistive devices emerge on the horizon, HERL is frequently engaged to do performance testing. Currently under review in the labs are three eagerly awaited new releases.

Yamaha Motor Corporation engaged HERL to work on its pushrim-activated, power-assisted wheel that provides mechanical assistance on manual wheelchairs. The Game Cycle, an upper extremity exercise cycle attached to a computer video game that encourages aerobic activity for people who can't use their legs to exercise, is also being tested.

The third high-profile project underway is the testing of the Independence 3000 IBOT Transporter. Although still unapproved for general use, the IBOT is a wheelchair of sorts designed to raise its occupant to standing height by balancing on two wheels. In addition, the IBOT climbs stairs, a major breakthrough for those relying on these devices for mobility.



Rory Cooper

These exciting projects and many more like them energize researchers and the students alike. However, the true excitement emanates from the knowledge that, as Cooper says, "HERL is dramatically increasing our research's impact on real people each and every day."

For more information, e-mail Rory Cooper at rcooper@pitt.edu.

While recent advances in wheelchair technology have paved the way to greater mobility for many wheelchair users, research conducted by a team of SHRS faculty suggests increased access to transportation may come at a cost – safety.

The team, headed by Dr. Gina Bertocci, Assistant Professor, Department of Rehabilitation Science and Technology, conducted four independent studies evaluating the crashworthiness of wheelchair seating and wheelchair occupant restraint systems. Almost without exception, they found that standard wheelchair seating components failed to withstand the forces generated in simulated crash tests, placing wheelchair users - adults and children alike - at a greater risk of serious injury.

Says Bertocci; "Wheelchair-seated travelers are unable to benefit from standard vehicle safety features because wheelchairs are not designed with crash safety as a primary function. Furthermore, occupant restraint systems used by vehicle-seated occupants have been designed to accommodate and provide effective protection to able-bodied occupants." These ingredients combine to form a recipe for disaster.

In one of the studies, an assessment of the effectiveness of wheelchair occupant restraint systems in a frontal crash, researchers found that standard shoulder belt anchorage locations can lead to the belt passing over the face or upper neck of children and smaller wheelchair occupants. In even a basic bumper-to-bumper collision, the restraints were more harm than help.

The findings, published in the *Journal of Rehabilitation Research and Development*, also suggest that wheelchair accessories added after manufacture could contribute to greater harm.

In a guest editorial that accompanied the report on the findings, team member Dr. Douglas Hobson, Associate Professor, Department of Rehabilitation Science and Technology, notes, "Accessories, such as seat inserts, position supports, and tray-mounted devices are often added to the wheelchair after they leave the manufacturer, and are not designed with crash injury prevention as a goal. Many wheelchair frame designs lack the necessary strength for attachment of the tie-down straps required to secure the wheelchair to the vehicle." Adds Bertocci, "Constraints posed by wheelchair components such as armrests may lead to poorly positioned lap and shoulder belts, which have been documented as a source of belt-related injury."

The team believes that defining the problem will go a long way toward solving it. Conditions and standards for wheelchair users have been steadily improving since the passage of the Americans with Disabilities Act in 1990. And this trend should continue.

"Substantial research is being conducted to improve the safety of vehicle seats and to improve protection for the occupant," says Bertocci. "Manufacturers of automotive seats are now required to perform extensive testing to ensure that vehicles comply with government crashworthiness standards. Our studies further prove that the stringent standards that apply to automotive seat manufacturers need to be transferred to the wheelchair transportation industry."

For more information, e-mail Gina Bertocci at ginaber@pitt.edu.



Gina Bertocci



Let the Games Begin

SHRS Puts Science Education FIRST

The setting may not rival the Coliseum, but the competition is no less intense.

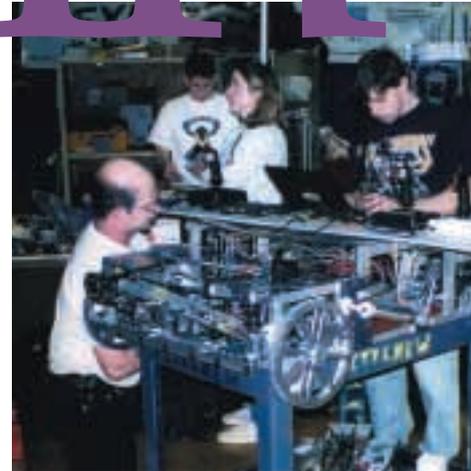
FIRST, founded six years ago by renowned inventor, Dean Kamen, features gladiator robots built by teams of high school students battling for hi-tech supremacy. For the past five years, the School of Health and Rehabilitation Sciences has sponsored a FIRST team.

Created to inspire curiosity and stimulate interest in science and math among young people, FIRST immerses its participants in the field of engineering. Each year, the design parameters for the robots, as well as the tasks that they perform, change.

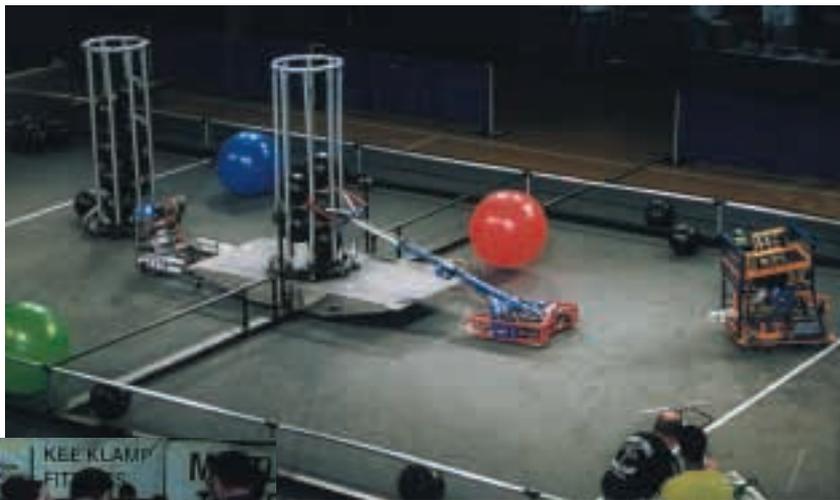
This year, contestants had to configure their robot to gather two different size balls and deposit them in one of two bins.

Through a complex scoring system, the robots' proficiencies are evaluated and ranked. Winning teams at regional competitions earn the right to compete in the national championships held annually at EPCOT Center.

Dr. Rory Cooper, Professor and Chair of the Department of Rehabilitation Science and Technology, heads the SHRS team, sponsored for the last several years by Johnson & Johnson. The 20 high school students who comprise the team spend more than 600 hours over a six-week period in the design and construction of their robot, which can cost as much as \$60,000.



“Kids with Disabilities Get a Substandard Science Education.”



But Cooper sees this as a nominal investment, particularly in a world that demands ever-increasing proficiency in math and science.

“We need to energize students to pursue their math and science studies more vigorously,” he says. “FIRST whets their appetite.”

Cooper says the need is particularly acute for students with disabilities. A paraplegic from a bicycling accident early in his career, Cooper identifies with the challenges these students face in the education arena.

“Kids with disabilities get a substandard science education,” he asserts. “These kids are somewhat conditioned that they can’t do science, which, of course, is generally untrue.”

And according to Cooper, the deficiencies don’t end with science. “Their lack of math skills is frightening,” he says.

Because they are deprived of the typical encouragement to study math and sciences, Cooper says that students with disabilities often fall behind their counterparts who do not have disabilities. Cooper saw the FIRST competition as an opportunity to reverse that trend. Six of the 20 SHRS team members have disabilities.

“By connecting classroom lessons to real world applications,

FIRST encourages these young people to discover new value in their math and science courses,” he explains. “Throughout the experience, they’re exposed to cutting-edge design and manufacturing processes. It is an ideal gateway to an engineering career.”



The SHRS team fared well last year, placing first in the region and 245th out of 400 in the nationals. Although this year’s team ranked 20th out of 34 teams in the

regional competition, they still qualified for the national contest.

Although Cooper is proud of his team and their accomplishments, he acknowledges that more needs to be done. “I’d like to see more kids with disabilities engaged... and more young ladies.”

For Cooper, the game has only just begun.

For more information, e-mail Rory Cooper at rcooper@pitt.edu.



Bodies in

Neuromuscular Research Laboratory Measures the Limits of Human Performance to Help Build a Healthier Future

To judge by the waiting room of UPMC's Sports Performance Complex on the South Side of Pittsburgh, sports injuries are a growth industry. On any given afternoon, a visitor to the sprawling, high-tech facility on the site of a former LTV steel mill will encounter a vast crowd of teenagers and college athletes in various stages of hurt and repair. Leg casts and thick bandages abound. Everyone but the staff seems to walk with difficulty. And there's energy in the air, as if every single one of the dozens of patients milling around in the spacious, paneled waiting room can't wait to get in, get well, and get back on the playing field.

If you follow the statistics, the picture is a true one: sports injuries are indeed on the rise. The explosion of fitness and nutrition awareness, extreme sports, and other physically demanding recreational activities over the last decade has brought with it an increase in injuries. More people are involved in sports than ever before, and more of them are pushing themselves at a higher level. Many of these new athletes are girls, women, and seniors, groups that are not traditionally engaged in intense and potentially damaging exercise.



Scott Lephart with Greg Norman



Because of this trend, UPMC's sports medicine patient volume has doubled over the last 10 years, and is expected to jump 20 percent in both 2001 and 2002. Physical therapy visits alone are expected to reach nearly 67,000 by July 2003, nearly double that of recent years. Physician visits also are projected to double by 2003.

Center of Excellence

Walk past the vast therapy room, where scores of athletes of all ages work out on the latest equipment, past the walls lined with signed jerseys, hockey sticks, ballet shoes, and baseball uniforms from world-famous patients, and you'll reach ground zero for UPMC's strategy to meet this trend head-on: the Neuromuscular Research Laboratory (NMRL). Here you'll find a center of excellence in the burgeoning field of sports medicine; a place where some of the world's most advanced medical research is finding new ways to improve performance, prevent injuries, and evaluate surgical and therapy techniques.

"The good news is, more people than ever are involved in sports," says Dr. Scott Lephart, Director of the NMRL. "The bad news is that's going to mean more sports injuries." Lephart, Associate Professor in the School of Health and Rehabilitation Sciences as well as the Department of Orthopaedic Surgery, opened the laboratory as part of the Sports

otion

Performance Complex last September. Under his direction, and with the cooperation of UPMC's Department of Orthopaedic Surgery and the Sports Performance Complex itself, the lab has brought state-of-the-art research technology to bear on a variety of projects of key concern to sports doctors around the world.

Women, Competitive Sports, and Injured Knees

One such challenge is the dramatic and disproportionate occurrence of anterior cruciate ligament (ACL) injuries in high school and college girls. The ACL is one of the internal ligaments that supports the knee. Typically, it fails by tearing loose from the bone in running/jumping sports like tennis and basketball, and it happens to girls more often than boys. If we're talking about college girls, it happens eight times more often.

Lephart says opinions vary on this astonishing disparity. "I don't think we're ever going to be able to say it's related exclusively to one thing." And if anyone in the field should know the answer, Lephart should. ACL injuries have been his focus for more than 15 years, an expertise that's part of the reason he was recruited to help start the graduate Sports Medicine Program at UPMC by Dr. Freddie Fu, Director.

Of course, with the major upgrade women's collegiate sports have undergone in the last 10 years, women are now playing basketball, tennis, soccer, and other knee-punishing sports with a never-before intensity. This is probably part of the reason, but it doesn't explain why women are so much more prone to ACL injury than men, who have been slamming around courts and fields for decades. In cooperation with the Department

of Athletics, the lab is currently studying the University of Pittsburgh's female varsity athletes for biomechanical and neuromuscular risk factors, with the goal of designing a program that will attempt to reduce the injury rate.



Films show that there's a marked difference in the way most women land after cutting and jumping: with their feet turned out instead of straight ahead and directly under the knee, as men typically do. This position puts extra stress on ligaments. Women also do not proportionally have the same strength as men in their quadriceps and hamstring muscles to help ligaments handle the overload. "These two factors could have something to do with the higher incidence of ACL injuries in women," says Lephart. Part of the research going on at the lab is aimed at measuring these factors, correlating them with injuries, and finding out ways to recover and prevent future injury.

No Microscopes. Just Video.

But this is different from other medical research. There are no microbes to study, so there are no microscopes, no slides, no incubators, and no autoclaves. Instead, the lab is equipped with the latest technology for studying and measuring the dynamics of the body in motion.

The place is about the size of a basketball gym, including a ceiling with the height to handle a baseball pitch, golf swing, or a tennis serve. Crossing the center of the lab is a wooden runway with a pair of force plates in the middle that measure the impact of footsteps. And surrounding the runway from all possible angles are TV cameras and lights.





Sports Medicine/Athletic Training

With this apparatus, researchers can digitize a 3D model of a body walking, jumping, landing, swinging a golf club, or pitching a baseball. Other instruments correlate the computer information of this event with measurements of muscle movements, impact, and other factors. When all this information is put together, researchers have a complete picture of the unique movements of a patient's body. They can use this information in many ways: to analyze problems, to recommend improvement therapies, and to measure the

body's condition before and after therapy or surgery.

This gait analysis system is part of the electromyography/motion analysis lab, just one part of NMRL's room-sized toolbox of neuromuscular technology. Other mini-labs are equipped to study balance and postural control, muscle performance and flexibility, proprioception (awareness of body and joint position), and reflex/fatigue.



Lephart's staff is using these machines to pursue an amazing variety of cutting-edge research projects, in addition to the ACL research. They've been studying arthritis for the past five years, measuring its deteriorating effects and developing options for managing it. They're studying the effects of laser surgery on the shoulder muscles of pitchers, golfers, and tennis players. They're evaluating the results of various surgical strategies for repairing ACL injuries. And they're exploring the development of skill and coordination in kids.

Halfbacks and Ballerinas

These projects and a prodigious list of publications have earned NMRL world-wide academic recognition, along with the attention of some of the world's top athletes. Pro golfer Greg Norman is heavily involved at the Lab in research and therapy on shoulder and hip injuries he sustained over a lifetime of crushing drives. Athletes



from Japan, Russia, and other parts of the world use the facility for performance evaluation, assessment of injury risk, and therapy. And the facility works with such local organizations as the Pittsburgh Ballet Theater, the Steelers, the Panthers, and the Mt. Lebanon High School football team to provide services and do research on injuries over a wide variety of relevant age and demographic groups.

The Whole Nine Yards

But it's more than high-tech facilities and ground-breaking research that make the NMRL unique, says Lephart. There are few facilities in the world where such research takes place surrounded and supported by a world-class Orthopaedic Surgery department, a stellar Sports Medicine clinic, and the sprawling vastness of the Sports Complex itself, with its acres of practice fields and facilities. Then there's the commitment of the university. Pittsburgh is one of the few places in the country offering Sports Medicine opportunities at bachelor, master's, and doctoral levels.

Only three other universities in the country offer Ph.D. studies in the discipline. "We're able to leave no stone unturned," says Lephart. "You can come here to become a clinician, an athletic trainer, an educator, a researcher. And you can help push the envelope of sports medicine while you're at it. It's the complete package."

For more information, e-mail Scott Lephart at lephart@pitt.edu.

SPORTS MEDICINE/ATHLETIC TRAINING PROGRAM

GETS A NEW HOME

As the Sports Medicine/Athletic Training (SM/AT) Program moves into the new millennium, it's also moving to a new affiliation within the university. As of this year, SM/AT is transferring from the School of Education to the School of Health and Rehabilitation Sciences.

The American Medical Association laid the foundation for this change almost a decade ago when the AMA embraced Athletic Training as an "allied health profession" and set the stage for AMA-sponsored accreditation of professional education programs in the discipline.

"A Strong Relationship"

The transfer reflects much more than alignment with a new paradigm. According to Dr. Scott Lephart, Director of the program and the architect of its new structure, the change means more opportunities for students, resource growth, faculty recruitment and, perhaps most important, the opportunity to strengthen the program's synergy with key SHRS research.

"One of many significant advantages of the transfer is being aligned with the health sciences of the university from a research standpoint, since the program's Neuromuscular Research Laboratory is already supported by and housed in UPMC and Orthopaedic Surgery centers," Lephart says. "Given the nature of the clinical practice of Athletic Training and the research foundation for the discipline that is embedded within the academic programming at both the undergraduate and graduate levels, a strong relationship emerges between the SM/AT program and existing programs at SHRS."

Under SHRS, the Sports Medicine/Athletic Training program operates three academic units and the NMRL, while also providing clinical sports medicine and athletic training services both within the university and externally. The academic program includes a CAAHEP-accredited undergraduate athletic training education program and master's and doctoral

specializations in Sports Medicine. The University of Pittsburgh is one of only four universities in the country with a comprehensive program at all three levels.

NMRL at the Core

The program's research is central to contributing new knowledge concerning the prevention, treatment, and rehabilitation of sports and orthopaedic injuries. Its research center, the Neuromuscular Research Laboratory, is one of four research labs supported by the Musculoskeletal Research Center, Department of Orthopaedic Surgery. Created in 1990, the NMRL is the applied research facility for the Department of Orthopaedic Surgery and the Sports Medicine Program at the University of Pittsburgh.

Committed to Excellence

The clinical component of the program includes team physician and athletic training services for the University of Pittsburgh Department of Athletics, and athletic training services delivered by graduate student assistants to local high schools, sports medicine clinics, colleges, and universities. As a result of the transfer, the athletic training clinical faculty are now housed under the auspices of the Department of Athletics. "This strategy is consistent with most Division I universities," Lephart says. "It provides a more appropriate administrative structure for our clinical faculty, which will help to reward and retain our excellent staff."

Moving Ahead

With an eye on the future, the program's new home has the potential to nurture academic growth that the university and the region need. "SHRS has made the commitment to providing a home unit that will support the expansion of necessary resources — including faculty — to sustain and further develop the academic and research objectives of the SM/AT Program," notes Lephart. "And this is a program that has the potential to be the most comprehensive in the country."



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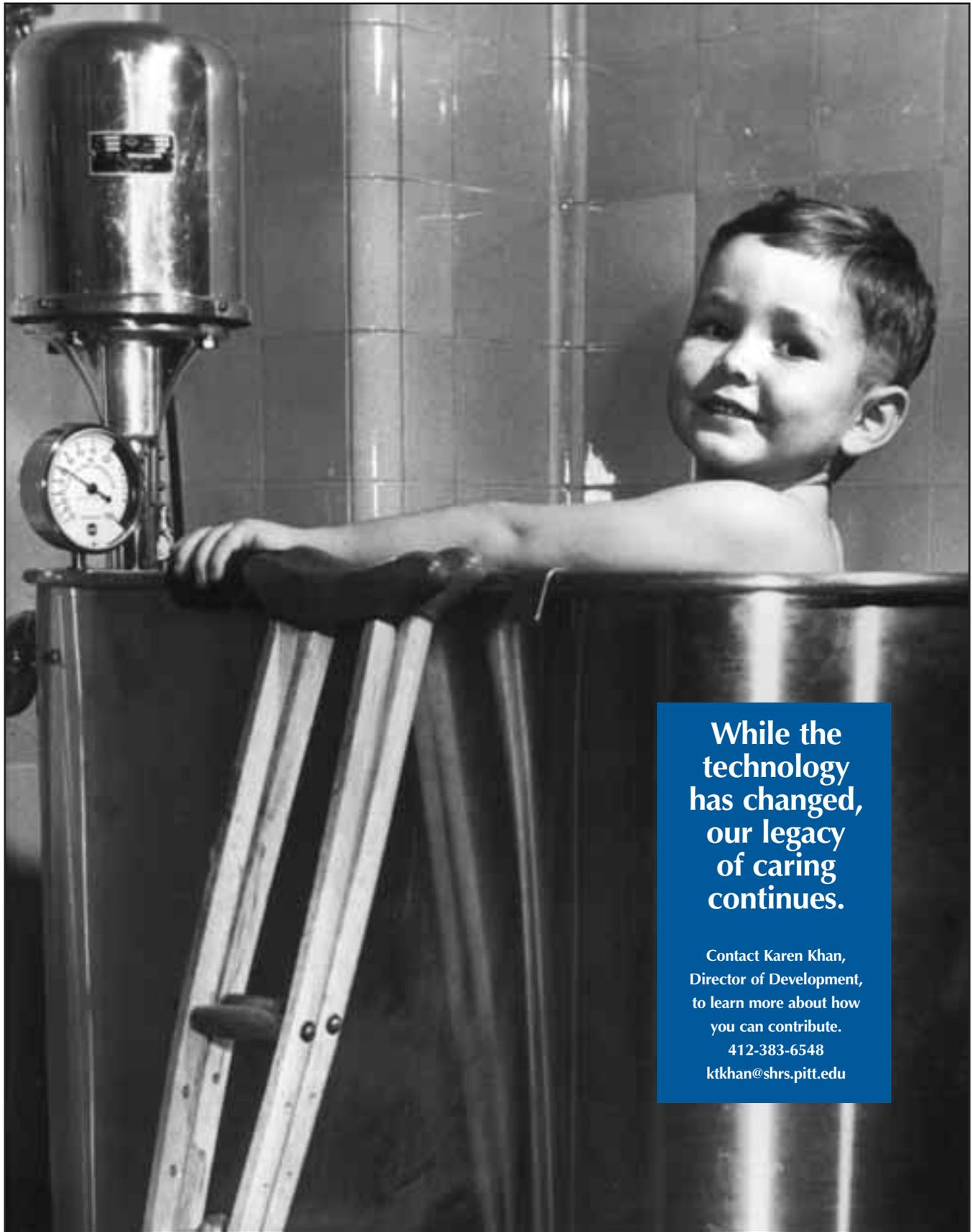
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CURRENT POSITION, HONORS, AND OTHER NEWS

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D. T. Watson Home For Crippled Children. circa 1954

**While the
technology
has changed,
our legacy
of caring
continues.**

Contact Karen Khan,
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to learn more about how
you can contribute.

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