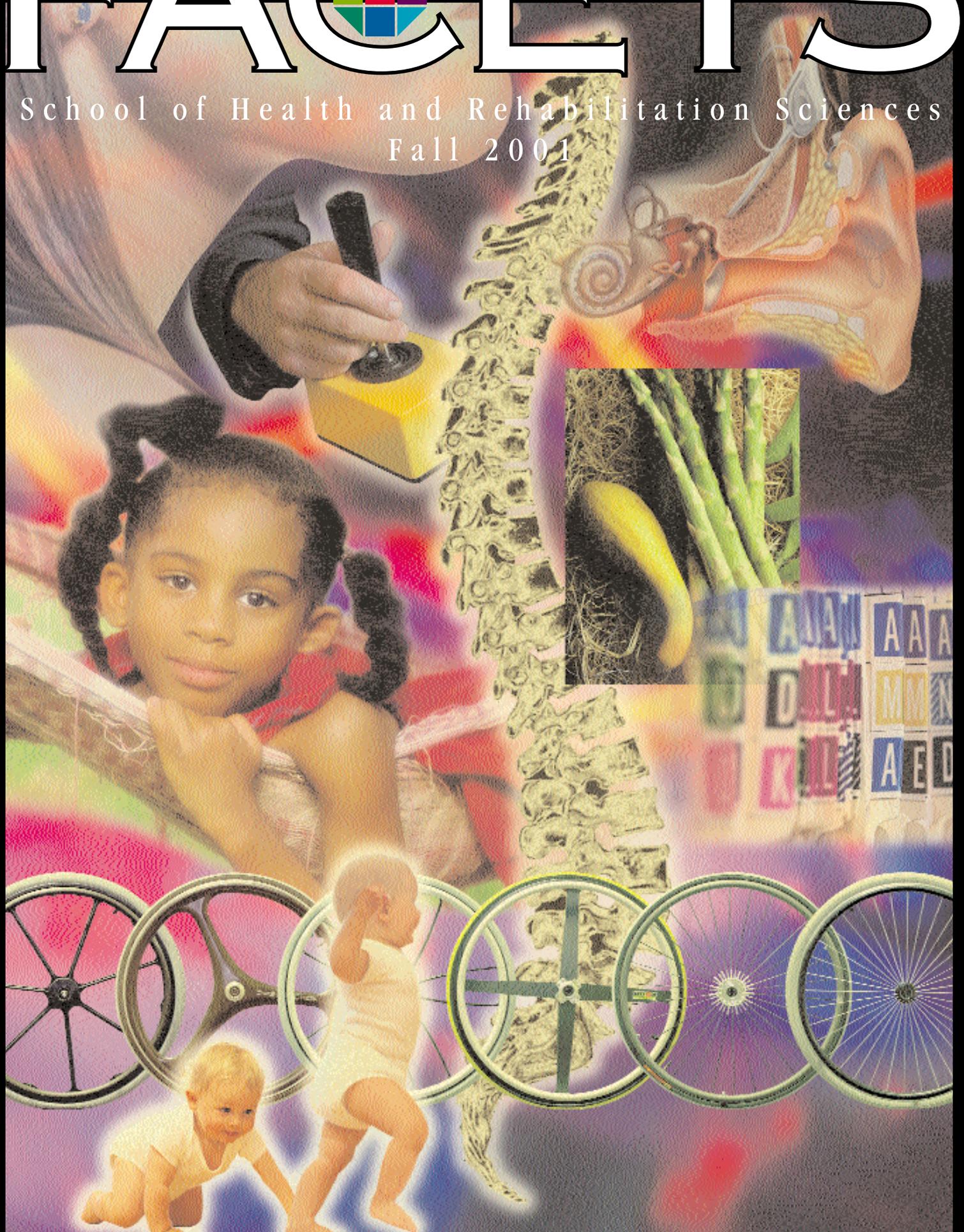


FACETS

School of Health and Rehabilitation Sciences
Fall 2001



University of Pittsburgh

FACETS

School of Health and Rehabilitation Sciences – Fall 2001 – Contents

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CLIFF'S NOTES DIFFICULT LESSONS



My wife Sondra and I had left Positano early on June 4th and by 7:00 a.m. were making good progress along the Autostrada as we approached Naples.

It was a beautiful morning in Southern Italy. According to our pre-arranged itinerary, we would leave our rental car in Naples and travel on by rail to Rome for the last two days of what had been a delightful, two-week Italian holiday.

Perhaps more enlightened travelers would have been better prepared with contingency plans for coping with unexpected problems. I cannot recall any thoughts about possible misadventures, or what we would do in such an instance. We certainly did not expect to be in a high-speed collision with the potential to bring our holiday to an abrupt end, and perhaps us as well. Quite unexpectedly, on the morning of June 4th, we were living this scenario. It was a matter of extraordinary luck, or perhaps the divine protection of angels, that we survived.

I shall spare you the tedium of recounting this event, which is just as well, as I am only able to recall the part that preceded a rather violent impact with a sturdy guardrail. The rest, and possibly the events immediately before impact, can be at least partly deduced from the condition of the car shown above. Like many other adversities in life, one may spend time and energy in remorse and regret, or look for guidance and enlightenment. I can say with conviction that this experience has had considerable educational potential for me and I hope, perhaps, for others who have the patience and wisdom to learn about such things vicariously. In this particular instance, there were at least two major lessons. Perhaps the first of these lessons should be on the value of being adequately prepared to respond to varying levels of adversity.

We were not prepared to deal with unexpected events, and certainly not with the measure of adversity we experienced. We were in a foreign country where we did not speak the language. We took, on faith, the assurance of a travel advisor that nearly all Italians spoke English. Perhaps this is true of Italians who work in the hospitality industry, but it was certainly not the case among healthcare workers in the Naples hospital where I spent four frustrating days. The nature and operation of the public healthcare system we experienced was decidedly different from any previous experience. We had not considered the resources available to us through our health insurance. Although we had the good fortune to be covered

and were able to seek assistance through the contracted services provided by our insurance carrier, it required a series of calls to the U.S. for us to become aware of these services. How much more comforting it would have been to have been aware of them from the outset. We knew that our cell telephone would not function in Europe, but neglected to obtain one for our trip. Considering the difficulty we encountered in attempting to

place a call from the hospital, I now consider a working cell phone to be an absolute necessity for unhosted travel abroad.

We were indeed fortunate to be able to speak with friends at the university and UPMC who provided advice and arranged for local medical consultations and other useful contacts that enabled us to get through a daunting four days of confusion and uncertainty.

The other lesson was more profound. I have worked in the area of rehabilitation research for over 25 years and have had extensive experience in working with people with all kinds of disabilities. I was comfortable in the belief that I had a comprehensive understanding and appreciation of disability and the problems encountered by individuals with disabilities. Spending four days in an environment where I was unable to communicate or move has left me with a much deeper appreciation and understanding of the problems encountered by people who live with disabilities in communities that are often insensitive and almost never fully aware of what it means to live with a disability. I have the good fortune and expectation for a full recovery despite some rather significant and painful injuries. Many individuals we encounter every day do not presently have such expectations.



Clifford E. Brubaker

I hope this experience will strike a chord of relevance for many of you. Perhaps it will serve to alert you to the need for being prepared. I hope that it will also prompt you to appreciate the difficulties experienced every day by individuals who have significant disabilities.

device is needed and, if needed, the type of device most appropriate to meet the person's lifestyle. The clinician would then work with the client and the technology team to prescribe the mobility device. However, coverage policies for wheelchairs can be very discriminatory. If the client can walk short distances within the home, but cannot walk in the community or on uneven terrain, he or she may not qualify for any type of wheelchair – manual or power. In 1984, Congress defined durable medical equipment (DME), including wheelchairs. The definition has been interpreted in such a way as to require that DME be used in the patient's home in order to qualify for Medicare Part B reimbursement. This is a Medicare policy that has been adopted in most Medicaid programs as well as by many private health insurers. The DME must also be deemed "medically necessary."

Reimbursement Definitions

Narrow interpretation of these policies can result in confining people with disabilities to their homes and even their beds. Conflicts arise immediately between the practitioner's notion of what makes good treatment and the health insurers who may argue that the treatment does not fit their definition of medical necessity. These conflicts raise not only pragmatic questions, but also ethical ones. Should clinicians conform to professional standards, or should they conform to policy? The clients and clinicians in the CAT are confronted with many initial reimbursement denials that are often reversed as a result of clinical staff appeals, a time-consuming process that is not reimbursable. Local examples reflect the larger reality of changes in policy affecting clients and professionals throughout the United States.

Cost Containment

Over the past 30 years, there have been substantial and relentless increases in healthcare costs and frequent attempts at cost containment by the federal government and the health service industry. Fundamental changes in the organization and delivery of healthcare services are occurring across the United States. These changes are, to some extent, market-driven, but policy plays an important role. Although the jury is still out, these changes may impact more heavily on rehabilitation and the healthcare needs of people with disabilities. People with disabilities use public insurance more than people who do not have disabilities, often because they are unemployed. Private health insurance is routinely, but not exclusively, funded by employers.

Disabilities and Health

People with disabilities are not necessarily ill; they often have excellent health. A person with a long-term disability, unlike someone who is ill, has or is trying to resume social roles such as parenting and working. People with acquired disabilities, such as spinal cord injury, may need support to learn how to lead new lives. Tucked into this is the reality that people with disabilities have ongoing healthcare needs that are different – and similar – to those of nondisabled people. For example, people with disabilities generally have thinner margins of health without the same opportunities to access health maintenance and preventive healthcare. As with assistive technology, disabled people may need durable medical equipment, sustained pharmacological support, and other long-term services at home such as physical or occupational therapy. Older people,

Administration



like my own mother who is blind, may experience a secondary condition such as hearing loss that makes them more vulnerable. As someone aging with a disability, her hearing loss has put her at greater risk for injury, depression, and other secondary conditions.

The Next Generation

We are training the next generation of physical therapists, occupational therapists, audiologists, speech-language pathologists, nutritionists, rehabilitation engineers, and practitioners in assistive technology, sports medicine, and emergency medicine. They will be well-trained in healthcare and



Kate Seelman

rehabilitation science practices and they will care deeply about their clients. They and their clients will face the challenges of this new system. Every day they will be challenged not only to make assessments and provide therapy, but also to do so with an informed knowledge of reimbursement practices and strategies that will provide their clients with needed treatment, information, and assistive technology. Our professionals must have the knowledge to help their clients negotiate healthcare delivery systems as well as existing healthcare and rehabilitation policies. They also must have the knowledge that will unite them in wise stewardship of their respective professional organizations because these organizations can influence policy and best practice formation.

We sincerely appreciate the advice and counsel of the members of our Board of Visitors and our Development Advisory Council.

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Welcome to *Access*. This column, a new addition to FACETS, will address healthcare and rehabilitation policy issues important to our faculty, students, and alumni, as well as to people with disabilities and providers of professional services.

Assistive Technology

Assistive technology service delivery provides a good platform to identify issues in healthcare and rehabilitation policy. People with disabilities throughout the United States routinely use assistive technology to maximize independent living and to live, learn, and work in their communities. Many users and potential users live in the Pittsburgh area and, together with rehabilitation professionals, confront a myriad health and rehabilitation policy issues, including those involving assistive technology. Clients and professionals at the Center for Assistive Technology (CAT) managed by SHRS and UPMC know the complexity and challenges involved in providing these services.

Mobility and Medicare

Let's consider the following clinical scenario. A person with a disability may come to the CAT to discuss his or her need for independent mobility. A member of the clinical staff completes a mobility assessment and, along with the client, determines whether or not a mobility



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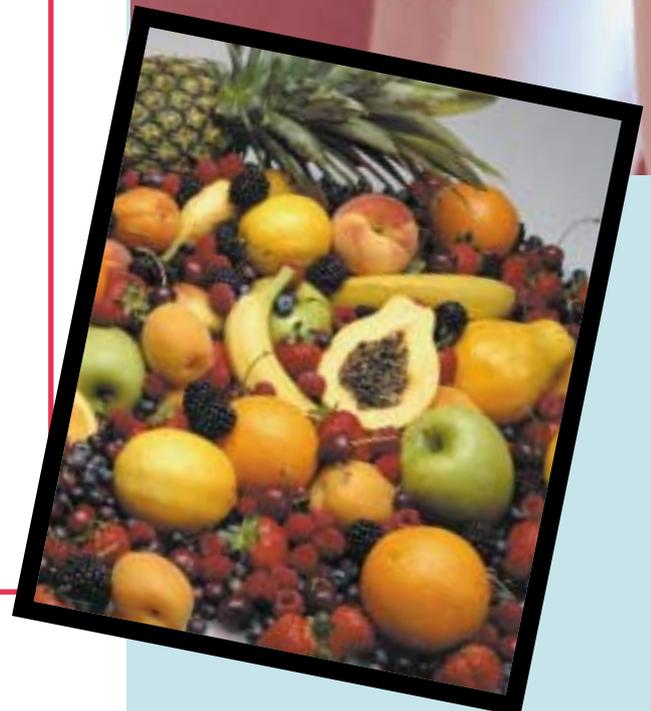
New Graduate Program in Disability Studies

Every day, approximately 43 million Americans with disabilities find themselves confronting a host of barriers – both physical and attitudinal – that effectively shut them out of the larger community. As a result, only 32 percent of working-age people with disabilities are in the workforce. Twenty-nine percent of people with disabilities have average annual household incomes of \$15,000 or less.

For over 30 years, advocates within the disability community and their allies have worked to eliminate barriers, most notably through the passage of the Americans with Disabilities Act of 1990, which outlaws discrimination against people with disabilities, most markedly in employment, state and local services, and private places of public accommodation. In the past ten years, a new academic field, disability studies, has emerged from this civil rights movement.

Disability studies look at disability not from the medical perspective alone, but more as the product of the interaction between the person with a disability and the attitudes of society and the physical barriers of the environment. It seeks to educate professionals in the health sciences and other fields on the public ideologies, policies, and practices that can best promote integrated and productive lives for people with disabilities. It brings new approaches and tools for improving day-to-day patient or client interactions and outcomes.

The Disability Studies program at the University of Pittsburgh is a graduate-level certificate program in the School of Health and Rehabilitation Sciences, Department of Health Information Management. A fifteen-credit curriculum that can be completed in two semesters, it instructs in psychology, sociology, law, economics, policy and services, and advocacy implementation strategies, all in regard to physical, sensory, and mental disability. It bridges with Rehabilitation Science at SHRS and also employs courses from other schools at the University of Pittsburgh. Specifically, this program trains interested professionals and scholars on current disability law, policy, and services, and also in strategies to promote these laws and improve policies and services in healthcare, education, employment, and public accommodations.



Sports Medicine and

New Department To Build Interdisciplinary Links

Consistent with its mission of advancing health and rehabilitation through research, teaching, and professional service, SHRS

The department will build disciplinary links using exercise and nutrition as modalities for enhancing healthy and physically active lifestyles. Specifically, exercise and nutritional sciences will be applied to the teaching and research of injury and disease prevention, treatment, and rehabilitation for those participating in sports, engaging in fitness-related activities, those with disabilities, and disease.



Scott Lephart

The programs of Sports Medicine/Athletic Training and Clinical Dietetics and Nutrition will function as integrated units at both the undergraduate and graduate level, yet will retain their specific professional preparation accreditation programs. The CAAHEP-accredited undergraduate Athletic Training program and the

ADA-approved undergraduate program in Clinical Dietetics will assume specialized tracks within the Bachelor of Science degree in Rehabilitation Science. Synergies in course content and faculty research will be emphasized to enhance the pooled resources of these two unique programs.

Graduate programs in Sports Medicine will continue to integrate research and clinical practice to prepare educators and scholars

in this multidisciplinary field. The master's degree in Sports Medicine includes extensive clinical graduate assistantships in Athletic Training. The doctoral specialization in Sports Medicine will be contained within the Ph.D. degree program in Rehabilitation

Science and includes research fellowships in the Neuromuscular Research Laboratory.

Graduate programs in Nutrition will be developed and include moving the coordinated Clinical Dietetics undergraduate program to a fifth-year, post-bachelor/master's degree leading to credentialing as a Registered Dietitian, as well as a two-year advanced master's degree with an emphasis in nutritional sciences related to exercise, performance, and disability. Doctoral assistantships will be developed to enhance the instructional and research capabilities of the faculty.

has merged its Departments of Sports Medicine/Athletic Training and Clinical Dietetics and Nutrition into a new department, Sports Medicine and Nutrition, chaired by Dr. Scott Lephart.

Americans are, indeed, very generous.

In the year 2000, donations to charitable and philanthropic organizations in the United States totaled an astonishing \$203.45 billion. More remarkable, however, is that 75 percent of that total, or \$152.07 billion, was not given by foundations or corporations as one might expect, but by individuals. The average American donates money to six organizations a year. These figures do not even take into account the enormous amount of time dedicated to volunteerism.

The reasons for donating precious time and money are as varied as the donors themselves. Some people feel a keen sense of responsibility to help because they themselves received assistance; others, because it makes them feel good. Some want to leave a legacy; others want to see their money make a difference in their own lifetime. Some donate to honor the memory of a teacher, mentor, or friend; others, to support a cause, or because it may – as in the case of research - directly benefit a loved one.

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Karen Khan

In this issue of FACETS, we want to take the opportunity to thank all of our alumni and friends who felt strongly enough about our goals, our programs, our faculty, and our research efforts to contribute to the School of Health and Rehabilitation Sciences in fiscal year 2001. Through your generosity, we were able to award scholarships based on financial need or academic excellence, provide graduate student awards, support faculty research, and provide services to the community.

With your encouragement and participation, you assist us in our efforts to become the most comprehensive training ground for health and rehabilitation sciences in the world.

Thank you

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McGowan, Marilyn R.
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McNamara, Ruth, Braymer
McNeil, Malcolm, R.
McWilliams, Betty, Jane
Mechling, Floyd, Franklin
Messick, Cheryl, K.
Mickey, Robin, Reid
Miles, Cynthia
Milikowski, Karen, Ann
Miller, Alisa, Ann
Miller, Cari, McNelis
Miller, Linda, Gruszkowski
Mitchell, Oscar
Molchen, Wanda, Virtue
Molecke, Constance, Marie
Molen, Kimberly, Calderone
Molitor, Cynthia, Black
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Morales, Dora, B.
Morrison, Tiara, Kush
Mostert, Deborah, Holtz
Mowry, Krista, Zanetti
Moya, Carol, Mutschler
Moyer, Walter, A.
Mulholland, Laura, Dambola
Munn-Goins, Ophelia
Murphy, Dawn, Michelle
Murphy, Robert, A.
Musgrave, John, Kerr
Narrigan, Joseph, J.
Nasby, Shirley, Campbell
Nescot, Ann, Elizabeth
Nickum, Jacqueline, M.
Lombardi, Georgann
North, Barbara, L.
Nyland, Ronald, Lee
Oblack, Donna, L.
O'Brien, Patricia Paris
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Ogden, David
Olaughlin, Pamela, Charlton
Olson, Patti, Donley
Oravetz, Andrew, William
Oravetz, Kathy, H.
Orlandi, Lisa, Marie
Orpneck, Karen, Miller
Orpneck, Richard, Michael
Owen, Mary, Nasser
Palmer, Paula, Joanne
Parks, Beth, Nypaver
Pascasio, Anne
Pastor, Malinda, J.
Patel, Bharti, Vinodkumar
Patterson, Michael, Wilson
Pavlick, Donna, Lynne
Penrod, Wendy, J.
Perez, Violet, Papadopoulos
Perrotta, Dolores, Ann
Pickering, Lee, Ann
Pierce, Frank, L.
Pinto, Frank, Richard
Platt, Thomas, E.
Polosky, Brenda, Marie
Poulton, Reece, Everson
Poust, Douglas, L.
Prater-Whitmore, Kelly
Pritchard, Vicki, Lynn
Pry, Judith, Brown
Pucciarelli, Mary
Rabinowitz, Lisa, Hoffman
Raju, Barbara, Schick
Ramsey, Cynthia, Serkoch
Ravnikar, John, J.
Reed, Charles, C.
Reiber, Dorothy, Pflasterer
Reighn, Cathleen
Reiner, Frank
Reiner, Yvette, Meitner
Reiser, Jacob, J.
Reitz, Susan, Roberts
Repak, Antoinette, Solecki
Rich, Wendy, Boyd
Rick, Rosemarie, B.
Riddle, Jean, Clark
Rizzo, Laura, Smolko
Rockar, Paul, Andrew
Rogers, Joan, C.
Rose, Gina, Marie Gentile
Roughen, John, Patrick
Ruberto-Beachler, Nancy, J.
Rubin, Herbert
Sakmar, Christina, Laichak
Sampogna, Mark, P.
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Santa, Victoria, Louise
Savor, Christie, Sue
Schaad, Judith, Rolley
Schladenhaufen, Regis, J.
Schlough, Kathleen
Schmeler, Mark, R.
Schmidt, Eric, Aiken
Schneider, Janice, King
Schomburg, Frederick, L.
Schreiber, Valerie, K.
Schwesinger, Ronald, W.
Scialabba, Mary, Ann
Scislowicz, Linda, R.
Scott, Edward, L.
Scully, Rosemary, M.
Sevick, Mary, Ann
Shafer, Mary, Beth B.
Shaiman Kimelman, Susan
Shames, George, H.
Sheaffer, Karl, John
Shields, Stephanie, Christina
Shipe, Nancy, Kulikowski
Shisler, Audrey, Cox
Shostek, Mary, Ann
Shultz, Tracy, Ann
Sidorick, Bridgett, John
Silverman Langue, Jill
Silverstein, Ira, Neil
Simon, Kareen, Mulholland
Simon, Yvonne, P.
Sims, Donald, George
Skrabski, Cynthia Jane
Slusser, Barbara, T.
Slutzker, Blanche, Zion
Smith, Betty, Josephine
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Smith, Johnny, L.
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Smychynsky, Leslie, Smith
Sommer, Maria, Elizabeth
Sorg, Angela, K.
Sowers, John, B.
Sparto, Patrick, Joseph
Spector, Alexander
Spiegelman, Arlene, Robin
St Clair, Isabel, Ann
Stafford, Lori, Lynn
Staudenmeier, Paul, Lawrence
Stauffer, Krista, Marie
Steinhart, Jo, Apple
Stevens, Kristen, Moore
Stiff, Beth, Anne
Stitley, Judith, Audrey
Stortz, Nancy, Edwards
Stoy, Walt, Alan
Stratico, Deborah, A.
Strauss, Jody, Schank
Strigle, Kay, Shuster
Styer-Acevedo, Jane, L.
Susick, Linda, Butera
Sweeney, Mary, Patricia
Sweithelm, Ralph, Charles
Szarnicki, John, Raymond
Tarplee, Sue, Currie
Teig, Mary, Jane
Thomas, Stacie
Thomson, William, R.
Tofts, Candice, Wright
Tomazich, Cynthia, White
Toto, Pamela, E. Bandalò
Trilli-Coll, Sally, Anne
Trinchere, Susanne, Shaheen
Tulick, Anne, Saxton
Turner, Linda, Marie
Ulery, Norma, Jean
Unrath, Daniel, Edwin
Urbansky, Deborah, Mosher
Urbansky, Kevin, Edward
Van Volkenburg, Mark, Daniel
Varhola, Penelope, A.
Varley, Nancy, Allshouse
Veenis, Andrea, Cornell
Ventorini-Burkett, Mary, Beth
Verbus, Rebecca, Z.
Verdi, Patricia
Vereb, Christopher, Andrew
Vicchio, John
Videlock, Joyce, Lorraine
Vignovic, Michelle
Viktorin, Carol, Ann
Voithofer, Michelle, Smith
Wainwright, Donna, Coldren
Walk, Gerrilynne, Siren
Walker, Emily, Sue
Walker, Jeanine, Bowen
Walt, George, Eric
Walter, George, Joseph
Walter, Kelly, Keane
Wargo, Mary, Louise Pollino
Watson, Katherine, M.
Watson, Lauren, M.
Watzlaf, Valerie, Magliocca
Weakland, Mark, Allen
Weibel, Elizabeth, Springer
Weidner, Kari, Jo
Weigel, Marjorie, Jane
Weiss, Donna, Ray
Weist, Dennis, J.
Welch, Karen, Matusavige
Welles, Jean, Crothers
Wenstrom, N., Jill Davies
Wesolosky, Nancy, Himmer
Weston, Bruce, C.
Whitman, Steven, A.
Widenhofer, Sharon, Hahn
Wiesen, Christine, M.
Wilson, Edith, E.
Wilt, Sonya, Mugnani
Wilt, Trevor, Eugene
Winner, Thomas, D.
Winters, Donna, Marie
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Wishart, Margaret, Bartoli
Wolf, Lois, Barnhart
Wood, Mildred, L.
Wood, Thomas, David
Wright, Susan, Jane
Young, R., Lee
Young, Ronna, Bernstein
Zakoworotny, Cynthia, A.
Zigrossi, Annette, Hochrein
Zimmerman, Joseph, E.
Every effort was made to ensure the accuracy of this list. If there are any errors or omissions, please contact Karen Khan at 412-383-6548; or ktkhan@shrs.pitt.edu



A New Voice



Imagine, for just a moment, a life without communication. A life where even the simplest greeting, a “hello” or “goodbye,” is virtually impossible.

For over one million Americans, this is reality. They have been silenced – unable to speak or use hand signs – by cerebral palsy or ALS, Lou Gehrig’s disease.

That is, until the late 1970s and the advent of augmentative communication. Dr. Bruce Baker was one of the pioneers.



Baker is president of Semantic Compaction Systems, as well as Adjunct Associate Professor, Department of Communication Science and Disorders. As a graduate student in the ‘70s studying linguistics at Middlebury College, Baker

befriended a colleague with mild cerebral palsy. At the time, communication aids were archaic and his friend was forced to rely on a crude, disk-shaped device wired to an electric typewriter to communicate. The device was marked with numbers and letters. He would type one letter, wait for the device to revolve through the cycle, then type the next letter. The process was tedious and time-consuming.

Baker resolved to find a better way. Using his background in communication theory, he created Minspeak®, or minimum effort speech. This breakthrough enabled users to generate text with 60 percent fewer keystrokes than traditional spelling. Based on ancient Egyptian hieroglyphics, Minspeak® used icons instead of letters.

And each word took on several meanings. For instance, apple could mean fruit, food, red, temptation, or generosity. By typing buttons marked “verb” or “pronoun,” users could indicate the appropriate meaning for the word.

The first prototype featured forty buttons that could produce a total of more than 64,000 word combinations. But while innovative, it proved too complex for most users. There were simply too many combinations to remember.

Undeterred, Baker went back to the drawing board. The latest version, which he calls Unity®, seems the perfect mix of language and technology. Users

have 5,000 words from which to choose as well as a word prediction system spawned from artificial intelligence technology. Unity® is fast and easy to use. One user “spoke” at the rate of forty-six words per minute using nothing but the knuckle of his pinky finger.

Semantic Compaction Systems leases the Unity® version to communication aid companies around the world. Baker estimates that over 60,000 systems are currently in use.

Baker brings this same “out-of-the-box” thinking to the classroom experience. His course, “Augmentative-Alternative Communication,” takes a practical look at communication theory and how it can be used to improve the quality of life. Each semester, Minspeak® users are invited to be guest speakers.

Says Baker, “While I like to focus on theory, showing my students the applications that come about as a result really cements the value of their studying and hard work.”

But Baker says his work is far from complete. “The next step in this wonderful technology is improving user’s cadence.”

Baker will not stop until all people without a voice can speak out, loud and clear.

For more information, e-mail Bruce Baker at minspeak@sgi.net.

Dr. Bruce Baker

At some time or another, we've all muttered, "Work is a pain." But in an exploratory study, Dr. Nancy Baker, who recently joined the faculty of SHRS as an Assistant Professor, Department of Occupational Therapy, found that for some workers, the comments are more than an idle complaint.

Baker and two colleagues from her alma mater, Boston University, surveyed 170 entry-level telecommunications workers at two sites to determine if their beliefs and valued outcomes regarding the meaning of working were associated with musculoskeletal discomfort. Further, they sought to learn if those beliefs and valued outcomes were predictive of the severity of discomfort.

"The causes of musculoskeletal disorders in the workplace are diverse and poorly understood," says Baker. "The meaning that working has to an individual may help to explain why certain psychosocial factors are associated with musculoskeletal discomfort and may eventually provide one way to intervene to reduce them."

Two surveys were administered. A Meaning of Working survey looked at seven values and beliefs related to work – work centrality, obligation, entitlement, comfort, promotion/power, expressive, and social support. A Musculoskeletal Discomfort questionnaire evaluated levels of discomfort in the neck, back, shoulders, elbows, wrists, and hands.

The results were telling, at least for those for whom money, power, and promotion were most important. These workers reported a higher degree of musculoskeletal discomfort. A logistic linear regression found that these valued outcomes, along with social support, could accurately

identify who was in a none/mild discomfort category or a moderate/severe discomfort category 72 percent of the time.

Baker speculates that since these workers were in a lower paying job with little opportunity for promotion, the values that were most important to them – power and promotion – were not being met. These same

workers reported more severe discomfort than those respondents who valued other rewards from work. Baker says, "More research needs to be done, but there appears to be some association."

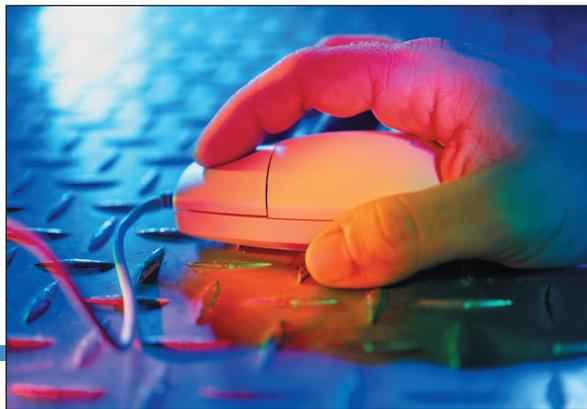
The results of the study will appear in an upcoming issue of *The International Journal of Muscular Ergonomics*. Baker, a seasoned researcher who most recently was project coordinator on a massive study involving construction workers at the Nevada Nuclear Testing Facility, plans to continue her investigation into the prevention of musculoskeletal disorders while at the university. In fact, it was the university's emphasis on research that appealed to

Baker as she sorted through prospective positions.

"A lot of Occupational Therapy programs are primarily clinical," says Baker. "Research is a sideline. Pitt is one of the few universities on the East Coast that met my needs."

And as a researcher and educator who understands how important it is for personal needs and values to be reflected in your work, Baker is certain she made the right choice in joining the SHRS faculty.

For more information, e-mail Nancy Baker at NAB36@pitt.edu.



No Gain, Some Pain

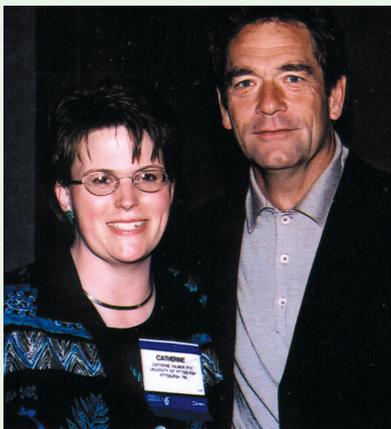
Dr. Nancy A. Baker



VOICES

Four members from the Department of Communication Science and Disorders presented papers at the prestigious 17th Biennial Symposium of the International Evoked Response Audiometry Study Group (IERASG). Making presentations were **Dr. John Durrant**, "Effects of Interaural Frequency Difference on Binaural Fusion Evidenced by Psychoacoustical versus Electro-physiological Measures;" **Wafaa Kaf**, "Contralateral Suppression of Otoacoustic Emissions: Preliminary Study to Determine Optimal Parameters;" **Lisa Taubman**, "Test-retest Reliability of Measures of Auditory Middle Latency Response in Normal Hearing Adults;" and **Dr. Barbara A. Vento**, "Development of DPOAE f2/f1 Ratio Functions in Human Infants." Durrant is Vice Chair of the IERASG Council.

Carmela Battaglia, Assistant Professor and Field Work Coordinator, Department of Occupational Therapy, provided a training session on using the computer to enhance fieldwork education to the Fieldwork Council of the Pennsylvania Occupational Therapy Association.



Catherine Palmer has a chance to chat with Huey Lewis about sudden hearing loss and hearing protection at the recent American Academy of Audiology Annual Convention in San Diego, CA.

Carmela M. Battaglia, Assistant Professor; **Denise Chisholm**, Assistant Professor; **Gail Clakely**, Instructor; **Pamela E. Toto**, Instructor; **Colleen White**, Instructor; and **Cathy Dolhi** were presenters at the 2001 conference of the Pennsylvania Occupational Therapy Association.

Denise Chisholm, Assistant Professor, Department of Occupational Therapy, teamed with senior student **Amanda Kane** to provide a staff development session on client-centered, occupation-based practice to Allegheny East MH/MR. She also teamed with second year master's student **Mindee Heidrich** to present a poster on application of the occupational therapy perspective to the role of in-home and community therapeutic staff support at the 2001 conference of the Pennsylvania Occupational Therapy Association.

Dr. Mary Jo Geyer, Visiting Assistant Professor, Department of Rehabilitation Science and Technology, made two presentations at the 16th Annual Clinical Symposium on Advances in Skin and Wound Care. Her topics were "Seating for Comfort" and "The Pitt Pedi-Press," a novel compression technique developed by Geyer for use with venous ulcers of the toes and forefoot.

Dr. Joan C. Rogers, Professor and Chair, Department of Occupational Therapy, presented a video teleconference on functional assessment strategies for the VA Medical Center.

Dr. Katherine D. Seelman, Associate Dean for Government and International Relations and Professor, Rehabilitation Science and Technology, presented the keynote address at the Williamsburg Traumatic Brain Injury International Conference in June. In early September, she presented "Rehabilitation Science and Disability Studies: Are They Complementary?" at the Rehabilitation Institute of Chicago. Later that month, she was an expert panelist at the Canada Foundation for Innovation.

In early October, Seelman traveled to Brisbane, Australia, where she was a keynote speaker and presenter at the Australian Rehabilitation and Assistive Technology Conference. In mid-October, she will travel to China where she will deliver a keynote address to the Chinese Rehabilitation Medicine and Engineering Society. In mid-November, she will be a guest Lecturer at the Health Policy Institute, University of Pittsburgh, where she will speak on "Management and Policy Aspects of Healthcare for People with Disabilities."

Dr. Katherine Verdolini, Associate Professor, Department of Communication Science and Disorders, presented an invited paper on biofeedback at the International Teachers of Singing Association in Helsinki, Finland. Verdolini also was a keynote speaker at the 4th Pan-European Voice Conference in Stockholm, Sweden, and she presented a paper on vocal tract manipulations contributing to Germanic versus Italian tonal ideals in classical singing, at the International Congress on Acoustics, in Rome.

Eight SHRS faculty members have had papers accepted for the Joint Conference of the Chinese Rehabilitation Medicine Society, the China Disabled Person Rehabilitation Association, and the Health and Rehabilitation Medicine Engineering Society, to be held in Beijing. SHRS contributing authors are **Dean Clifford E. Brubaker**, **Dr. Katherine Seelman**, **Dr. David Brienza**, **Dr. Mary Ellen Buning**, **Dr. Ellen Cohn**, **Dr. Douglas Hobson**, **Nigel Shapcott**, and **Dr. Jue Wang**.

A Cut Above

Dr. Rory A. Cooper, Professor and Chair, Department of Rehabilitation Science and Technology, was the inaugural recipient of the Dion Johnson Foundation Award for his contributions to spinal cord research. Cooper donated the \$10,000 award to the University of Pittsburgh to establish the Rory A. Cooper and Dion Johnson Endowment, which will be used to encourage student research by funding the RST Student Paper Award. In addition, Cooper received the Institute of Electrical and Electronics Engineers (IEEE) Professional Achievement Award, one of the highest honors bestowed by the national organization.

Dr. John Durrant, Professor, Department of Communication Science and Disorders, has received a \$500,000 grant from the National Institute of Deafness and Other Communication Disorders, Small Business Technology Transfer Program, for a project entitled "Audio-Vestibular Testing for Bedside/Other Applications." The corporate partner on the two-year

project is Intelligent Hearing Systems, Miami, FL. Co-investigators on the project are **Dr. Joseph Furman**, Department of Otolaryngology, and **Dr. Catherine Palmer**, Associate Professor, Department of Communication Science and Disorders.

Dr. Miriam Hertz, Assistant Professor, Department of Health Information Management, has received two university grants: the University Center for Social and Urban Research Steven Manners Faculty Development Award and a Central Research Development Fund Small Grant. These grants are funding two pilot studies that investigate the life histories and social service needs of individuals who have disabilities as a result of street gun violence.

Patrick Sparto has been awarded a five-year, \$526,917 grant from the National Institute on Aging for a study entitled, "The Influence of Aging and Vestibular Disease on Postural Control." This research will examine how older and younger adults, with and without vestibular disease, balance in an environment with rapidly changing visual scenery.

Dr. Connie Tompkins, Professor, Department of Communication Science and Disorders, has received the 2000 *American Speech-Language-Hearing Journal* Editor Award, which is given to the manuscript published in JSLHR that is judged by a panel of distinguished scientists to represent the best contribution of the year.

Dr. Valerie J. Watzlaf, Associate Professor, Department of Health Information Management, received this year's AHIMA Research Award. The award is given to the HIM professional who exemplifies unusual vision and leadership in understanding HIM philosophy, and conducts or supports research that demonstrates application of these concepts to healthcare.

Dr. Susan Whitney, Assistant Professor, Department of Physical Therapy, has been certified as a Neuro Clinical Specialist by the American Physical Therapy Association.

Dr. David M. Brienza, Associate Professor, Department of Rehabilitation Science and Technology, has been appointed Co-Director of the NIDRR RERC on Wheeled Mobility.

Dr. Christine Dollaghan, Professor, Department of Communication Science and Disorders, has been appointed to a three-year term as chairperson of the Research and Scientific Affairs Committee of the American Speech-Language-Hearing Association.

Dr. Jacqueline Dunbar-Jacob, who holds a secondary appointment in Occupational Therapy, was named Dean of the School of Nursing at the University of Pittsburgh.

Tom Platt, Assistant Professor, Emergency Medicine Program, was awarded the 2001 SHRS Dean's Distinguished Teaching Award.

Dr. Katherine D. Seelman, Associate Dean for Government and International Relations and Professor, Rehabilitation Science and Technology, was elected a public member of the National Board for Certification in Occupational Therapy.

Dr. J. Scott Yaruss, Assistant Professor, Department of Communication Science and Disorders, has been elected to the Board of Directors of the National Stuttering Association, the largest support group in the United States for people who stutter.

Taking the Lead





GOING *for* GOLD

As Professor and Chair of the Department of Rehabilitation Science and Technology and a renowned researcher, Dr. Rory Cooper is a man on the move. But the description took on new meaning at the National Veterans Wheelchair Games held in New York City in early July. The games, the world's largest wheelchair event, attracted 525 athletes, and Cooper captured five gold medals.



Cooper took home the gold in the 100-meter, 200-meter, 400-meter, and 800-meter wheelchair track races in the master's division. He also won the challenging master's division wheelchair slalom. In addition to his medal count, Cooper's contributions to the other athletes were recognized with the Endeavor Award, given by the British Ex-Services Wheelchair Sports Teams.

Bookmarks



Dr. Nancy A. Baker, Assistant Professor, Department of Occupational Therapy, in collaboration with Dr. Linda Tickle-Degnen, Boston University, published a meta-analysis of the effectiveness of physical, psychological, and functional interventions in treating clients with multiple sclerosis.

Dr. J. Scott Yaruss, Assistant Professor, Department of Communication Science and Disorders, authored a chapter on speech disfluency and childhood stuttering in the MIT Encyclopedia of Communication Sciences and Disorders. Yaruss also co-edited the proceedings for the recent World Congress on Fluency Disorders held in Nyborg, Denmark.

But for Cooper, the games were more than a sporting event. Accompanying him were 13 students and faculty members who used this gathering of elite athletes as a living laboratory. During the three-day event, the team collected 60 interviews for use in a number of research projects.

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



CLASS ACTS

Elizabeth R. Skidmore was an invited speaker at the Sixth Annual AMPS (Assessment of Motor and Process Skills) at the National Institutes of Health in September. She discussed the evidence supporting constraint-induced movement therapy.



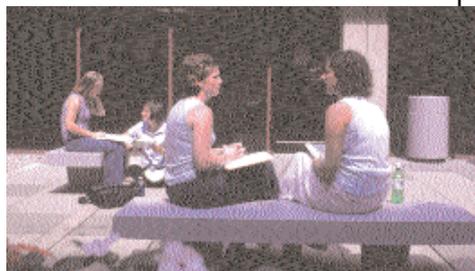
Maryann Donnangelo, Antoinette Frerotte, Danielle Krek and Jennifer Wilhelm, students in the Department of Occupational Therapy, conducted an experiential session on disability awareness at Camp Cadet, a program for youth ages 12 to 14, sponsored by the Pennsylvania State Police, Troop B.

Linda Coniglio and Janet Begg, graduate students in the Department

of Occupational Therapy, developed and presented a workshop on "Evaluation of the Hand" for Associated Occupational Therapists, Inc., in fulfillment of the final requirements for their Master of Science degrees.

Four students in the Department of Rehabilitation Science and Technology, **S. David Algood, Michael Dvorznak, Alicia Koontz, and Andrew Zeltwanger** won four of the six RESNA-Whitaker Foundation Student Scientific Papers. Each student received a \$1,000 cash prize. SHRS students have won more of these awards than any other university. **Tamara Mills and Brian Fay** received honorable mentions.

Kristie Kovacyk, Department of Communication Science and Disorders, has been selected to participate in the "Research in Higher Education Mentoring Program" sponsored by the American-Speech-Language Association (ASHA) and the American Speech-Language-Hearing Foundation (ASHF).



YEARBOOK

'80s

Linda McHugh – OT '89 is Director of Occupational Therapy for UPMC Presbyterian Hospital, Montefiore Hospital, and Western Psychiatric Institute and Clinic.

'90s

Kelly Conologue-McCarron – EdD '90 has been appointed Director of Home Care Rehabilitation for the Centers for Rehab Services/UPMC.

Christina Palik – RHIA '92 has been promoted to HIM Operations Manager at St. Elizabeth Health Center in Youngstown, OH.

Colleen White – OT '92 Instructor, Department of Occupational Therapy, was promoted to Regional Director of Contract Services (Hospital/Long-Term Care), for the Centers for Rehab Services.

Aaron Mendelsohn – HIM '94 received his Ph.D. in Chronic Disease Epidemiology and is currently a member of the Research Faculty at the University of Pittsburgh Graduate School of Public Health.

Wendy (Kubancsek) Zdobinski – CSD '94 is a speech pathologist in the Boston Public School system specializing in working with children who are deaf or hard of hearing and children with cochlear implants.

Raymond Bush – OT '96 is Assistant Director of Occupational Therapy at UPMC Montefiore Hospital.

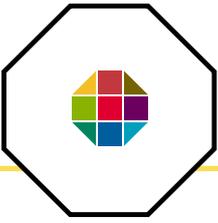
Julie Heizel Scott – CDN '97 recently passed the Certification Examination for Diabetes Educators. She is currently employed at Mon Valley Hospital as a Clinical Dietitian.

IN MEMORIAM

Betsy Evelyn Cobb, HRP '44

John Rees, HRP '54

Mata Barack Jaffee, HRS '79

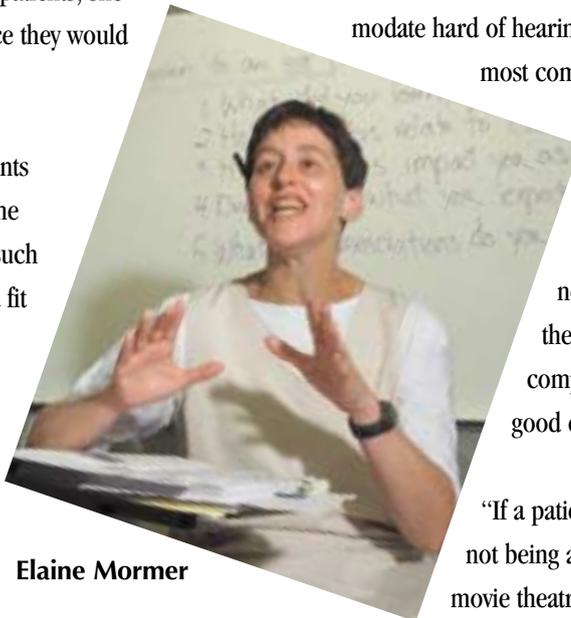


Learning by Doing

Elaine Mormer Brings Disability Law to Life

Sometimes the best way to learn is through experience. So when Elaine Mormer, Clinical Instructor, Department of Communication Science and Disorders, wanted her class of audiology graduate students to understand disability law and its impact on their patients, she gave them an experience they would never forget.

Realizing that her students spend much of their time learning clinical skills such as helping to select and fit patients with hearing aids, Mormer chose to address the issue of disability rights in a similar way – through a hands-on approach.



Elaine Mormer

“My hope was that I could design a class project that would enlighten my students. I wanted them to see that, in addition to conventional clinical treatments, audiologists can improve patients’ communication abilities using non-traditional approaches,” says Mormer.

Advocacy seemed especially important to Mormer because deaf, hard of hearing, and deaf-blind people are often described as having an “invisible disability.”

Mormer says that people with hearing loss are not always perceived as having a disability and, therefore, their rights are often overlooked or ignored. She uses movie theatres as an example.

“Movie theatres are required by law to accommodate hard of hearing patrons. The most common approach is the availability of an infrared amplification system. But only the newest theatres have these and that level of compliance is just not good enough.

“If a patient complains about not being able to hear at a movie theatre,” she continues, “the audiologist should inform that patient of his or her legal rights. Clinicians can help patients to contact the theatre, and address the fact that arrangements have to be made. Under the Americans with Disabilities

Act, public places must be accessible to all persons with disabilities. As well as helping patients clinically, audiologists can be advocates for change.”

Assessing the Situation

To help her students better understand the synergy between advocacy and clinical practice, Mormer enlisted the help of Maggie Casteel, a noted advocate for people in the deaf, hard of hearing, and deaf-blind communities. Casteel’s program, “I Need My Ramp,” advocates for individuals with hearing difficulties who need mental health or substance abuse services.

Students in Mormer’s class were charged with surveying human service agencies in Allegheny County to gauge their level of communication accessibility. Facilities included nursing homes, child and family services agencies, and self-help and support groups. The students probed agency officials on how well they complied with the ADA, and distributed literature to those facilities that failed to meet federally-mandated levels of accessibility. In all, 51 facilities were contacted.

Says Casteel, “An interesting component of the project was that noncompliant facilities were sent information about their legal responsibilities, as well as easy solutions to become compliant. Students took an active role in bettering the community.”

The class found that noncompliant facilities were surprisingly unfamiliar with hearing related disabilities. Many had no knowledge of sign language or lip-reading and were generally unprepared for language barriers that exist for deaf, hard of hearing, or deaf-blind patients. And in almost every case, facilities did not have access to an interpreter, hearing assistance technology, or assistive listening devices necessary for people who are hard of hearing to use telephones.



The results were no surprise to Casteel. “Most mental health and substance abuse providers have no accessibility for patients who may be deaf, hard of hearing, or deaf-blind,” explains Casteel, who is hard of hearing. “I’ve been to quite a few facilities where there isn’t closed captioning on the T.V. and not a single employee signs. These places are doing more harm than help for an individual with hearing loss.”



“As audiologists, our work shouldn’t stop when we leave the clinic. I’m convinced we really opened up people’s minds and encouraged them to rethink how they deal with issues of accessibility.”

Making a Difference

The resulting survey was deemed so comprehensive that it is now being used

as a starting point for an accessibility audit of all health and human service agencies in the state. And it had the desired effect on the students as well.

“This project encouraged us to explore an aspect of our job that we sometimes don’t think about,” says Larry McGuinness, a first-year graduate student. “As audiologists, our work shouldn’t stop when we leave the clinic. I’m convinced we really opened up people’s minds and encouraged them to rethink how they deal with issues of accessibility.”

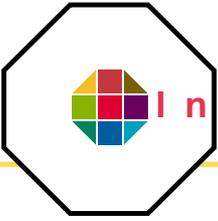
Tara Bellisario, a second-year graduate student, agrees. “There are several facilities that admit to not having any accommodation for hearing loss, but justify this by saying they don’t have patients who need them. From my experience, this is highly unlikely. Our proactive approach hopefully changed some of these perceptions.” Robert Petruso, another second-year student,

sees the power of advocacy in his own life. He experienced a hearing loss at age five.

“It doesn’t take much for me to be my own advocate. I’ve been doing it for years. For instance, in class I get notes ahead of time, have a note-taker, or make sure there will be an assistive listening device waiting for me. Here at Pitt, everyone does a great job accommodating me in every way they can. But it’s all about representing yourself, being your own advocate.”

Says Mormer, “Accessibility will only come with awareness. I’m just pleased that my students got so much out of the activity. Their accomplishments will certainly set a precedent for each of my classes in the future.”

For more information, e-mail Elaine Mormer at emormer@pitt.edu.



It's a disorder with no cure. It drives away some therapists because successes can be elusive. It frightens children and frustrates parents. It attracts ridicule and causes the sufferer shame that can last a lifetime. Its name is stuttering.

Dr. J. Scott Yaruss, Assistant Professor, Department of Communication Science and Disorders, is in his second year of a five-year National Institutes of Health research grant to study some of the factors that may cause children to stutter when they're very young. He also serves as Co-Director of the Stuttering Center of Western Pennsylvania, an important partnership between the School of Health and Rehabilitation Sciences and Children's Hospital of Pittsburgh. The center's four-part mission is to treat the disorder, research its origins, educate clinicians and students, and support the people who stutter, along with their families. The center combines clinical professionals at Children's Hospital with the research capabilities of the University of Pittsburgh. Graduate students from the Department of

Communication Science and Disorders' Clinical Network also enter the mix, studying under Children's Hospital experts and working hands-on with patients.

Early Diagnosis

Yaruss's work begins with children aged two-and-a-half to five, at a time when speech and language are still in the early stages of development. He looks at the types of behaviors disfluent children display for commonality with the stuttering disorder, which is characterized by frequent disruptions in the forward flow of speech. Speech disruptions in the two-and-a-half to five age group characterize the early stages of stuttering. In more advanced stages, the signs tend to be tension and struggle in children's attempts to speak. This struggle can result in a situation in which the child experiences physical difficulty in getting the words out.

Multiple Factors

The mix of factors that contribute to the development of stuttering includes language skills, motor skills, the child's temperament, and

other factors that are less well-understood. "Maybe one in four children is disfluent," says Yaruss. "They have interruptions in their speech and they say 'um, um, um' or they talk 'li- li- like this' when they're learning to speak. But does this child need therapy? It can be hard to tell. What we do is look at the variables and try to determine whether he exhibits certain 'risk factors' suggesting that he might continue to stutter. If he's got this mix, I'll put him in therapy. If he doesn't, we'll monitor him over time to see if it's going to be okay."

Determining the Right Treatment

When stuttering has been diagnosed, the question becomes, what is the right course of treatment? There is no clear-cut answer because no cure exists for stuttering, although some children outgrow it. Experts advocate many different types of therapy centering around changes to the timing and the tension of speech production. What cuts across all treatments is the need for a child to accept that it's okay to stutter.

"I like to see kids as young as we can," says Yaruss, "because if we can plant the seeds of acceptance early, then they never have to develop that shame. When children are coloring, they color outside the lines and we don't mind. But in the case of stuttering, kids are supposed to be fluent. Essentially, they're not allowed to talk outside the lines. Parents panic when they hear kids make speaking mistakes, where they don't panic when they see kids making tricycle-riding mistakes."



J. Scott Yaruss

Talking Outside the Lines

Stuttering Center Provides Research and Treatment for Children Who Stutter

Encouraging Acceptance

Yaruss has seen an explosion of interest and growth in the Stuttering Center in its three years of operation. The center actively promotes understanding of the stuttering disorder through distribution of paper-based information and also the presence of its Web site. In addition, Yaruss conducts workshops at various sites in Western Pennsylvania, which draw attention and referrals to the program – as does his five-year research study.

“When a child stutters,” says Yaruss, “it doesn’t take him long to be embarrassed and ashamed. People say things to him like, ‘What’s the matter, don’t you know your name?’ It increases the shame. The implication can be that a child will completely shut down when he realizes he can’t talk. He’ll say, ‘Other people think I’m stupid. They treat me like I’m stupid. There must be something wrong with me.’”

And that’s just not acceptable to Yaruss and other professionals at the Stuttering Center. They know they can help stuttering children to speak more fluently using a variety of techniques. They can also help stutterers and parents to accept that it’s just fine to talk outside the lines, and that acceptance is the key to a happy and productive life.

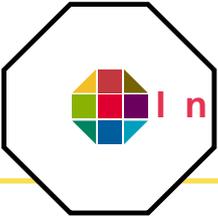
For more information, contact Scott Yaruss at jsyaruss@csd.pitt.edu or visit the Stuttering Center of Western Pennsylvania Web site at www.pitt.edu/~commsci/stuttering_center.



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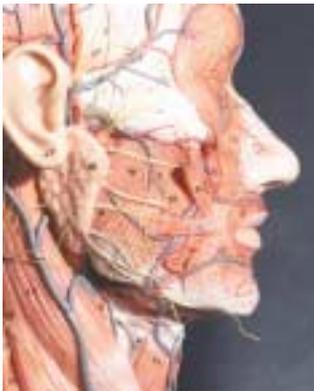
On the Front Lines of Speech-Language Pathology

The Clinical Network Combats Swallowing Disorders

Imagine a sudden change to the most basic, automatic human functions . . . the beating of the heart, the intake of oxygen, or the ability to swallow. Imagine the profound impact of such changes on a person's life. James L. Coyle, Instructor, Speech-Language Pathology, Department of Communication Science and Disorders, doesn't have to imagine such a thing. He and his students see it every day.

Coyle serves as an instructor in the department's Clinical Network, a unique style of graduate training program that places students on the front lines of speech pathology at UPMC Passavant Medical Center, the Eye and Ear Institute, Children's Hospital of Pittsburgh, the Pittsburgh VA system, and other medical and educational settings.

The two-year program includes distinct clinical phases. In year one, students accompany clinical faculty on diagnostic and treatment visits, observing and participating in interactions with patients while also completing class work and acquiring clinical skills. Year two includes outplacement in clinical and school settings where students experience more direct patient contact with less instructor supervision. Coyle says, "I encourage them to observe surgical procedures. It's kind of like a medical student rotation. I slowly get them adjusted to the setting and the clinical process in that setting."



These graduate students witness a world that's changed dramatically in a generation. Coyle recalls his own education with a wistful smile. "I was trained in a traditional program with on-campus treatment rooms with two-way mirrors, and the supervisor sat in the booth and supervised two or three students at the same time. Many of the patients attending those clinics were in need of less intensive speech and language services than our first-year students are exposed to." Now, he and his students experience what he likens to "combat" on the front lines, treating open-heart surgery patients, brain injury and trauma victims, and dementia sufferers. These cases represent a cross-section of today's medical speech pathology caseload.

For Coyle, Clinical Education Director Dr. Cheryl Messick, and 60 graduate students, dealing with oropharyngeal dysphagia – the clinical name for swallowing disorders – can make for a grim experience. "We never think about a seemingly automatic function

such as swallowing until it breaks," says Coyle. "When it breaks, we think about it a lot." Swallowing most often breaks as the result of neurological disorders and head and neck cancers, and often following illnesses, surgery, trauma, and dementia, including Alzheimer's Disease.

A simple and remarkable set of mechanics comprise the act of swallowing. As we chew and prepare to swallow, muscles connecting the jaw to the throat shorten, pulling the esophagus open and closing the larynx and trachea. During the same one- to two-second span, the tongue pushes food backward and down into the throat and on to the stomach. Other body parts in the area contribute to a dynamic, precise, automatic, and taken-for-granted process.

But imagine if some of those parts aren't there anymore. Perhaps they've been paralyzed by stroke. Or removed in a cancer operation. Or sheered off by a steering wheel in a highway pileup. Or the swallowing mechanism, governed by the brain, becomes disconnected from a person's awareness, as happens with dementia patients.



James Coyle



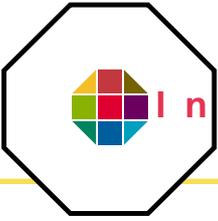
Coyle and his students strive to help patients use surviving parts of the mechanism to learn to swallow all over again. He explains, “Next Friday, I will be teaching a person who has lost part of her larynx to cancer to deliberately change the timing of previously automatic, unconscious body functions so that she closes the windpipe before she swallows, or I can guarantee that 100 percent of the time, food or liquids will enter her windpipe.” If that happens, sudden choking or inflammation and infection can result. It’s a frequent occurrence with stroke victims who experience up to a 20 percent mortality rate the first year after stroke due to complications involving pneumonia.

And why the boom in treatment of oropharyngeal dysphagia versus 20 years ago? Coyle cites advances in medical technology that have helped patients survive previously fatal conditions, such as stroke, cancer, premature birth, and severe trauma. As a result, the speech pathologist as a “head and neck rehabilitation expert” must prepare for more pathology while investigating origins of speech and language disorders.

That preparation involves an in-depth understanding of anatomy, physiology, and medicine in general. “I train my students rigorously,” Coyle says with pride. “They experience the clinical setting one full day a week and probably two-thirds of the time is teaching time. That’s five hours of clinical teaching each week. It’s grueling, but that’s what they need to be able to function in the clinical setting.”

Next up for the Communication Sciences and Disorders program is the development of a clinical doctoral program to train the next generation of experts in medical speech-language pathology. Coyle notes that there are few, if any, clinical doctoral programs in the country in speech pathology. This new program will keep the Department of Communication Science and Disorders preeminent in the nation in its preparation of professionals able to handle the results of catastrophic injuries that can disrupt or destroy the simplest and most important of human functions – like the act of swallowing.

For more information, e-mail James Coyle at JCoyle@pitt.edu



Taking Physical Therapy

Residents in Sports Physical Therapy Combine Research and Teaching with Hands-on Clinical Work.

Ballerinas have a secret. It's timeless. It's indescribable. And women's basketball, soccer, and volleyball teams everywhere are desperately trying to figure it out.

The secret is how to spend a whole career leaping, landing, and running across a hard surface, at the extreme limits of your ability, without destroying the ligaments that hold your knee joints together.

It's not that the dancers are unwilling to share. It's that the secret is complicated, bound up in years of training and conditioning. And it's something not even the dancers themselves can analyze and teach.

Better Performance, Better Knees

That's where the residents in the University of Pittsburgh Sports Physical Therapy residency program come in. Under the direction of Dr. James (Jay) Irrgang, Professor, Department of Physical Therapy, physical therapists in pursuit of advanced clinical competencies in sports and orthopaedic physical therapy are working in many areas of research – including studying the way dancers train.

Each year a handful of physical therapists enter the program for two years of mentored clinical practice, classroom work,

lectures, in-service training, teaching, conferences, journal clubs, and case presentations. They're also enrolled in the post-professional Master of Science program in musculoskeletal physical therapy at the University of Pittsburgh.

Clinical education, under the supervision of recognized clinical experts in sports and orthopaedic physical therapy, is provided at the university's acclaimed Center for Sports Medicine (CSM). The program is jointly sponsored by the CSM, Centers for Rehab Services, and the Department of Physical Therapy.

The residents must also complete at least one research project. Brian Klucinec, one of five current residents, is working in conjunction with the university's Neuromuscular Research Laboratory (NMRL) on the South Side to study the knee injury problem. Klucinec is studying the use of simple field tests, such as the ability to balance on one leg, and the way an individual lands from a jump, to identify young female athletes who might be at risk for a knee ligament injury. Additionally, he is working with researchers at the NMRL to determine the effects of an exercise program, patterned after many of the training techniques used by ballerinas, on muscular control of the knee. It is hoped that the training program will reduce knee ligament injuries in females who play



basketball, soccer, volleyball, and other court-pounding sports.

Training the Next Generation of CSM Therapists

Physical therapy for ballerinas and basketball players is only one example of what the residency program is all about. The six-year-old program's major goal is to provide a way for physical therapists to extend their competencies into sports medicine – the cutting edge of physical therapy today.

It's a well-rounded and unique program that exposes participants to physicians and athletic trainers as well as other therapists working at one of the nation's centers of excellence in sports medicine. And one of its primary goals, according to Irrgang, is to provide qualified new talent for the CSM itself. "We'd like the residents to stay on with us," he says. "So the program gives them experience at the center, research opportunities, and clinical practice working with athletes and other physically active patients."

to the Next Level

That opportunity became a reality this year for Tara Ridge and Erica Baum, two residents who completed the program this past July and who now work full-time at the center. Ridge describes the program as “a fast track to a career in sports medicine.” She says the program provides one-of-a-kind opportunities like special speaking engagements as well as unique clinical studies, research, and academic exposure. “I’m working with elite athletes after just two years of study. To be able to do that in a world-class facility like this puts a physical therapist far ahead of others.”

Two more of this year’s residents are Air Force therapists, who, on completion, will bring sports medicine competencies to military applications. “There’s a natural parallel,” Irrgang says. “In combat, just like sports, people are working at the limit. When they’re injured, they need to return to the highest possible fitness in the shortest possible time.”

Faster Healing is for Everyone

Techniques for accelerating an injured athlete’s return to fitness also apply to an increasingly active general population. “In traditional

outpatient physical therapy,” says Irrgang, “the injuries have a lot in common with sports injuries – sprains and strains involving the knee, shoulder, and back. Sports medicine has taught us how to heal these injuries faster.”

Take a knee injury, for example. Rehabilitation exercises used in athletic situations, including stabilization exercises and balance and agility drills, apply almost directly to knee injuries suffered by non-athletes. Sports medicine provides the incentive and the research opportunities to devise the therapy that gets anyone – tight end, firefighter, weekend tennis buff, or ballerina – back in the game faster.



Jay Irrgang

“You can come here, work with recognized talent in all disciplines of sports medicine, and do ground-breaking research,” says Irrgang. “In two years, you can become an expert. Believe me, there’s no better way to jumpstart a career in physical therapy.”

For more information, e-mail James Irrgang at irrgangjj@msx.upmc.edu.

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Feature

on a Roll

Partnerships are Key at the Center for Assistive Technology

Most of us don't realize it, but every day, we rely heavily on assistive technology. Whether we're pushing the button on our automatic garage door opener, using our computers to search for important pieces of information, or simply driving the car to pick up the kids at soccer practice, we're depending on equipment to help us do what we want, when we want to do it.

For people with physical disabilities, the reliance on assistive technology is even greater. Specialized equipment – particularly durable medical goods – is not just a luxury. It is a necessity. Unfortunately, need is often not enough. In too many cases, individuals requiring specialized medical equipment are kept from the best assistive devices by a bureaucratic maze. Fortunately, the team from the Center for Assistive Technology (CAT) is changing this.

Founded and funded in 1993 by the School of Health and Rehabilitation Sciences, the CAT bridges the gap between suppliers, insurance companies, and people needing special equipment and devices to live independent, fulfilling lives. Committed to supporting individuals at every stage of life, the center

provides direct connections to the latest advances in augmentative communication, audiology, home and worksite modification, computer access, and durable medical equipment, such as wheelchairs and other transportation technologies.

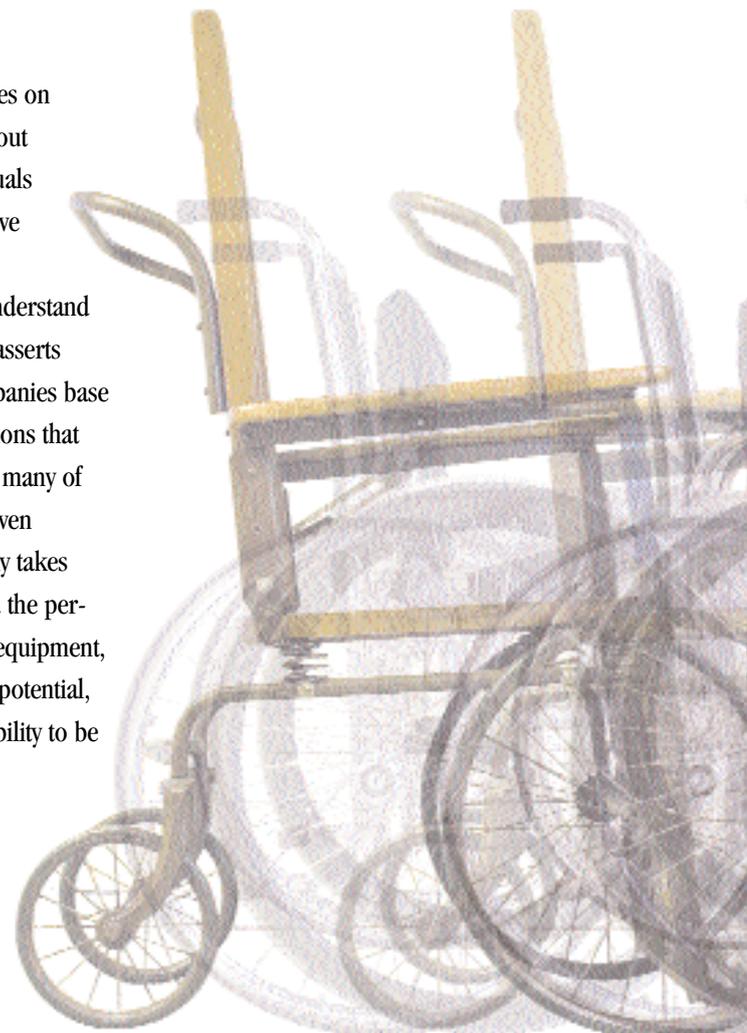
Led by Dr. Mike Boninger, Medical and Executive Director, and Mark Schmeler, Clinical Director, the CAT's team is staffed by SHRS faculty and works closely with the UPMC Health System to identify the best assistive technologies for each client. The center also helps clients navigate through government and insurance requirements to get the high-quality devices and equipment they need.

Starting with the Need

One of the CAT's major efforts focuses on educating the insurance industry about the importance of providing individuals with direct access to the right assistive technologies. "On the whole, the insurance companies really don't understand assistive technology options at all," asserts Boninger. "In fact, since most companies base their decisions on Medicare regulations that were created in 1965 – long before many of today's assistive technologies were even conceived, the bottom line frequently takes priority over equipment options and the person's real needs. Without the right equipment, clients can't function to their fullest potential, and in many cases, they lose their ability to be independent."

Since its founding, the CAT has worked with a wide range of people and has helped to address an extensive range of conditions. The results have been nothing short of impressive. A steadily growing number of satisfied customers are communicating, moving, and functioning more independently than ever before. The key to this success lies in the power of strong partnerships.

"We seek out partnerships that address specific requirements and ultimately satisfy everyone involved – from clients and insurance carriers to treatment personnel and equipment suppliers," remarks Schmeler. "We're also in the unique position of having access to our own insurance provider, UPMC Health Plan. Working together, we arrive at solutions that help people get the equipment and technologies they need. We also achieve significant cost savings by getting rid of red tape, which can make it a lot easier to justify the purchase of a certain device or piece of equipment."



Over the past two years, the CAT has been particularly successful in breaking down barriers that stood between its clients and the equipment they needed. In particular, the Permobil Loan Program, the KOO4 ETAC Program, and the center's growing relationship with the Hiram G. Andrews Center, have shown how partnerships can really help to address key needs.

“We seek out partnerships that address specific requirements and ultimately satisfy everyone involved — from clients and insurance carriers to treatment personnel and equipment suppliers. Working together, we arrive at solutions that help people get the equipment and technologies they need.”

First Class Seating with Permobil

For people living with ALS, multiple sclerosis, or other rapidly progressing neuromuscular conditions, wheelchairs form a critical link with the outside world. Unfortunately, due to high costs and insurance regulations, many of these people are denied access to the lightweight, self-propelled, high-end, modular, power wheelchairs they need to function. Instead, they're often given standard, heavy, ill-fitting equipment that cannot accommodate their rapidly changing needs. Often, by the time they wade through



Mike Boninger

the mountains of paperwork and secure insurance

company approvals necessary to purchase a high-end, lightweight, self-propelled, modular, power wheelchair, they are often too ill to use it.

The Permobil Loan Program

has changed this no-win situation. By working together with UPMC Health Plan and UPMC Home



Mark Schmeler

Medical Equipment and focusing primarily on the needs of the client, Schmeler and his colleagues have developed an innovative rental strategy that puts lightweight, self-propelled, high-end, modular, power wheelchairs within easy reach of individuals who need them. After surveying the marketplace, Schmeler and his team established a partnership with Permobil, a Swedish manufacturer of modular, self-propelled, power wheelchairs. “Permobil chairs are renowned for their flexibility, comfort, and durable construction,” says Schmeler. “And unlike the standard equipment approved by Medicare, they're designed to accommodate the changing physical, treatment, and mobility needs of each user.”

The only drawback with the Permobil seems to be the price. Listing at approximately \$25,000 each, these chairs are well out of reach for most people if their insurance carrier refuses to foot the bill. Not one to be easily discouraged, Schmeler devised a clever way to get over the cost hurdle.

Continued on next page





Feature



On a Roll

Continued

A New Lease on Life

Instead of saddling people or their insurance companies with the full price of the chair, the CAT has worked together with UPMC Home Medical Equipment and UPMC Health Plan to purchase an initial fleet of three Permobil. People requiring the chairs can rent them at a cost of \$500 a month, for as long as they're needed. Best of all, the rental cost is currently covered by UPMC Health Plan.

The program is working like a well-oiled machine. Instead of worrying about equipment and insurance hassles, users can focus their energies on pursuing activities they enjoy. Families no longer have to make the outlay for an expensive chair that may have limited use. And all costs involved with keeping the chair operational, including adjustments, maintenance, and service expenses, are covered by the UPMC Health Plan. Four people have used the program so far, and plans are in the works to add two or three more chairs in the near future. UPMC Health Plan anticipates it can save approximately \$250,000 per year over the long run while providing direct access to state-of-the-art equipment.

The program is also becoming a model for many other healthcare systems. "By purchasing the fleet and renting it out, we're essentially freeing the user and the insurance carrier from making an outlay for durable medical equipment," notes Schmeler. "This is an innovative approach that's attracting a lot of attention in the healthcare community. I've spent a good bit of time talking about the program at meetings and conventions over the past year. Every

Where The Rubber Meets The Road

The Center for Assistive Technology Keeps Karen Van Dusen On The Go.

You have to move fast to keep up with Karen Van Dusen. As Carnegie Mellon University's Departmental Computing Coordinator, she maintains a schedule that that would leave most people panting in the dust. Charged with addressing the technology needs of every department on campus, Karen is constantly zipping from meeting to meeting in buildings all over Oakland. And to get her where she's going, Karen uses a motorized wheelchair obtained through the Center for Assistive Technology.

"I've been in a wheelchair all of my life," explains Van Dusen. "And up until a year and a half ago, I was exclusively in a manual chair. I have been working with Mike Boninger and Mark Schmeler at the Center for Assistive Technology since 1993, and they finally convinced me to consider the motorized chair."

Like many people who use wheelchairs to enable their mobility, Van Dusen had developed problems with her hands. In her case, the repetitive motions necessary to move the chair, combined with heavy keyboard use at computer terminals, had left her with a painful case of

carpal tunnel syndrome. Van Dusen started seeing Boninger for therapy, and eventually met Schmeler. That's when the motorized chair discussions began.

"I didn't want the motorized chair because I didn't want to make changes in my life," explains Van Dusen. "I didn't want the hassle of adding a lift to my minivan, and I was concerned that people would look at me in a different way. It just wasn't something I wanted to consider."

The chair discussion was tabled for awhile. In the meantime, the center helped Van Dusen with some other needs, such as a booster seat for her van and seating

adjustments on her wheelchair. But in 1999, a flare-up with her hands brought the power chair issue back to the forefront.



"My hands were really bothering me, and Mike brought in a hand surgeon to meet with me," she recalls.

"After considerable discussion, I agreed to try a motorized chair."

Over the next several weeks, Van Dusen test drove a number of chairs. After the fourth week, she was ready for one of her own. Her chair was delivered a few weeks later. From the outset, it met all of her requirements.

"I was not willing to compromise when it came to this chair," Van Dusen emphasizes. "It had to fit, I had to sit in it comfortably, it had to be stable, and it had to go fast. I got everything I wanted."

While Van Dusen uses her motorized chair to get around Carnegie Mellon's campus, she still uses her manual chair at home. More than anything, the motorized chair has extended her range of travel. In fact, she now doesn't give impromptu trips to Oakland a second thought.

The center's collaborative approach is what kept Van Dusen coming back for the past eight years. "They've always treated me like an adult, and I have never felt pushed into doing anything I didn't want to do. By using the center, I've had the opportunity to interact with doctors, students, vendors, and fabricators all under one roof. We've solved challenges together, and I've always received the information I needed to make decisions that are right for me. Everyone is part of the team, and I like that."

Her relationship with the center continues to grow and develop. "I'm really interested in kayaking, and I've been talking to Mike and Mark about building me a cockpit for the boat. They're up for it."

"By using the center, I've had the opportunity to interact with doctors, students, vendors, and fabricators all under one roof. We've solved challenges together, and I've always received the information I needed to make decisions that are right for me. Everyone is part of the team, and I like that."

time I speak, hospital administrators and insurance professionals are really interested in finding out how we put a team together that took the hassle out of getting the right chairs for our clients.

Stopping One Size Fits All With K004 ETAC

We've all experienced one-size-fits-all products. They're usually neither the right size, nor the right fit. In a tee shirt, it's an irritation. But in a wheelchair, it can have a decided impact on the quality of daily life. Yet until recently, people who needed lightweight, high-strength wheelchairs upon discharge from the hospital often faced a one-size situation. In most

cases, they ended up in a standard K004 ETAC chair that met Medicare requirements but rarely those of the individual user. That meant that a 5-foot, 96-pound woman found herself in the same chair used by a 6-foot, 250-pound man.

"In a standard K004 ETAC chair, people frequently end up sitting either too high or too low in seats that are too wide or too deep," observes Boninger. "In addition, users frequently find the wheels to be in the wrong position for easy movement. The result is poor mobility, low comfort level, and increased likelihood of serious injury to joints and soft tissue through repetitive stress."

The Swedish Solution

Seeing the success of the Permobil program and convinced that there had to be a better way to put people in chairs that address their needs, the team at the center again surveyed the marketplace. They knew that K005 ETAC chairs – fully adjustable, ultra-light models that are not typically covered by Medicare – had nearly all the features their clients needed. The challenge was to find a Medicare-approved K004 chair with K005 features.

Continued on next page



On a Roll

Continued

With some creative thinking and cooperation from Swedish manufacturer ETAC and UPMC Home Medical Equipment, the K004-ETAC Program was born. “ETAC stepped up to the plate and worked with us by creating a chair that would meet Medicare’s requirements as well as ours,” says Schmeler. “They made it possible for our clients to get into lighter weight, more rigid chairs that offer greater adjustability. They also developed a product that can easily accommodate the demands of daily, out-of-home use.” Built to deliver years of service, K004-ETAC chairs accommodate a wide range of physical and mobility requirements. The seating area is fully adjustable to accommodate the user’s physical dimensions. In addition, the chair’s wheels can be moved forward or backward to place them in a position that’s comfortable for clients to reach.

“We partnered with ETAC because U.S. manufacturers don’t - or won’t - look beyond cost and regulatory roadblocks,” explains Schmeler. “ETAC found ways to adhere to the insurance regulations, and ultimately turned challenges into opportunities. For example, by filling in the adjustment holes on their chairs with plastic bushings, they ensured compliance with Medicare’s K004 requirements. Yet, since therapists or other treatment professionals can quickly pop out all of those bushings, their chairs still retained the adjustability needed to meet client requirements. Everyone ended up getting what they wanted.”

Once the chair was developed, UPMC Home Medical Equipment stepped in to streamline the delivery process. “Since ETAC is a supplier of wheelchairs that are owned by UPMC, we now deal direct with the manufacturer and remove the middleman. Our clients can get their chairs delivered to either the hospital or to the CAT, where they can be adjusted and configured specifically to their needs. Everything arrives from ETAC set up and ready to roll. And since our staff places the order for the chair, we minimize the number of chair rejections due to fit or design issues. In fact, the ETAC relationship has worked so well that the K004 ETAC has been selected as the fleet chair at both the center and UPMC Rehabilitation Hospital.”

Like the Permobil program, the ETAC initiative is attracting national attention. “We’ve proved that by taking a team approach, it’s possible to satisfy the needs of Medicare, insurance companies, clients, and therapists,” says Schmeler. “I’m continually getting calls from organizations around the country asking how we did it. I keep telling them there’s really no secret. You just have to work together.”

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Extending the Reach of Assistive Technology

While the wheels keep turning at Pitt’s Oakland campus, the need for comprehensive assistive technology exists well beyond city and county limits. People living in outlying areas require the same type of support that’s available in the

city. More important, they need local resources that spare them the expensive and the time-consuming commutes to town that can literally eat up several days each month.

To broaden its spectrum of services and to specifically serve the needs of clients in and around Cambria County, the center has partnered with the Hiram G. Andrews Center, a barrier-free educational, counseling, evaluation, medical maintenance, and therapy resource that is operated by the Pennsylvania Department of Labor and Industry, Office of Vocational Rehabilitation (OVR). Working together, Boninger and the Hiram G. Andrews staff have developed the CART/CAT program, an endeavor that draws on the capabilities of the Johnstown facility’s Center for Assistive and Rehabilitative Technology (CART) and reinforces them with assistive technology personnel and resources available from Pitt.

“Our combined team provides clients with the assistive technology they need to pursue their educational goals,” explains Boninger. “At Hiram G. Andrews, about 75 percent of the students are living with long-term conditions, ranging from ALS and multiple sclerosis to chronic pulmonary obstructive diseases and spinal cord injuries.



We draw

on the

strength of our programs in Oakland to give those clients direct and easy access to the equipment and technologies they need to function in daily life. In addition, we share our staff with the Andrews team to supplement their ongoing efforts.”

The CART/CAT program also provides a fertile ground for ongoing assistive technology research. Nearly half of the students enrolled at Hiram G. Andrews participate in studies that evaluate the effectiveness of new assistive technologies. In addition, the program reaches beyond the confines of the Johnstown campus through consulting services that help local property owners comply with the Americans with Disabilities Act. According to Boninger, “Our goal was to set up a center for excellence in assistive technology at Hiram G. Andrews. I think we’ve collectively achieved that objective. Our engineering, clinical, and therapy support helps the Johnstown team expand its reach and effectiveness, and it ultimately allows more of their students to live productive and fulfilling lives. Also, by sharing what we’ve

learned through the Permobil and ETAC programs, we help Hiram G. Andrews deliver better care in a cost-effective way. It’s a situation where literally everyone is learning and benefiting. It’s also an opportunity to prove that the research and partnerships we’ve fostered in Oakland really do work beyond the confines of our facilities.”

For more information e-mail Mike Boninger at mlboning@pitt.edu or Mark Schmeler at schmelermr@msx.upmc.edu.





A Fair Test

Unraveling the Knot of Cultural Bias in Language Testing

For years, psychologists have struggled with the problem of how to design intelligence tests that do not measure culturally-specific information; information that is very familiar to people from certain groups or backgrounds but less familiar to those from different backgrounds. Recent work by researchers at SHRS and Children's Hospital of Pittsburgh is shedding new light on the same problem in tests designed to identify children with language disorders.

Imagine that you are a child living in poverty, with parents who did not finish high school. When you start school, you are given a series of language tests. Your low scores suggest that you have a language deficit. Although your parents have never been concerned about your language ability, they agree to enroll you in special education services for children with language impairments. The stigma and label of "language disorder" may stay with you for the balance of your education.



Christine Dollaghan

But what if your low scores on these tests did not reflect your language ability, but rather your unfamiliarity with some of the words and concepts that were tested? What if you were misdiagnosed as having a language disorder because of your different cultural experiences?

In a series of interrelated studies, Dr. Christine Dollaghan, Professor, Department of Communication Science and Disorders, and Dr. Thomas Campbell, Associate Professor, Department of Communication Science and Disorders and Director of Audiology and Communication Disorders, Children's Hospital of Pittsburgh, have found that some children – especially those from low-income, poorly educated, or minority families – are being diagnosed as language impaired not because of deficits in their fundamental language skills, but rather because of the different knowledge and experiences they bring to the testing situation.

The implications are unsettling. Children may be labeled inaccurately, and scarce special education resources may be misdirected. As Dollaghan says, "We cannot imagine any positive benefit from such a situation."

Dollaghan and Campbell first addressed this problem in a comparative study entitled "Reducing Bias in Language Assessment." The pair tested the language skills of 156 randomly selected school-age boys, 69 percent of whom were minority students.

On tests that relied on prior knowledge, especially vocabulary, scores from the minority students were on average a full standard deviation lower than those from the non-minority students. But when the tests centered on language processing – actually using and remembering language that was familiar to both groups – there was no difference between the two groups of students.

The report summarized, "Our findings provide unequivocal evidence that the knowledge-dependent language measure we studied is biased against minority children." Their study has been included in *Clinical Issues When Assessing African American Children: ASHA Readings*, a publication of the American Speech-Language-Hearing Association (ASHA).



Tom Campbell

Not a Level Playing Field

In a well-known study, Betty Hart and Todd Risley of the University of Kansas showed just how wide the prior knowledge gap is between children of different socioeconomic backgrounds.

Hart and Risley found that even the youngest children in professional families hear roughly 2000 words per hour, while children in welfare families hear approximately 600 words per hour. This means that by age three, children at lower socioeconomic levels will have heard 20 million fewer words than children from more privileged backgrounds. Hart and Risley did not find that preschool children exposed to these lower rates of language experienced clinically-defined language impairments, but the amount of language exposure significantly correlated with scores on language-based tests well into elementary school.

"Nonsense" Makes Sense

With their initial research as background, and armed with insights from Hart and Risley's study, Dollaghan and Campbell devised a test aimed at distinguishing fundamental language deficits from differences in language background and experience. The team created 16 "nonsense words" comprised of one through four syllables. Neither the words nor their syllables corresponded to any English words. This helped to ensure that, regardless of background or previous exposure to



“If we are misdiagnosing children, our attempts to understand the nature and origins of child language disorders will suffer.”



language, all the students tested would be equally unfamiliar with the words.

Forty ethnically-diverse students were selected to participate in the first study of the non-word test. Half of the students had been diagnosed as having language impairments by an ASHA-certified school speech-language pathologist and were enrolled in language intervention in an urban public school setting; the other half were developing language normally.

The nonsense word test was relatively simple; the students repeated each non-word as it was presented on an audiotape. The results were striking.

On the longer (three- and four-syllable) non-words, and on all non-words combined, the group developing language normally did significantly better than the group diagnosed as language-impaired. At the 99 percent confidence level, there was no overlap at all between the two groups' average scores.

Clearly those students whom speech-language pathologists had diagnosed as having language impairments found non-word repetition more difficult. A later study comparing non-word scores with scores from a traditional standardized language test showed that the non-word test more accurately identified the students with language problems.

The Influence of Parental Education

Dollaghan and Campbell also have examined the influence of parental educational level on measures of early speech and language. Working with Jack L. Paradise, Heidi Feldman, and Dayna N. Pitcairn of Children's Hospital, and Janine Janosky and Marcia Kurs-Lasky of the University of Pittsburgh, the team analyzed spontaneous language samples from 240 three-year-old children. Four variables were

analyzed – the mean length of utterances, the number of different words, total number of words, and percentage of consonants spoken correctly. The children were also given a standardized, “knowledge-dependent” vocabulary test.

For three of the four variables and the language test, the study showed that the higher the mother's education level, the higher the child scored. Once again it was shown that sociodemographic factors are related to children's performance on language tests.

An Ongoing Effort

Dollaghan and Campbell's research is part of a much larger effort at the University of Pittsburgh to understand all of the risk factors for language disorders, including medical conditions like ear infections, and environmental hazards such as exposure to lead paint. Dollaghan sees these interdisciplinary connections as a real plus. “Being part of this large research community gives us access to many different children of many different backgrounds, to other researchers, to other tests, and other information.”

But while there is still much to be learned, Dollaghan is sure of one thing. “If we are misdiagnosing children, our attempts to understand the nature and origins of child language disorders will suffer.”

And for Dollaghan, misdiagnosis is “a very preventable problem, at least theoretically. If, as a society, we choose to use our resources to narrow the gap in low-income children's language exposure, we could make a huge difference in their lives.”

For more information, contact Christine Dollaghan at dollagha@csd.pitt.edu.



Good Vibrations

Cochlear Implants Provide Stimulating Results in the Treatment of Hearing Loss

The roar of the crowd at a homecoming football game. The blaring horns and beating drums of a marching band. The laughter of trick or treaters. The crackling of the first logs in the fireplace. The sounds of autumn. Until recently, sounds unheard by patients with diseases or malfunctions of the cochlea.

Due to the aftereffects of noise, drugs, vascular disease, chemicals, or a variety of genetic factors, their cochleas – the sea shell-shaped structures in the inner ears – stood between them and the sounds of the world around them. Now, through the advent of highly advanced, computer-controlled cochlear implants, a growing number of hearing impaired patients – from young children through teens and adults – are able to recognize and process the sounds that so many of us take for granted.

“The cochlea is a hard structure that contains a series of membranes suspended in fluid,” explains Dr. Sheila Pratt, Assistant Professor, Department of Communication Science and Disorders. “Housed on those membranes are receptor cells that provide linkage with the auditory nerve. When the cochlea is damaged through ossification or other factors, the cells on the membranes are damaged and a roadblock forms between the outer ear and the brain. A cochlear implant is an auditory prosthesis that overcomes that blockage by allowing sound impulses to reach the auditory nerve.”

Making Contact

Comprised of a number of microprocessor controlled-components, a cochlear implant allows patients to hear by taking the place of the inoperative receptor cells. By converting incoming sounds to electrical impulses, the implant manually stimulates the endings of the auditory nerve and allows the brain to recognize those sensations as sounds.

When a patient is outfitted with a cochlear implant, sound is received by an exterior speech processor that clips over the ear. The processor – which looks like a standard hearing aid – runs the incoming sounds through an integral chip. The chip then analyzes the sounds with a preprogrammed speech-coding strategy, such as ACE, SPEAK, or CIS, and then sends signals to a transmitter coil via a small external wire.



Sheila Pratt

The transmitter coil is held in place by a magnet that's attached to an implanted, computerized receiver/stimulator placed just below the skin. It transmits incoming sounds to the receiver, and converts them into electric signals. The signals are sent to the stimulator, which then forwards them to an electrode implanted in the cochlea. Fibers leading to the auditory nerve are stimulated by the signals, and impulses are transmitted to the brain, where they're recognized as sounds and processed as hearing sensations.

To insert the implant, a surgeon makes a small incision behind the ear. An indentation is then created in the skull to accommodate the receiver/stimulator component. Next, a small hole is drilled through the skull into the inner ear area. Another hole is drilled into the cochlea itself. The implant is completed when an electrode is threaded from the receiver/stimulator, through the two holes, and finally into the cochlea.

To be eligible for an implant, a patient must have an intact auditory nerve. While they can be done on adults, most implants are performed on children between the ages of twelve months and four years.



“In children, implants produce best results when done before the age of four or as soon as hearing loss occurs. That way, there’s less chance that their developmental progress will be significantly compromised.”

Prior to surgery, patients are put through comprehensive behavioral testing and a physiological evaluation to determine the extent of their hearing loss. If standard amplification techniques don’t work, more tests are done. If testing indicates an intact auditory nerve, a cochlear implant is then considered.

Pratt cautions that implants are not a correction. “They’re just a stimulation. In children, implants produce best results when done before the age of four or as soon as hearing loss occurs. That way, there’s less chance that their developmental progress will be significantly compromised. We have done implants on 15- and 16-year-olds, but the results have been mixed. Most of these patients have difficulty developing hearing and language skills since they have no concept of what sound is.”

Staying Tuned to Patient Needs

While the results from cochlear implants have been promising, audiologists have to follow their patients carefully to make sure the equipment continues to function effectively. “Kids are brought in frequently to have their equipment checked and adjusted,” says Pratt. “You have to watch them carefully for signs that things aren’t working. If they suddenly become quiet, disoriented, or start responding in strange ways, it’s critical to get them in for an exam.”

Because children tend to be very active, the equipment also can become damaged. “We try to discourage some activities – such as swimming and rough sports like hockey or football – but things happen. We also teach them to try and avoid certain materials.

Plastics, for example, harbor static electricity that interferes with the function of the equipment.”

When patients visit the audiologist for an exam, they are connected to a computer and their equipment is analyzed. Components or coding strategies can be adjusted on the spot. If the electrode in the cochlea malfunctions or fails, the patient will be admitted to the hospital to have it replaced. At home, patients are responsible for routine battery changes. They also learn how to conduct integrity checks by connecting themselves to a computer or dialing in on a special phone line.

Making The Student Connection

In her class, Pediatric Audiology and Anatomy and Physiology of Hearing, Pratt promotes the

potential of cochlear implant technology. “We show students how to do the evaluations and how to work effectively with other professionals to address the needs of each patient. We also familiarize our students with the equipment presently used in cochlear implants, and encourage them to stay current. The technology is changing and improving all the time.”

In addition, Pratt is emphasizing the importance of strong patient relation skills. “We really need more rehabilitation specialists who are familiar with this technology,” she notes. “Once an implant has been done, our graduates have to reach out to their patients and help them learn about sound and let them know when it’s present. They need to assist in reinforcing cognitive skills that may be underdeveloped. And ultimately, they have to be prepared to facilitate speech and language development. There are a lot of people out there with cochlear hearing loss, and there’s a lot of work that needs to be done.”

For more information, e-mail Sheila Pratt at spratt@pitt.edu.



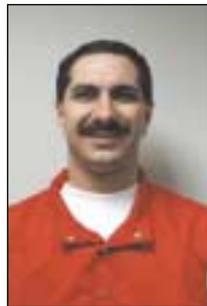
Let's Get Clinical

Building Emergency Medicine Knowledge . . . One Patient At A Time

The sirens scream and the strobe lights flash. Emergency vehicles race to a rescue scene. There's no time to second guess or rethink decisions. There's no opportunity to feel anything less than complete confidence. There's a job to do, and it needs to be done now.

If this sounds like the opening of *ER*, it's not. It is a typical day for students in the Emergency Medicine program, which is widely recognized for turning out top-notch, Nationally Registered Emergency Medical Technicians - Paramedics. Certification as a Nationally Registered Paramedic is the hands-on component of the degree program.

Designed to provide students with practical field experience throughout their coursework, the Emergency Medicine program does more than simply



Bob Seitz

take students along for the ride. "This program combines classroom work with field experience to help students really see what goes on in the real world," explains Bob Seitz, Assistant Professor and Clinical Coordinator, Emergency Medicine. "Students begin the curriculum in their junior year after completing two years of pre-requisites. We start the program with textbooks, but quickly segue into rotations where students are on the front lines actually putting their didactic information to work. Whether they're out on a paramedic unit, or are working in the clinical setting at a local hospital, every student contributes to helping care for patients."

Hitting the Ground Running

Recognized as one of the most rigorous paramedic training programs in the country, the Emergency Medicine curriculum demands a full-time commitment from students. Coursework covers two full semesters, and students are restricted to taking a prescribed array of classes. Beyond the classroom, they are required to log more than 540 hours of clinical training over the two

semesters. Of that time, 312 hours must be spent in the field and more than 80 hours in an emergency department setting. In all, students rotate through 19 different clinical and field areas.

"Being enrolled in this course is like having a 40-hour a week job," says Seitz. "Students put in an average of 20 hours per week functioning as crew members on emergency vehicles and attending to patients in the hospital settings. Then, they go home and put in at least another 25 to 30 hours of prep work to keep up with the didactic side of the curriculum. When it's all said and done, most of our students are working the equivalent of a 70-hour week. Looking at that objectively, it's clear that our students have to be committed to what they're doing – there's just not time for anything else."

A key part of the clinical program centers on a series of Terminal Performance Objectives (TPOs). TPO's facilitate the combination of clinical time and application of the skills necessary to successfully complete the program. To ensure exposure and expertise with various patient populations, students interact with patients and are evaluated in the areas of Skills, Assessments, Pathologies, Complaints, and Team Leadership. The goal is to present didactic information in combination with clinical experience to create knowledge.

"Emergencies are emergencies because they're unanticipated," notes Seitz. "As a result, students see and fulfill their TPO requirements as they respond to calls in the field. In most cases, students are able to complete their



requirements within the two-semester timeframe. However, if they don't see enough patients, or don't have the opportunity to see enough of the right kind of patients, they are required to continue working in the field until those standards are met."

Students also spend a lot of time honing critical lifesaving skills. Over the course of their field service, they perfect the psychomotor skills involved in procedures such as intubation, ventilation, venous access, and medication administration. To become proficient at these skills – and to ensure that patient safety is never compromised – students practice in laboratory settings using anatomical mannequins as patients.

"It's one thing to read a book about intubating a patient and another thing entirely to actually do it in the field," remarks Seitz. "If you don't know what you're doing, it's possible to ventilate a patient's stomach instead of his lungs, which creates a disastrous situation. We make sure our students learn and demonstrate the skills they need by connecting them directly with professionals in the hospitals. For example, students will spend time with anesthesiologists and nurse anesthetists to learn how to manage an airway correctly. They work in psychiatric emergency rooms to perfect their skills in dealing with behavioral and psychiatric emergencies. They learn how to insert an IV and administer medications. Our students even spend time in the pathology labs to gain a more complete understanding of anatomy and physiology."

Experience With Broad Boundaries

A partnership of local hospitals makes these clinical experiences possible. At present, Presbyterian University Hospital, Mercy Hospital, St. Francis Hospital, West Penn Hospital, Children's Hospital of Pittsburgh, UPMC – Shadyside, UPMC – McKeesport, and Magee Women's Hospital all actively participate in the program. They welcome Emergency Medicine students into all areas of their facilities, and, along the way, expose them to a wide range of clinical specialties.

"Every hospital that participates in our program brings a unique array of capabilities to the curriculum" says Seitz. "For example, West Penn is renowned for burn treatment. Mercy and Presbyterian are known for their level one adult trauma care programs. Children's is a level one pediatric facility. And

Presbyterian has exceptional experience with transplants. Paramedic students function closely with paramedics, nurses, and attending emergency medicine physicians. If you put all of that together, you see that our students have terrific opportunities to experience a wide array of emergency situations by the time they complete their coursework. Couple all that with the exceptional cooperation we receive from the City of Pittsburgh's EMS department and the crews on Stat MedEvac – the emergency helicopter team – and you have nothing short of a complete and comprehensive experience."

The far-reaching nature of the program is clearly paying off for students. For the past several years, the program has enjoyed a near-perfect success rate on the National Registry Exam, the test that's given annually to certify the skills of paramedics. Success on this exam ensures that each student has "the" credential he or she needs to graduate from the program and enter the field.

When it comes right down to it, every minute in the program counts. "This program is not about simply putting in time," comments Seitz. "It's about gaining the right knowledge and developing skills that are readily usable in the field. Our students work hard while they're with us, but when they



graduate, most of them have a choice as to where they go to work. Most important, they leave with the knowledge that they can handle the situations they face. They have the skills, they have the expertise, and

most of all, they have the confidence to step forward and take complete control of an emergency situation."

For more information, e-mail Bob Seitz at seitzsr@msx.upmc.edu.

"This program combines classroom work with field experience to help students really see what goes on in the real world. Whether they're out on a paramedic unit, or are working in the clinical setting at a local hospital, every student contributes to helping care for patients."



Setting the Standard

Recording a Better Healthcare Future

When you hear the word “standards,” you think of a structured basis of comparison issued by an official agency – rules or principles used to ensure that a job is done right. But in an emerging area like electronic health records (EHR), the criteria for what information should be included in an EHR has been anything but standard. Until, that is, Dr. Valerie Watzlaf, Associate Professor, Health Information Management, and her team became intent on sorting out existing standards for one major regulatory organization.

The project began with a Request for Proposal issued by the American Society for Testing and Materials (ASTM) and the American Health Information Management Association (AHIMA) to study awareness of, and adherence to, ASTM standards in the areas of content and structure of EHRs and the corresponding coded values for EHRs. In effect, the ASTM issues standards that aren't always followed by large vendor corporations, healthcare organizations, and small start-up companies. The ASTM wanted to know: Do U.S. organizations know about the ASTM standards, and are organizations using them? Precisely what information are organizations collecting in the health records?

Watzlaf's proposal involved investigating the level of awareness of the standards for the content of electronic health records, measuring the extent to which these standards are used, and collecting feedback on how well the standards meet users' needs.



Valerie Watzlaf

Watzlaf's team submitted its proposal in September 2000 and received the AHIMA grant in January 2001. The team includes Watzlaf as principal investigator, Assistant Professor Patricia A. Firouzan as secondary investigator, and Dr. Xiaoming Zeng as research assistant, with support from undergraduate and graduate students Leanne Borrelli, Julie Buehler, and Manisha Ghate.

Finetuning the Survey

The first step was to develop a six-part survey and cover letter for inclusion in the proposal that answered the RFP. The survey included closed-ended and open-ended questions that were developed with input from the University of Pittsburgh Office of Measurement and Evaluation

(OME). The validity of the survey was tested in Boston, where Watzlaf and Zeng made a presentation at the conference, “Toward an Electronic Patient Record.” This ASTM group of approximately 20 healthcare professionals serves on a voluntary basis to further the cause of EHR standards.

Watzlaf found this group's feedback invaluable. She recalls, “I think they were interested in the individual who is actually going to complete the survey – their educational background and credentials. They were concerned about the definition of what an electronic health record is, and they wanted us to take this definition from ASTM.”

The team revised the survey based on this critical feedback, adding questions about the participants' educational and healthcare backgrounds. Other feedback from pilot testing of the survey among healthcare professionals in the Pittsburgh area also dealt with the actual survey format. Watzlaf recalls, “We had options including ‘yes,’ ‘no,’ and ‘not sure.’ They didn't like that. They said if you include a ‘not sure’, a lot of people would click on it because they aren't sure of the status of their system at that time. We used ‘not applicable’ instead.”

In many ways, team members are learning as they proceed. Their proposal originally intended “to provide the cover letter and survey via an electronic format so that recipients can access the survey through e-mail containing a link to the URL and, therefore, return the survey quickly.” And here, as the team ventured into the e-universe, snags developed.

Watzlaff recalls, "When we first started, I thought, 'This is going to be great!' But there are things we didn't think of, like how often you have to back up the information or it's not going to be there. Or preparing your cover letter that's sent via e-mail. Normally, you'd write the letter and mail it. But since it's electronic, we had to make sure the link to the on-line survey works for all browsers. Sometimes it would, sometimes it wouldn't." Watzlaf credits her unofficial Web master Zeng with working through the problem, which involved people using different Web browsers to access the system. "It took many hours of Xiaoming's time to establish this survey online," she says.

No E-Mail

But this was merely the first obstacle with an electronic survey.

"We have been finding that some hospitals don't even have e-mail," says a surprised Watzlaf.

"They're requesting that the survey be sent by fax. We've had more survey respondents than we expected who are asking for that."

Correspondingly, these same hospitals are indicating that they won't have EHRs in the near future. As a result, the team is sending out hard copies of the 13-page survey via fax and mail.

Another concern is the 1996 National Health Insurance Portability and Accountability Act, which requires extensive data exchange from the healthcare provider to the insurance carrier and also Watzlaf wonders how hospitals can ever meet regulations on EHRs when they don't even have e-mail.

The team hopes to achieve a 50 percent response rate from nearly 1,000 queries to potential respondents across the spectrum of

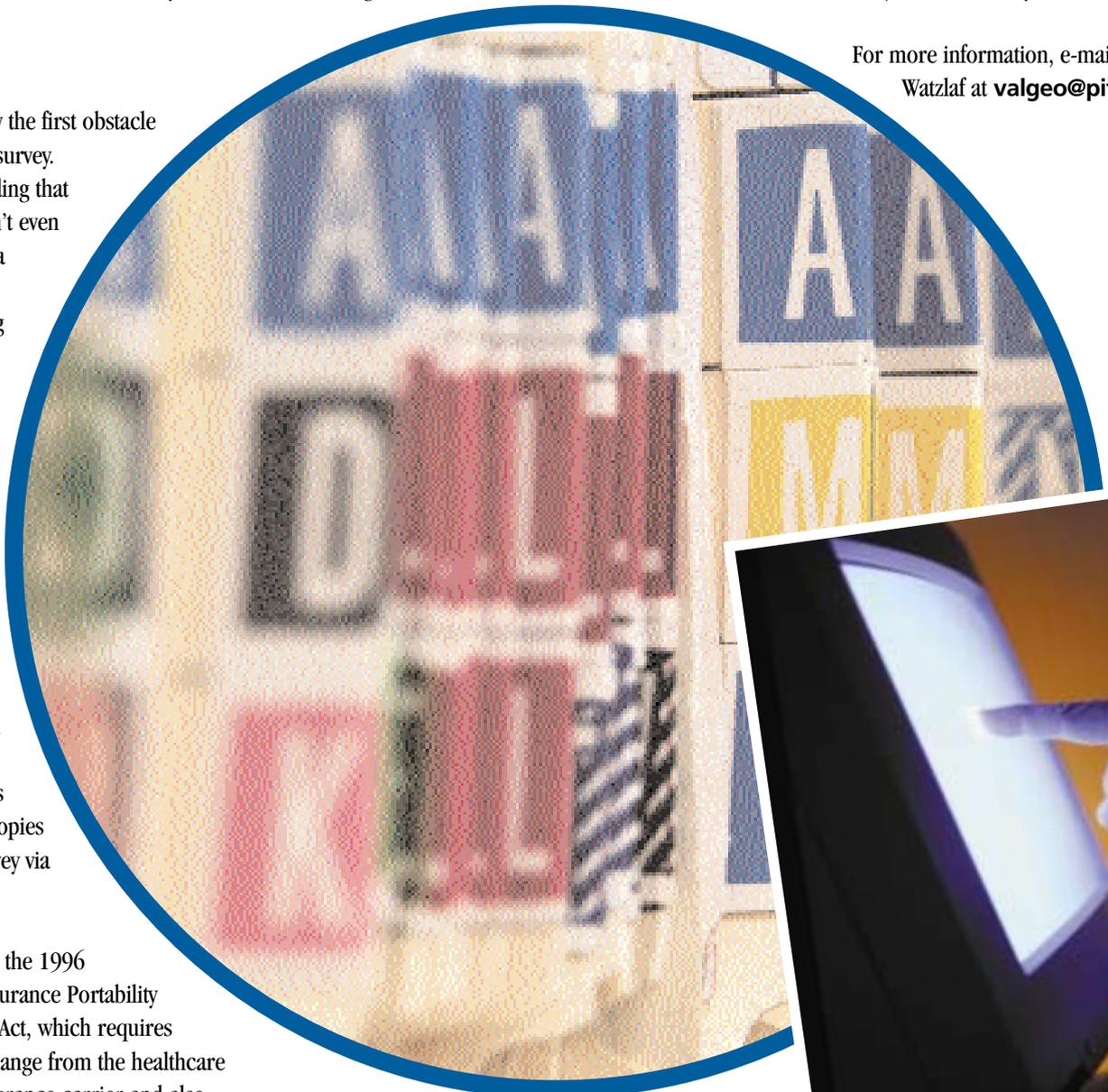
technology in all 50 states. The survey group includes all types of healthcare facilities (including some who have won awards for best EHRs or CPRs), as well as vendors whose software helps to create EHRs. A few weeks in, results are building in the team's database. "Once respondents complete page 13," says Watzlaf, "they click 'finish' and it says 'thank you.' From here the data automatically go into the Microsoft Access database. It's immediate. They finish, and the data compiles."

All data is scheduled to be received by February 2002 and analyzed through April. By the terms of the grant,

moves inexorably to an electronic health record environment, which can only enhance the quality of care offered to all patients.

Watzlaf's eyes shine as she speaks of a future that includes standardized EHRs. "Then you'd have this universal document that can be used across the country for epidemiological research, outcomes research, to improve the quality of care for patients, the sharing of data – all of that would be just wonderful. It could also lead to what we call a longitudinal health record wherein you as a patient can have a record of all the care you ever received. And that is just the best way to treat a patient."

For more information, e-mail Valerie Watzlaf at valgeo@pitt.edu.



the article containing research results must first be submitted to the *Journal of the American Health Information Management Association* for possible publication. The results of the study will almost certainly affect the next generation of ASTM standards as the nation



Milestones in Movement

Tracking Infant Development



The first time she rolls from her back to her stomach. The first time he sits up himself. The first time she pushes herself up on hands and knees and begins to crawl. The first time he takes a tentative step.

This series of “firsts” in an infant’s life is awaited anxiously by parents around the world. And each parent has his or her own timetable as to when these events should take place. For the novice, it’s a schedule that often is shaped by parenting guides or grandparents’ hazy recollections. For the seasoned mom or dad, it’s usually based on when big brother or big sister reached those milestones.

But what if a deadline is missed? How can a parent differentiate between normal variance among infants and developmental deficiency?

This question takes on a particular significance for parents of very low birth weight infants. Since the mid-1970s, the survival rate for these children has increased dramatically. But with very low birth weight comes a heightened risk for immediate and long-term developmental problems – thirty-fold higher according to Dr. Lynette Chandler, Associate Professor, Department of Occupational Therapy. “In the general population, two infants out of a thousand are at functional risk,” she says. “In the high-risk group, the risk increases to sixty children in a thousand.”

Movement Assessment of Children

It was the need for a comprehensive tool to identify early signs of motor developmental delay that led Chandler and colleagues from the University of Washington to develop the Movement Assessment of Infants (MAI), later adapted into a second, shortened test named the Movement Assessment of Children (MAC).

The MAC allows clinicians and researchers to evaluate, systematically and quantitatively, motor function during the first year of life. Unlike instruments such as the Primitive Reflex Profile or the Alberta Infant Motor Screen, which focus on one or two aspects of infant neuromotor function, the MAC assesses both motor function and the neurological components that underlie function. It evaluates muscle tone, primitive reflexes, automatic reactions of balance and equilibrium, and voluntary gross and fine motor skills.

A child’s function is evaluated objectively using a numerical scale. Expected performance varies depending on the age of the child. For instance, a ten-month-old infant would be expected to be able to sit securely, without arm supports. That would be scored as a “one.” The score would drop to “two” if the child could sit without arm support but

was not stable, and “three” if he or she could not sit independently. If a child cannot complete the function by the expected age, concerns are raised about the child’s motor development. The more milestones missed, the greater the risk of a deficiency.

Fast and Thorough

It takes less than 20 minutes to administer the MAC, not including time spent talking with the parent, rest and feeding breaks for the child, and scoring.

Depending on the age of the child, up to twenty-six functional movements ranging from visual tracking to walking are assessed and rated on a 1-3 scale.

Muscle tone, the degree of tension in muscles at rest and active, is rated on a 1-4 scale. Muscle tone that differs from the norm may be indicative of a neuromotor abnormality.

Primitive reflexes, which are normally present for brief periods of time during infant development, are rated on a 1-3 scale. Primitive reflexes are often incompatible with functional

“We cannot cure a developmental problem, but we can mitigate it.

The brain can learn.

The earlier a child enters treatment, the better.”

movement, so children who retain primitive reflexes may show movement deficits.

A “total risk score” and sub-scores for each category are computed, with higher





scores indicating greater deviation from the norm. A total risk score of “three” or more is an indication that a more thorough evaluation by a physician is needed, and may be an indicator of neuromotor disability.

The MAC calls for both observation and manipulative examination of the child. “Our procedures are consistent with the current emphasis on non-intrusive evaluation and natural observation,” says Chandler. “However, this assessment also values the knowledge gained from the touch and skilled handling of experienced professionals.”

Broad Application

Experience was key to the development of the MAI and MAC. Unlike researchers whose knowledge of infant development is confined to periodic infant assessments performed at designated ages, Chandler and her colleagues had worked with families and their children on an ongoing basis. They saw how neuromotor deviations and abnormalities developed over time, and how they influenced functional development. The MAI and MAC evolved from insights gained over a combined 40 years of clinical experience.



Several independent research teams have verified the validity of the assessments. For example, in a study where the team was blind to the history of the children, the team found that the MAC discriminated between children whose mothers used cocaine during pregnancy and those children not exposed to cocaine. A researcher in Slovenia found the MAC to be predictive of neuromotor abnormality. The MAC has been used in clinical research and intervention sessions with infants with a broad range of conditions and diagnoses, including Down’s syndrome, cerebral palsy, and prenatal exposure to alcohol and drugs.

While enthusiastic about the MAC, Chandler understands its limitations. “We cannot cure a developmental problem,” she emphasizes. But she’s quick to add, “we can mitigate it. The brain can learn. The earlier a child enters treatment, the better.”

Chandler sees the MAC as an invaluable tool during the treatment process. “The original assessment serves as a benchmark. Each month, we update the assessment to determine if progress is being made.

It only takes about five minutes. If we don’t see any progress, we know we need to change the treatment program.”

For example, in a study in Australia, Chandler used the MAC to document the response to treatment of 27 children with severe developmental delays. After 12 hours of treatment, significant changes were noted. “The use of the MAC for clinical documentation and outcome studies will contribute to our understanding of the best treatment of children with motor delays,” says Chandler. She would like to see the MAC become a worldwide standard assessment tool for documenting motor delays, clinical

treatment, and outcomes. The MAC has already been translated into German, French, and Spanish.

Finding the Right Assessors

Chandler acknowledges that while pediatricians would be ideal assessors, their orientation makes it unlikely. “They’re trained to look at things medically, not functionally.” She says there is also the return on investment to consider. “Given the relatively low percentage of children with developmental delay, they don’t want to spend the time and money it takes to conduct the assessment on every child.”



Lynette Chandler

Instead, she sees nurses as ideal candidates to screen for motor delays. “Nurses are trained to be excellent observers. The MAC could easily be integrated into the nursing curriculum.” Chandler has conducted two-day courses for nurses at the University of Washington and also hopes to do so at the University of Pittsburgh.

Chandler also believes parents could easily learn how to conduct a simplified version of the MAC on their own children. She says the test is a godsend for parents who suspect their child has a developmental delay. “They have a hunch that something is not right, but want a second opinion. Over half the time, the MAC shows that the child is fine. But,” she adds, “often enough, the parent is correct and learns the true nature of the movement problem by going through the assessment with the therapist.”

For more information, e-mail Lynette Chandler at Ichndlr@pitt.edu



“Working hand-in-hand with the University of Pittsburgh teams provides experience that’s both unique and essential to a complete and effective athletic training program,” says Conley.

Under the supervision of the program’s staff of Certified Athletic Trainers, undergraduates divide full days between classroom instruction and clinical practice with Pitt’s athletic programs.

Pitt Athletics: The Perfect Laboratory

“The clinical settings offer the perfect laboratory

environment for putting classroom learning into practice,” notes Conley. “The education happens in both places. Students get immediate feedback on what they’ve learned.”

Students spend long hours in the program. They’re typically in the classroom from early morning to noon, then work with the teams until evening, five or six days a week. Under faculty supervision, students provide support to the certified staff, assessing and minimizing injury risk factors as well as evaluating and directing rehabilitation programs for those athletes who do suffer injuries. According to Clinical Instructor/Certified Athletic Trainer Tony Salesi, “This is one of the few programs where people can actually work and help people right away,

before they graduate. Working with Division I athletes requires a great deal of dedication from the students – and a great deal of patience, too.”

The benefit of all the hands-on experience is more than just practice. It exposes students to a broad range of approaches to therapy and evaluation in what is fundamentally a highly personal and individualized skill area.

“Everybody’s different,” says Josh Hubert, another of the program’s faculty Clinical Instructor/Certified Athletic Trainers. “You have to work with individuals and make decisions based on personality, pain tolerance, and condition. And no two situations are really alike. It’s the kind of judgment you can only get from experience.”

Clinical Instructor/Certified Athletic Trainer John Vairo adds, “This is not a passive experience. It’s active. You need the clinical setting to get it down. Field work also gives students experience in communication. Athletes are different than other therapy patients. They need more explanation, more depth. And that’s a critical part of successful care.”

nationally-recognized sports medicine program, including the new UPMC Center for Sports Medicine clinical facilities and Neuromuscular Research Laboratory, gives students, both undergraduate and graduate, access to the very latest in sports medicine research and technology.”

Adds Rob Blanc, Head Athletic Trainer, “The support we’re getting from Dr. Fu is phenomenal. Students at all levels are learning from physicians, clinicians, and researchers. They’re exposed to the best people in the world on a daily basis.”

In addition, the University of Pittsburgh’s place among Division I universities gives students direct exposure to a living laboratory of world-class collegiate athletic competition.



Kevin Conley

Finding a Role Model

For Jill Kirby, faculty Clinical Instructor/Certified Athletic Trainer, the emphasis on clinical practice provides a unique opportunity for mentoring female undergraduates.

“It’s especially important for females in this discipline to have role models, because it’s so new. And with female athletes, the challenges are different. Beyond the sprained ankles, there are emotional and social issues. Athletic trainers find themselves acting as counselors on top of everything else.”

Continued on next page

Back!

The Graduate School of Public Health, under the direction of Dr. Stephen Wisniewski, is undertaking the data management, and the team is looking to recruit research subjects from orthopaedic surgeons and internists through UPMC

Challenges to Date

And the report after eight months?

Recruiting subjects is a challenge, says Delitto. The preponderance of patients, thus far, have opted for surgery and the promise of potential quick relief from their chronic pain. “Many of these people have been through physical therapy before and, for a variety of reasons, believe it hasn’t improved their situation,” he explains.

Delitto is hopeful, however, that as the study proceeds, randomizing patients into the non-surgical treatment will become easier.

He points out that his team consulted with the best minds in the field nationwide to develop a physical therapy regimen specific to the needs of LSS patients.

“A key to our program is that it is flexion-oriented,” he notes. “We teach patients about flex postures that we know help relieve symptoms.” The therapy also offers specific exercises, coupled with functional activities.

The program is intense, lasting four weeks, and patients must continue the exercise program on their own following the therapy.

Looking Forward

“We know from experience that some people respond to surgery and some people respond to physical therapy,” Delitto states. “What the study hopes to uncover is if it can be predicted to which treatment an individual patient will best respond.”

Along with attempting the best outcomes, keeping people from undergoing unnecessary surgery is also a goal. As with all surgery, laminectomy represents a risk to patients, particularly since LSS patients tend to be in their fifties and sixties and may have other conditions such as high blood pressure or diabetes. Research indicates that up to 15 percent of patients experience complications following surgery, half of which are life threatening.

Delitto is hopeful that the two-year follow-up phase of the study will also help to quantify quality of life improvements.

“In this way, we can arm patients with the best possible information required to make truly informed choices.”

For more information, e-mail Anthony DeLitto at delitto@pitt.edu

“We know from experience that some people respond to surgery and some people respond to physical therapy.”



More Than Pets

Understanding How Service Dogs Change Lives

When guide dogs for people with visual impairments were first used over 80 years ago, the relationship between humans and canines took a huge step beyond mere pet and companion. Researchers are now working to discover how that relationship can be intensified even further.

They are called service dogs, and the name is well-chosen, for they provide remarkable kinds of service to people with physical impairments. What the dogs can do for their human partners is nothing less than amazing. They open doors – both metaphorically and literally. Wheelchair service dogs help pull wheelchairs, both powered and manual. If the human can walk but with difficulty, the service dog can provide balance and counterbalance. The dogs can turn lights and appliances off and on. They can push the elevator button for the right floor. They can make sure the remote control for the TV is handy. The most common advantage the dogs provide is the simple act of fetching: one person related getting into the shower but forgetting her towel; when asked, her dog brought it. A service dog can open the refrigerator, take out a can of soda, close the door, deliver the soda, and then deposit the can in the trash when it's empty. Merely having the dog to pick up something you have dropped but cannot reach yourself can be a major benefit.



Some service dogs even receive special training to become “Seizure Response/Alert Dogs.” They work with individuals who have epilepsy or other seizure disorders. The dog is trained to perform certain tasks to help the human when a seizure occurs. There are hearing dogs that help individuals with hearing impairments by responding to doorbells, alarm clocks, smoke alarms, and microwaves.

The people who can benefit from service dogs include individuals with spinal cord injuries, spina bifida, multiple sclerosis, and muscular dystrophy. Many have multiple disabilities, such as people who are blind and must use a wheelchair.

The Need for Study

However, while anecdotal evidence indicates the dogs do improve their human partner's quality of life in general terms, deeper questions need to be addressed. For one, in exactly what ways do the service dogs help? How big an impact do they make on their human partners' lives? What kinds of dogs and training work best? What kind of people will realize the greatest benefits if they are partnered with service dogs? How can we do a better job of matching people and dogs?

The information to answer these questions is currently limited. Samples have been small, testing insufficient, and results are often controversial. That's why Dr. Shirley G. Fitzgerald, Assistant Professor, Department of Rehabilitation Science and Technology and Associate Director of Research, Center for Excellence on Wheelchairs and Related Technology, has led a study to address these issues in a scientific manner. Her research becomes especially important when one considers the extent of the current demand for service dogs. Assistance Dogs International, a coalition of people who set quality standards for the service dog industry, says that as many as 6,000 people a year want service dogs. Yet there are less than 600 new dogs available per year. Waiting lists can be five years long. With the funding for dog providers coming exclusively from donations, there is not only a need for more accurate information, but also an increase in overall awareness of the need for service dogs.



Not Your Average Pets

Needless to say, it takes a very special kind of dog to handle these chores. These are working dogs; they're not for play. To become a service dog, the animal must show excellent social behavior skills: No aggression, no inappropriate barking, no biting, no snapping/growling, no inappropriate jumping on strangers, and no begging. They must be very healthy, and be spayed or neutered. And, of course, they must have the right personality, one that meshes well with their human partner's personality.

Some organizations breed service dogs; others obtain them from local breeders; still others get them from shelters. The most common breeds are Labradors, Retrievers, or a mix. Standard Poodles, because of the low dander of their fur, are especially valuable when the human has allergy problems. Dogs used for hearing are frequently mixed breeds. But very few dogs – less than 40 percent – have all the characteristics necessary to become service dogs.

The training of service dogs is an extended, and intense, process. It usually begins with puppies and lasts 18 months or more. The two major suppliers of service dogs – Paws with a Cause and Canine Companions for Independence – differ in their specific training methods, yet both focus on providing a dog that will match its human partner's needs. Often, when the dog and its human partner meet, a field service trainer works with both of them until the two can function as a team. If a change takes place in the living habits or work patterns of the human partner, further training is provided. Interestingly, the service dogs can retire when they become older and less able to work. The human partner can then get another dog.

Research Steps

The research undertaken by Fitzgerald has two levels. In the first, service dog recipients are interviewed before they receive their dog, then three months and nine months later. To



Shirley Fitzgerald

determine how much the dog has really changed their lives, they are questioned on several topics. One is community integration: How often do they get out? How much do they interact with people? Another is employment: Have there been improvements in ease of getting to work and on the job? In addition, they are asked about healthcare utilization:

Has having the dog made them more likely to attend to their healthcare needs? What exactly is the dog doing for them?

Along with the questions on daily living are psychosocial questions on self-esteem, social support, and quality of life. Fitzgerald points out that one of the clearest results of the study is that service dogs improve their human partners' quality of life.

Because daily needs are more likely to change than those that are psychosocial in nature, a second phase of Fitzgerald's research focuses on daily living patterns. Participants are interviewed at two, five, and seven months after obtaining the dog.

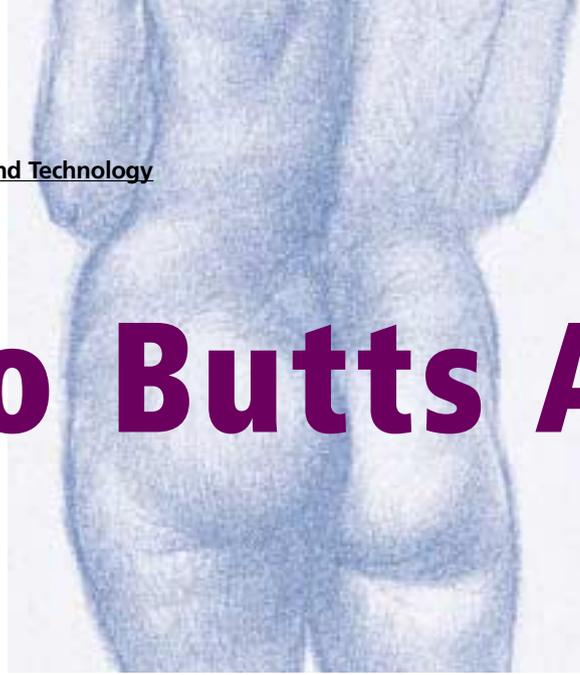
The question of who can best be helped by service dogs is the focus of an epidemiological research program Fitzgerald currently has underway. Funded by the Veteran's Integrated Service

Network (VISN), Competitive Pilot Project Fund, it is studying a larger group of people, with the objective of determining what kinds of people have service dogs. There has been no scientific analysis of this information – for example, 80 percent of service dog owners are women – and it is central to the entire concept of connecting service dogs to help those who need them most.

Fitzgerald says, "The data we've generated has gone a long way toward clarifying the real advantages of service dogs. However, there's much more to be done. Much of what happens between the dog and its human partner is very individual, so the potential success of the relationship is difficult to quantify."

For more information, e-mail Shirley Fitzgerald at sgf9@pitt.edu.





loading conditions on that model to try and predict how the tissue will react,” he states.

Brienza notes that once the buttock model is developed, it could be used to help design new or

Putting the Pressure on Wheelchair Seat Cushions

No Butts About It

For the estimated 1.5 million people in the United States who rely on wheelchairs for mobility, there is an insidious risk of developing dangerous pressure ulcers from the simple act of sitting in their chairs. This is particularly true

for people with spinal cord injuries, and the elderly who lack mobility and the sensation that represents the first alert to a developing pressure ulcer.

or healthy response to pressure on the skin is a dilatation of the blood vessels and an increase in blood flow to compensate for that pressure.”

However, Brienza points out that a certain portion of the population, including many people with spinal cord injuries, does not appear to exhibit this natural response, putting them at even a greater risk of developing pressure ulcers. Researchers are trying to identify differences in responses – the level of risk – and how that relates to the development of pressure ulcers.

evaluate existing seat cushions. “Through computer simulation, the model can be applied to different cushions to determine if they met the specific needs of an individual.”

Dr. Mary Jo Geyer, a former student researcher and now faculty in the Soft Tissue Mechanics Laboratory, believes that the same biomechanical tissue characterization used in evaluating the risk of pressure ulcers could be used to characterize the soft tissue in people with lipodermatosclerosis (LDS), other venous diseases, and diabetes that result in ulcers, primarily on the lower extremities.

Currently, expensive CT Scans are used to evaluate LDS and fibrosis. Geyer’s research has shown that a similar analysis and evaluation can be accomplished using the much simpler biomechanical system.



David Brienza

Enter the Department of Rehabilitation Science and Technology. Through a variety of research and technical initiatives, faculty and

researchers are advancing the science of preventing pressure ulcers. Chief among them is the use of the right wheelchair seat cushion.

Brienza and his colleagues have developed a tissue characterization technique based on quasi-linear visco elastic modeling. In the past, similar characterizations have been used to study elastic properties of tendons and other types of connective tissue and muscle. Here, it was a dapted to evaluate the characteristics of skin, fat, and muscle in compression.

“We’re very excited about this development,” states Brienza. “It represents a whole new area of research for us.” Presently, there are two research projects underway in the laboratory to evaluate this technique with LDS and diabetic ulcers.

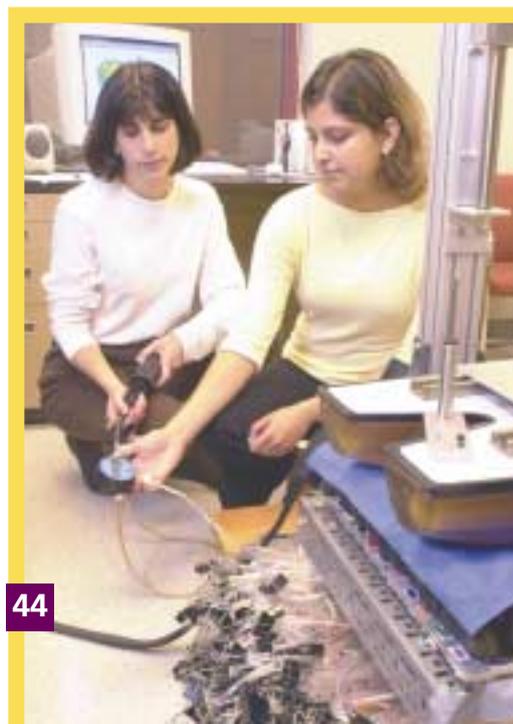
Unfortunately, the importance of the proper wheelchair seat cushion is often overlooked. But, according to Dr. David M. Brienza, Associate Professor and Director of the Soft Tissue Mechanics Laboratory, “The seat cushion is fundamental to the use of a wheelchair. It’s the interface between a person and their mobility device. In a way, it’s the base of operation. Among other things, the cushion needs to protect your skin.”

“It’s a mathematical model that we fit to data that we collect,” says Brienza. “Based on the parameters of the model, we make assumptions about the condition of the tissue.”

The group also uses finite element modeling in their research. “Once we can characterize the elastic properties of tissue, we can use those properties to form a three-dimensional model of a structure – a buttock, perhaps – so we can simulate different kinds of

Testing in Real World Conditions

In order to test theories developed in the laboratory, Brienza and his team fielded a pilot study, “A Randomized Control Trial to Evaluate Pressure Reducing Seat Cushions for Elderly Wheelchair Users.” Conducted in 1999 and recently published, the study evaluated the differences in the risk of developing pressure ulcers using standard foam cushions versus specially-designed,



pressure-reducing cushions. In this pilot study, consenting nursing home residents were recruited as subjects.

The research was sponsored by grants from the National Institute on Disability and Rehabilitation Research, ETAC USA, Crown Therapeutics, and Sunrise Medical.

The preliminary findings confirm that there is a high rate of pressure ulcer incidence among older, sedentary people and shows a trend toward significantly lowering rates of pressure ulcers among those subjects who were given specially-designed, pressure-reducing cushions, rather than the standard foam cushions.

The researchers are currently seeking funding from the National Institute of Health to conduct a definitive, randomized control, multi-center study to further validate the findings of the pilot project. They estimate this study would take four or five years and involve 300 to 400 participants.

Research and Technology Cross Disciplines

Soft Tissue Mechanics Laboratory researchers are taking lessons from other disciplines. Forensic experts use ultraviolet and infrared-imaging techniques to detect biological markers that provide an indication of the condition of the skin, in particular wounds not visible on the surface of the skin. These techniques have been successfully used in cases such as investigating suspected child abuse.

Brienza notes that these techniques are so precise they make it possible to match an invisible imprint in a person's hand left by the handle of a knife that was used in a crime.

"If you could detect those kinds of subtle injuries, we believed there was the potential to detect pressure damage before it becomes more serious," he points out. This is particularly important for people who have darkly pigmented skin on whom a telltale red mark of a developing pressure ulcer may not be visible and, therefore, are at greater risk of developing pressure ulcers. Research is ongoing to evaluate the potential of this promising technique.

Seat Cushions Go High Tech

Brienza's team is also examining a relatively new powered seat cushion technology that includes air chambers – typically in rows – that alternately

inflate and deflate, varying the pressure. "The technology is used in bed surfaces," notes Brienza, "but its effects on tissue viability have not been proven and are not well understood. We suspect that the alternating pressure either compensates for the defective active vaso dilatation or stimulates vaso dilatation."

Funded by the Veteran's Administration, the researchers are studying, among other things, how the variations in the thickness of the air cells and the frequency with which pressure is alternated may impact the tissue response and, ultimately, the impact on reducing pressure ulcers.

Which Cushion is Right?

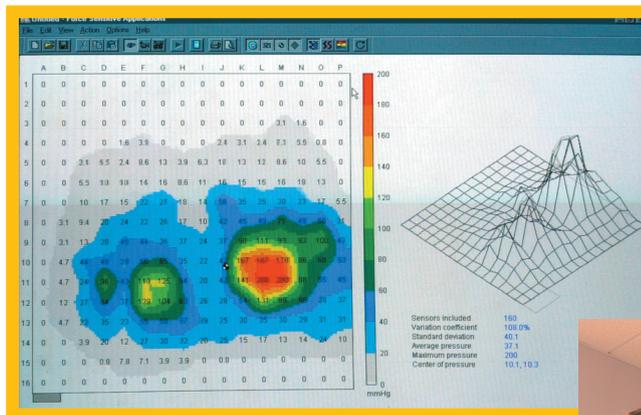
But with the potential all of this research holds for the future, currently

there is no easy answer to the question of how to select the wheelchair seat cushion that's right for an individual. Along with the fundamental components of the ability to feel sensation and the degree of mobility, many other risk factors such as nutrition and exposure to moisture must be assessed.

Once risk factors have been evaluated, how a person intends to use their chair must also be considered. For example: For a person who plays wheelchair basketball, an air cushion might not be the best choice because it's less stable than a custom, contoured foam cushion. On the other hand, foam may force the build-up of heat and moisture, two of the risk factors for developing pressure ulcers.

The weight of the cushion may factor into the equation if the person moves frequently from chair to car, moving the cushion as well. In this case, a dense fluid cushion may not be the right choice.

Each of these priorities must be balanced and a cushion selected that is the best compromise for the individual.



The short answer, according to Brienza, is "There is no one cushion that works best. There are a variety of good cushions on the market today – air, gel, viscous fluids, foam – each of which has a place in the marketplace."

Developing Standards

Adding to the dilemma, currently there are no standards by which to evaluate and compare seat cushions or bed surfaces. Pitt researchers are collaborating with researchers around the world to develop and validate test methods that quantify clinically relevant characteristics of cushions and

bed surfaces. Following three years of work, the ISO group has recently completed the first draft of standards for seat cushions.

A similar effort to develop bed surface standards has just begun.

"Our goal is to empower consumers and give them information they need to know to be able to compare products," states Brienza. Currently, information consumers have comes from the manufacturers. While that does not invalidate the information, he points out, it's not necessarily comparable. There is no standard way for a manufacturer to report pressure distribution, for example.

"If standard test methods and reporting standards were used, it would enable consumers to make comparisons among the products and, ultimately, select the one that best fits their needs," Brienza concludes.

For more information, e-mail David Brienza at dbrienza@pitt.edu.





Food



Making Good Nutrition Palatable

Eating is one of the basics of daily life. However, making the right food decisions isn't something we always get right. To stay healthy, we need to make good choices – and in today's prepackaged, drive-thru world, that's not easy. We also really need to understand nutrition and see how it's relevant to our own personal situation.

Judy Dodd, Adjunct Assistant Professor, Department of Sports Medicine and Nutrition, is doing just that. Instead of conveying information in that flat, "eat your broccoli" tone that's used in so many health education presentations, Dodd encourages students to step up to the plate and make nutrition interesting, relevant, and most important, fun.

"I don't just teach nutrition education," Dodd says. "I promote practical application of nutrition concepts. Students need to know how to package and convey their knowledge in ways that the general public actually cares about. Simply showing up and droning on about theory at your local senior center isn't going to cut it out there. You'll be tuned out after the third slide."

Nutrition and Lifestyle

Dodd encourages her students to look at nutrition from a lifestyle point of view – a strategy that embraces people ranging in age from infants to the elderly. She also emphasizes the need to relate to patients as people, and to understand the communities in which they live.

"Social settings, medical conditions, and economic status can have dramatic effects on nutrition and health," observes Dodd. "People face different challenges and respond by eating in different ways. For example, a mother on WIC doesn't have the same choices a middle class family in the suburbs has when it comes to food. A patient with diabetes can't eat the same diet that the average teenager lives on. When they're practicing out in the field, our students need to be able to instantly recognize these differences and tailor their presentation of information to their audience. And no matter what the situation is, they need to make sure that people understand that

for Thought

good nutrition is both relevant and achievable. When it comes right down to it, people need to know that they can do it and that it's not so hard to try."

That's not to say, however, that Dodd doesn't see the value in clinical work and research. "Didactic learning is critically important," she notes. "Theory and understanding research are an inherent part of our curriculum. A part of my role is to work with other faculty to help our students identify opportunities to link their knowledge to their patients' lifestyles. We want students to look outside of the traditional hos-

pital setting, as most of them – at one time or another – will be working in the community with healthy people."

Godiva vs. Garbage

Choice is the driving force behind good nutrition. And for most people, steering clear of foods laden with fat, sodium, and empty calories can be quite difficult. While it's easy for dietitians to deny access to the foods people love, Dodd sees a major disconnect between denial and the realities of the real world.

"Nobody likes to hear the word 'no,'" says Dodd. "In fact, being denied access to something you really enjoy – like snacks and desserts – can make them seem all the more tantalizing. Now, while there are cases when 'no' has to mean 'no' – such as allergies or instances where medications can react negatively with certain foods – no food is really out of bounds for most people. Instead, the issue is how much can you eat and how often can you eat it."

Dodd encourages her students to step back and look at the whole picture before dropping the boom of denial on a patient. She also insists that students take the time to become aware of the diet-related issues people bring to the table.

"When it comes right down to it, taste and convenience are the two criteria people use to make food choices," she observes. "Often, nutrition considerations are secondary at best. We've all seen that saying 'no' really doesn't work, so it's up to the Registered Dietitian (RD) to find a common ground where the taste needs of the patient are balanced for their nutritional requirements. For example, with a patient with diabetes, it may actually be better to allow them one piece of Godiva each day than to have them eat an entire box of special diet candy that tastes like chalk and still brings calories. The one piece of really good chocolate may satisfy the patient's taste needs and is most likely a lesser evil than eating an entire box of candy."

A Fresh Approach

According to Dodd, communication is the key to helping patients make healthful choices. And to get the "choices" message to ring true and be appealing, RDs know they need to take the time to know who they are talking to and understand their situation. She believes it's the dietitian's responsibility to find the "hot button" issues that make patients care about what they're eating. And she feels it's their duty to get their messages out in fresh ways.

"We want our graduates to be able to demonstrate their knowledge memorably – nutrition isn't boring and it shouldn't be presented in a deadly manner," she says with vehemence.

"If that means they have to create an interactive game or even conduct cooking demonstrations on site at a community center with a hot plate, so be it. Since dietitians also have to be able to write for the public, this is another emphasis. Formal academic writing is necessary for the classroom, but hand that text to the public and you can just watch them glaze over. Above all, we want our students to practice being flexible when they present information to the public. There are those times when you have to be able to think on your feet and go where the conversation and interests of your audience take you."

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As a part of the process, Dodd promotes the development of strong relationships. "If you don't make that personal connection with the patient or the group you're speaking to, you're done," observes Dodd. "You can talk until you're blue in the face about dietary modification and good choices, but if people don't think you're speaking to their issues, you're tuned out almost immediately. You can have great information and the latest research, but if you can't recognize the teachable opportunities and

it's not presented in a way that your audience understands or finds compelling, you're wasting time – both yours and theirs. However, if you take the time to ask yourself why this is important, how do I effect change and how do I make this fun, chances are good that you'll be much more successful in accomplishing your goals."

For more information, e-mail Judy Dodd at jdodd@pitt.edu.



Judy Dodd



Staying in the Game

Sport as a Way of Life

Over the past two decades, Americans have become increasingly conscious of the importance of wellness, exercise, and living a healthy lifestyle. We've become a nation of weekend athletes. We compete in everything from golf to marathons to rugby. And when we're not competing in sports, we're busy watching it on television.

While the health benefits of athletics are real, there is a downside. Athletes at all levels are often pushing themselves further than their bodies can withstand. It's a recipe for pain and injury.

The burden of helping competitors stay in the game falls squarely on the shoulders of Certified Athletic Trainers, professionally educated members of the sports medicine team dedicated to the prevention, treatment, and rehabilitation of injuries to physically active participants competing at various levels of play.

Contrary to what the name might suggest, today's athletic trainers don't focus solely on conditioning, according to Kevin Conley,



Program Director and Instructor in the Athletic Training Education program. "Today, the contemporary athletic trainer can be found practicing in a number of traditional settings such as collegiate and high school programs, professional sports organizations, and sports medicine clinics, with increasing roles in newer venues such as corporate and industrial work environments."

Delivering on the Promise

As the stakes have risen in sports, so has the demand for professionally educated and clinically experienced athletic trainers as a key part of a successful athletic program. "A lot of schools are seeing the light." Conley

says, "They're realizing that a well-organized staff of athletic trainers is a key part of delivering on the promise of high school and collegiate sports – especially at the Division I level.

Across the country, leading schools like the University of Pittsburgh are meeting the challenge with highly focused athletic trainer education programs that combine intensive classroom instruction with extensive hands-on clinical experience under expert supervision.

Athletic training as an academic program has existed at the University of Pittsburgh since 1978, when the National Athletic Trainers' Association (NATA) first certified the curriculum. In 1993, the American Medical Association stepped up the emphasis on the athletic trainer's health and safety responsibilities by recognizing athletic training as an "allied health profession." That put athletic trainers into the same category as emergency medical technicians, physical therapists, radiographers, and other critical medical support personnel. The AMA further recommended that athletic trainers be part of every school sports program – down to the high school level – to ensure the health and safety of all athletes.

In 1997, the University of Pittsburgh program reached top-level status with accreditation by the nationally-recognized Commission on Accreditation of Allied Health Education Programs (CAAHEP). Most recently, the program has moved from the School of Education to the School of Health and Rehabilitation Sciences, while maintaining its close relationship with the Department of Athletics.

Close Ties

Today, according to Conley, the University of Pittsburgh program is a state-of-the-art example of what it takes to equip an undergraduate student for a successful career in this challenging and exciting field. "The program's close relationship with the university's



My Aching

Improving Treatment of Severe Back Pain

In 1899, over a hundred years ago, two enterprising physicians first identified a condition now known as lumbar spinal stenosis (LSS), a condition among patients with severe lower back pain whose symptoms are relieved by performing a laminectomy.

LSS is estimated by the National Institute of Health (NIH) to affect five in 10,000 people. But this is not the lower back pain you might experience after bending and lifting. LSS is a chronic condition in which patients experience neurogenic claudication, or severe cramping and pain in their legs.

Lumbar spinal stenosis is caused by the narrowing of canals in the spine, resulting in pressure on the spinal cord and nerve roots. While a small percentage of cases are congenital, more than 90 percent of cases occur later in life, primarily as a result of arthritis and other

degenerative changes in the spine that happen as we get older. The result is an inability to walk no more than the length of a city block before the pain becomes unbearable. And while relief can be achieved by simply sitting down, the quality of life these patients experience is severely compromised.



Anthony Delitto

A Dearth of Research

Despite the fact that we have known of the existence of LSS for over a century, no definitive research has ever been done to determine which measures – surgery or non-surgical management such as physical therapy – are the most successful long-term treatment

for LSS patients.

Dr. Anthony Delitto, Associate Professor and Chair, Department of Physical Therapy, has had a long-standing interest in conducting a definitive, randomized control study comparing outcomes of decompressive lumbar laminectomy – the most common surgical procedure used to treat LSS – with a targeted physical therapy program.

“Much of what we know currently about the differences in the two treatments is anecdotal,” says Delitto, who also serves as Director of Research for the Comprehensive Spine Center at UPMC. “What research exists was done primarily after the fact and suggests that surgery may provide better short-term relief.”

But he points out that there seems to be little difference between the two approaches when viewed from a longer-term perspective. “Quantifying this information would obviously be key to what treatment recommendations are made to patients.”

Delitto notes that one of the reasons such research hasn't been conducted is that it's expensive. So he and a team of researchers submitted a proposal to the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and, in 2000, received \$1.7 million in funding to conduct a four-year study that will include more than 200 subjects. The research also has a two-year follow-up phase. Recruitment of subjects began in February.

The Pitt study is one of two on back pain currently underway, both funded by NIAMS. The second is a multi-centered study based at Dartmouth College.

Delitto's team includes faculty from the Department of Physical Therapy, including Julie M. Fritz and Richard E. Erhard. The cross-disciplinary nature of the program currently involves Department of Neurosurgery faculty: Dr. Peter C. Gerzten; Dr. Joseph C. Maroon; Dr. Peter E. Sheptak, and Dr. William W. Welch, who serves as co-principal investigator.



Staying in the game

Continued from page 49

Nationwide, more than half of all the athletic trainers certified by the NATA in the last decade have been women. Kirby, who works with the women's basketball and track and field programs, says that this is an exciting time for women considering a career in athletic training. "With pro sports like the WNBA, there are now more opportunities for women in sports than ever before, which means more pressure on female athletes from the beginning."

Player's Advocate

In addition to face-to-face professional preparation with athletes, the program's emphasis on clinical practice helps develop another part of the athletic trainer's job: Advocacy. Ultimately, athletic trainers play a key role in advising coaches on when a recovering athlete is ready to return to the field – as well as when practice conditions are too hot, too humid, or otherwise too hazardous to continue.

"This is something you can't get in a classroom," Conley explains. "Here at Pitt, we're fortunate. Coaches have listened to us, even when they're not always happy with what we have to say. They have confidence that we're looking out for the best interest of everyone involved. Such experience is essential to the key role that athletic trainers play in keeping teams and players in optimum game-winning condition."

Win-Win

Conley sees the program as a win-win situation. For the 29 University of Pittsburgh undergraduates now preparing for certification as athletic trainers, the program is an essential first step toward a career in athletics, medicine, or any number of other allied health professions. For Pitt teams, it provides healthcare coverage at a level matched by few other learning institutions in the country.

"Here's a good measure of the value of our program to the Pitt athletics community," he says. "At some colleges, the

athletic training facilities are seldom introduced to prospective student athletes. Here at Pitt, however, the athletic training program is an integral part of the recruiting strategy. It's part of the reason athletes want to come here."

Judging from the number of opportunities for physically active participants at every level of experience and competition, there's no end in sight to our national passion for



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sports of all kinds. As the competition gets more intense, athletic training education programs like the one at the University of Pittsburgh will continue to meet the challenge.

For more information, e-mail Kevin Conley at kconley@pitt.edu.

The Rehabilitation Engineering Research Center on Wheeled Mobility

The Rehabilitation Engineering Research Center (RERC) at the University of Pittsburgh is one of more than a dozen similar programs across the country. RERCs typically focus on specific issues related to assistive technology. Pitt focuses on wheeled mobility and seating.

Supported by the National Institute on Disability and Rehabilitation Research, RERC is an outgrowth of the Rehabilitation Act of 1973, which authorized sweeping changes in how the U.S. tackles the issues faced by people with disabilities.

Co-Directors of the RERC are Dr. Clifford Brubaker, Dean of the School of Health and Rehabilitation Sciences, and Dr. David Brienza, Associate Professor, Department of Rehabilitation Science and Technology.

RERC was established at Pitt in 1993, and two years ago, re-energized itself with a renewed mandate of research, design, and development of new assisted technologies and guidelines, training and education, and information dissemination related to wheelchair mobility. The RERC also acts as a source for technical assistance to the public. Within each area, tasks have been identified to help achieve the overall goal of improving wheeled mobility.

Research

The lion's share of the research currently underway involves wheelchair seating (see article on page 44). This includes developing new options for dynamic seating, studying pressure ulcer prevention, and optimization of cushion design.

Researchers are also developing international standards for seat cushions and quantifying and developing outcome measurement tools to assist physicians and others who prescribe wheelchairs in selecting the proper seat cushion.

Guidelines and Product Development

Developing guidelines for preventing injury to users of wheelchairs is just one of the initiatives being undertaken, including safely transporting people in wheelchairs in cars or vans.

In addition, this group is developing a standard interface for the integration of computers and other electronic devices with wheelchair controllers and working to enhance controls for powered wheelchairs, among other initiatives.

Industry representatives also consult the RERC when they have ideas for new or improved products. RERC personnel can advise if a product currently exists, has been previously tried, or if it seems promising and should be pursued.

Training and Education

It goes without saying that a training component is critical to the RERC. Graduate and post-graduate students, along with practicing professionals, have the opportunity to further their expertise in wheelchair mobility through hands-on experience and graduate research and education.

Information

All of this research and development is not done in a vacuum – nor does it collect dust in a library. Researchers, faculty, caregivers, and people who use wheelchairs are targeted through this information dissemination and exchange initiative.

Among the highlights: RERC hosts a bi-annual International Seating Conference that brings together 600 to 800 experts in the field. Regular workshops and forums are also held.

A compendium of information, including research papers, symposia lectures, and other reference materials is located at www.wheelchairnet.org.

The RERC fields questions from the public through the Web site, among other avenues. Those questions most often relate to identifying existing technology to solve specific problems.





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Heroes
are made,
not born.

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