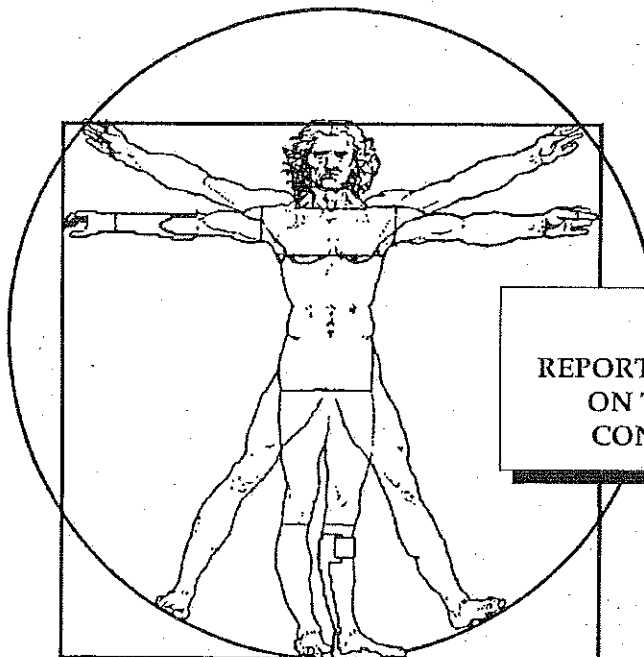




# Capabilities

Communicating the Science of Prosthetics and Orthotics

VOLUME 2 NUMBER 3, OCTOBER 1992



**INSIDE!**  
REPORT, PHOTOS & MORE  
ON THE 7th WORLD  
CONGRESS of ISPO

## Director's Thoughts: *On the Value of Research and Development*

by Dudley S. Childress, Ph.D.  
Director, Northwestern University REP-PRL

One of the remedies sometimes given for America's economic problems is to increase our expenditures for research and development (R&D). I agree with this remedy, because I believe R&D is of fundamental importance to a modern economy. It is, perhaps, of even more importance to the spirit of a society, which also affects the economy. I believe that without research we die, not physically, but spiritually. Research quickens and vivifies us because it provides hope and interest in the future. It stimulates creative activities and promotes progress in positive ways.

We need to be reminded of the importance of R&D from time to time. Sometimes in a complex society we forget the most basic aspects that sustain our vitality. R&D is one of these basic vitalizing ingredients. Research has been described as "next year's seed corn." If we don't take care of it, future prospects are dim indeed. I believe this is true in orthotics and prosthetics as well as other fields of endeavor.

Research is defined in dictionaries as close searching, studious inquiry, and exhaustive investigation. Researchers carry investigations to great depths. But successful researchers go beyond just searching, they "find". In fact, by definition, success is dependent upon finding;

To "Director", page 8

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## Report on the Seventh World Congress of ISPO

by Dudley S. Childress, Ph.D.

We recently hosted the Seventh World Congress of ISPO as part of the dissemination of information activities of our NIDRR-sponsored Rehabilitation Engineering Center on Prosthetics and Orthotics. This was a wonderful opportunity to disseminate information to Americans and to persons from abroad. Since the meeting also involved a tour of our center, it provided opportunity for consumers and providers of prosthetics and orthotics care to visit our facility and to observe what we are doing. We also had a scientific exhibit at the Congress. Dr. James B. Reswick, Director of Research at NIDRR, took part in the opening ceremonies of the Congress.

Although all the final figures are not complete, there were approximately 1409 regular registrants at the Congress. About half of the participants were from outside the United States. More than 40 countries were represented. The total number of persons present, including volunteers, exhibitors' staff, guests of the Congress and others was approximately 2109. More than 125 exhibitors took 222 booths in the exhibit hall. There are many ways to measure the size of a meeting, most of which indicate that this was the largest World Congress of ISPO ever. The quality of the program was also high.

There were 20 overview sessions, 37 instructional courses, 20 manufacturers' workshops, and 60 scientific sessions, twenty-six of which were pre-planned symposia sessions. There were a sizable number of posters and video and film presentations. Consumers officially took part in the Congress for the first time. Over 500 presentations were made and most of them are published as one-page short papers in the Proceedings (see order form on page 3). All twenty overview sessions were videotaped, along with 18 scientific sessions, the Knud Jansen lecture, and the opening and closing sessions (information about available videotapes is also in this newsletter issue).

The keynote speaker at the opening session was Mr. John D. Kemp, Executive Director of the United Cerebral Palsy Association, Inc., Washington, D.C. Mr. Kemp gave an inspiring speech about his experiences as an amputee, about the ADA, and about related disability issues.

The Knud Jansen Lecture (Jansen was the founder of ISPO) was given by Professor John Hughes, Director of the National Centre for Training and Education in Prosthetics and Orthotics at the University of Strathclyde in Glasgow, Scotland. His topic was "Education: An Investment in Everyone's Future." The text of his lecture will appear in the next issue of *Prosthetics and Orthotics International*, the Journal of ISPO. The lecture was concerned with the history of education in P&O, its current status, and the international need for P&O education.

The program of the Congress was dedicated to the memory of Dr. Clinton L. Compere, the great Chicago orthopaedic surgeon responsible for P&O research, education and clinical services at Northwestern University and at the Rehabilitation Institute of Chicago. He had a big national impact on P&O research and education as well as on his primary field of orthopaedic surgery.

The opening reception was sponsored by the Orthotics and Prosthetics National Office. Participants enjoyed the informal sports theme on the plaza outside the hotel where they had a fine view of Michigan Avenue. It's impossible to recognize all the people and organizations that contributed importantly to the Congress but the support of the AOPA, AAOP, and ABC was especially appreciated by ISPO and the meeting organizers.

The weather throughout the duration of the Congress was generally beautiful and this added to the pleasure of being in a metropolitan city that offers many delightful venues for its citizens and visitors. Many international guests stayed after the meeting to take part in Chicago's Friday evening celebration of the 4th of July, which included a Grant Park concert and a large fireworks display over the Lake Michigan waterfront. Technical tours were part of the Congress activities. Over 800 people took part in the reception and tours of



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the Rehabilitation Institute of Chicago, which included the P&O Clinical Services Department, the Physical Therapy Department, the Occupational Therapy Department, and Northwestern University's P&O Education Program, the Prosthetics Research Laboratory, and the Rehabilitation Engineering Program. Other technical tours included the laboratories of Rush Presbyterian St. Lukes Hospital and of the Pritzker Institute of Medical Engineering at the Illinois Institute of Technology. Tours of P&O laboratories (Scheck and Sires O&P, Inc. and Koeber's P&O Lab) were arranged by Jim Kaiser, C.P., and Dennis Smerko, C.P.O.

The Secretary General of the Congress, Dudley Childress, says that the aspect of the meeting that impressed him the most was the warm spirit of cooperation and helpfulness that existed among the attendees. According to him, the participants seemed happy and eager to make the most of their opportunities to learn, to share, and to enjoy. He was particularly glad about the participation of significant numbers of attendees from countries that in the past have not been well represented. The success of the Congress, he says, was ultimately due to all those who participated and who each made their contributions, large and small, to the Congress as a whole. ♦

#### ISPO VIDEOTAPE INFORMATION

Many ISPO sessions were videotaped. They are listed below. Order directly from Satellite Broadcasting, 4580E Mack Ave., Frederick, MD 21701, or phone 800-747-0856. Each title below is \$35.00 U.S. Add \$5.00 shipping & handling per order. Outside U.S. add \$5.00 per tape (\$55 maximum). Maryland add 5% sales tax. Specify VHS, PAL, or SECAM.

- GLV-01 Opening Ceremonies: Knud Jansen Lecture (J.Hughes, UK)
- GLV-02 To Amputate or Preserve the Severely Injured Lower Limb
- GLV-03 Prosthetic Foot Mechanisms
- GLV-04 Clinical Experiences with CAD/CAM
- GLV-05 New Ideas in CAD/CAM
- GLV-06 New Locomotion Aids: Part I
- GLV-07 New Locomotion Aids: Part II
- GLV-08 Trans-Tibial Socket: Fitting Concepts and Loading
- GLV-09 Sports and Recreation
- GLV-10 Surgical Management of Limb Deficient Children
- GLV-11 CAD/CAM in O&P
- GLV-12 New Powered Hand Prostheses and Automated Gripping

#### 7th World Congress of ISPO PROCEEDINGS ORDER FORM

A limited number of Proceedings are still available. To order, send \$35 U.S. per copy and the form below to:

Bonnie Collard  
Northwestern University REP-PRL  
345 E. Superior St., Room 1441  
Chicago, IL 60611 USA

*Make checks payable to Northwestern Univ. REP.  
Allow 6-8 weeks for delivery.*

Please send me \_\_\_\_ copy/copies of the 7th World Congress of ISPO Proceedings at \$35 per copy.

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Address: \_\_\_\_\_

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- GLV-16 Orthopaedic Foot Care: Part I
- GLV-17 Orthopaedic Foot Care: Part II
- GLV-18 Pediatric Myoelectric Fittings
- GLV-19 Tone Reducing Orthoses: Myth or Reality
- GLV-20 Above Knee Socket Design
- GLV-21 Conservative Management of the Diabetic Foot
- GLV-22 Upper Limb Orthotic Management
- GLV-23 Trans-Femoral Amputation
- GLV-24 Knee Disarticulation
- GLV-25 Pediatric Cerebral Palsy: Tone Management
- GLV-26 Management of Low Back Pain
- GLV-27 Gait Analysis Techniques and Prosthetic Evaluation
- GLV-28 Gait Analysis and Evaluation of Amputee Gait
- GLV-29 Stroke Management
- GLV-30 Seating and Service Delivery: Orthotics or Engineering
- GLV-31 World Assembly, Prize Presentations
- GLV-100 Complete Set \$1050.00

## Resource Unit

345 E. Superior St., Rm. 1441, Chicago IL 60611 USA

### Annual Consumer Advisory Panel Meeting

*(Background: The Consumer Advisory Panel, or CAP, is a part of the Resource Unit and Northwestern University's Rehab Engineering Program. The CAP is a group of individuals who advise the Program by assisting with research program development and who provide input to the Resource Unit. The group meets yearly.)*

This year the Consumer Advisory Panel met in conjunction with the Seventh World Congress of ISPO in Chicago, Illinois USA. The meeting was held on June 27, 1992 at the Hyatt Regency Chicago Hotel. The agenda consisted of research presentations by staff of the Rehab Engineering Program, presentations by guest speakers, and a roundtable advisory meeting. Highlights included:

- Dr. D.S. Childress, Director of the REP, gave an eloquent presentation on the value of research and the value of consumer input. He also demonstrated the Synergetic Hand,
- Mr. Kevin Carroll, Director of Prosthetics at Sabolich Prosthetic and Research Center, discussed state-of-the-art lower limb socket technology and the advances at his facility,
- Mr. Craig Heckathorne, Research Engineer with the REP, presented his work with the Arm Prosthetics Unit in Sweden,
- Ms. Laura Fenwick, Clinical Instructor of Orthotics with Northwestern University's Prosthetic-Orthotic Center, discussed the orthotics education program approach at NU.

Also speaking were Joshua Rovick on CAM (computer aided manufacturing), John Steege on CAD (computer aided design), and Richard Weir on cineplasty.

During the roundtable advisory session, laboratory members received CAP input relevant to new research directions and developments at the Laboratory. After the meeting, the CAP participated in the ISPO Congress activities during the following week. Several CAP members were ISPO presenters.

One vacancy currently exists on the CAP. If you are interested in this position of responsibility, please contact the Resource Unit for more information.

### New Consumer Advisory Panel Member

This fall the CAP welcomed a new member, Ms. Linda Lee Ratto of the Amputee Foundation of Greater Atlanta. Ms. Ratto is an educator and author, and mother of

Courtney, a congenital amputee, and Ryan, recently physically challenged as a result of an accident. She has guest lectured with the American Academy of Orthotists and Prosthetists, Scottish Rite Children's Medical Center in Atlanta and Syracuse University. She has spoken on the subject of prosthetics in elementary and secondary schools in Delaware, Pennsylvania, and Georgia.

Ms. Ratto is also a national public speaker on breast cancer and has appeared on "Hour Magazine" and NBC's "Noonday" news program, as well as the Atlanta Medical Radio Program. She has conducted medical symposia on behalf of the American Societies of Plastic and Reconstructive Surgeons and Nurses, and the American Cancer Society.

Ms. Ratto's most recent books, "Coping with Being Physically Challenged," and "Coping with a Physically Challenged Brother or Sister," (reviewed in this issue) are published by Rosen Publishing Group in New York City. Ms. Ratto is our featured writer for this issue's *Consumer View Column*.

### 1992-1993 Resource Unit Prosthetic-Orthotic Survey: What Users Want

The Resource Unit recently mailed out its survey, "What Users Want." In it, users of prosthetic-orthotic devices are polled concerning their priorities for a device (for example, cosmesis, fit, function, training, etc.), their opinions about their past and present care, their views on issues such as the public's conception of P&O users, and statistical information about their physical challenge and use of a device.

The survey's purpose is three-fold:

- The RU is sincerely interested in user's desires,
- Survey responses will help guide research directions at the laboratory, and
- Survey responses will be used to improve consumer services offered by the RU.

After all surveys are completed and returned, the results will be compiled and published in the January 1993 issue of *Capabilities*. Other publications may result from survey responses.

If you have not received this survey, and would like to participate, you may do so by requesting a copy from the Resource Unit. Requests for copies and survey responses must be received by the Resource Unit by December 20, 1992. Support groups, service organizations, and professionals are encouraged to mass-distribute the questionnaire to their members and clients.

**1992-1993 Prosthetic-Orthotic Resource Directory:  
Available December, 1992**

Next month, the first Resource Unit Directory will be available free to interested parties. This 32-page booklet features a complete listing of prosthetic-orthotic manufacturers, organizations serving prosthetic-orthotic users, toll free numbers and computer bulletin board services pertinent to P&O, and information about Northwestern University's prosthetic-orthotic activities. Order forms for Resource Unit publications will also be included.

If you would like to receive this FREE booklet, please contact the Resource Unit. ♦ EMT

**Consumer View**

**Parent Perspectives: Child Amputees  
The Healthcare Team**

*by Linda Lee Ratto, M.Ed.*

The first of our three children was born missing her left hand. An educator by training, I began a lifelong quest for the most current information I could find in the field of prosthetics. As an English major, my journal writing became my therapy. I cried for two years. Writing helped.

I found few if any children's books on physical challenges while we combed libraries, attending library storytimes. I began to write our own books for my children's enjoyment. They were my first editors and loved my stories about a girl with a hook prosthesis who has two crazy brothers!

Thirteen years later, I have two books published, along with over a dozen manuscripts in varying stages of publication. A born teacher, I feel compelled to share with others some of the important things we've learned as a family faced with amputation.

The most important message I would like to teach medical professionals is the idea of teamwork. Although the child is your patient, the parents are being treated as well. The caring for the amputee's entire family must be in concert with the proper fitting of any appliance. The child's needs are so much more than just a new arm or leg.

Who is the captain of the child's healthcare team?—until the child is old enough to decide for herself, the parents. Not all medical professionals would agree. However, giving the family that power and responsibility is the best and most practical approach to premium healthcare.

**Resource Unit Information Request**

Fill out the information below, then send this coupon to:

Northwestern University  
Rehab Engineering Program  
Resource Unit for Information and Education  
345 E. Superior St., Room 1441  
Chicago, IL 60611

- ☐ Please send me more information on the RU & lab activities.
- ☐ Please send me a P&O Resource Directory.
- ☐ Please send me your newsletter.
- ☐ Please send me information on (topic):

Name \_\_\_\_\_

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Helping your patients and their families help themselves is the most powerful service you can give. Presenting and discussing all options for the child's situation, providing written materials for home review, and networking with support families, will bring the amputee and his family into the decision-making process. Then such issues as the right choice for that child, cost, and rehabilitative compliance are shared with the family. When children and their families are given the responsibility of choosing their course of treatment, even less-than-perfect successes are met with more understanding, rather than hostility.

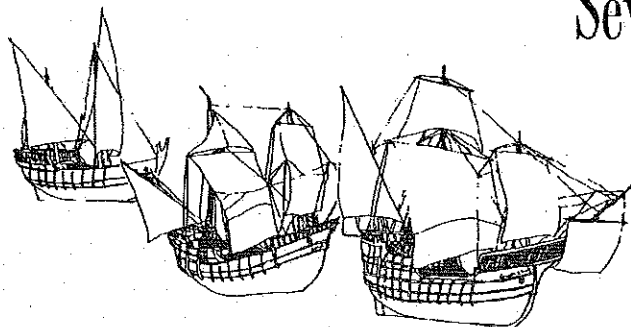
Medical professionals cannot go home with every patient, although many would like to. You cannot talk families through every difficult day. But you are a vital link to a network of information and people-support which can foster a lifelong cushion for the child. When parents and children understand their options, use your expertise, make decisions, and then seek resources within their own home-environments, they will cope well. They will have learned lifelong skills.

In this age of liability, it should be a comfort to know that every team member shares in the responsibility of a team's decisions and actions. Consumer education empowers the patient and his family toward wellness. But it also creates a mutual sharing in the burden healthcare decisions can bring. No one should be left alone with tragedy. Together medical personnel and patient-families can lighten the load for each other. ♦

*Linda Ratto is the newest member of Northwestern University's Rehabilitation Engineering Program's Consumer Advisory Panel. For more about her, see page 4 of this newsletter.*

# Images of ISPO

## Seventh World Congress 1992



*This page, clockwise from top:*

Typical exhibit area scene at the Congress.

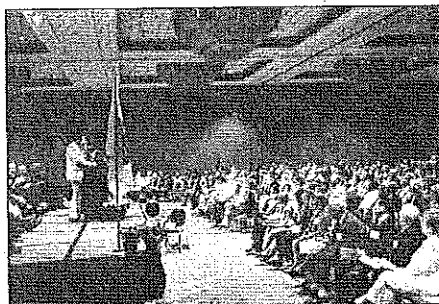
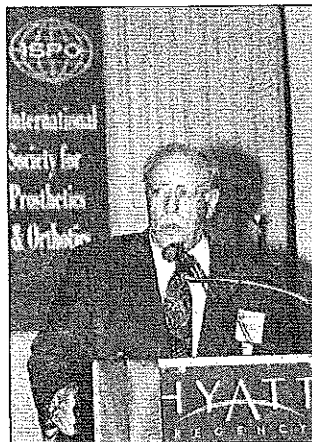
Part of the crowd at the Opening Reception, sponsored by the P&O National Office.

Participants in Opening Ceremonies. From right to left: John Hughes (Scotland), Dudley Childress (USA), Rev. Robert Jais (USA), Dr. Willem Elisma/President of ISPO (Netherlands), Patrick Lenihan (USA), Dr. Paul Meyer, Jr. (USA).

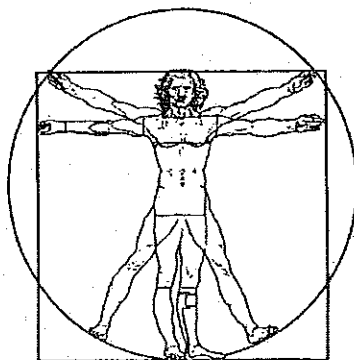
Mr. Howard Rusk, President, World Rehabilitation Fund, addressing Opening Session.

Left to right: Mrs. Hans Mauch, Dudley Childress, Dr. and Mrs. René Baumgartner of Münster, Germany at the Banquet.

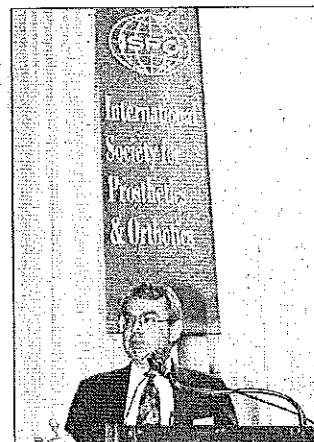
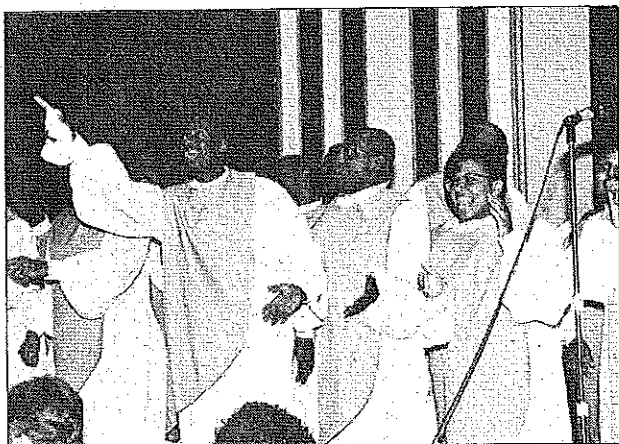
Mr. David Schultz (USA), Chairman, National Office Board, P&O National Office.







## Finding the New World in Prosthetics & Orthotics Around the Globe



*This page, from left to right, by row.*

Row 1. Keynote Speaker, Mr. John Kemp, Executive Director, United Cerebral Palsy Associations, Washington, D.C.

Presenters Ms. Carol Scholar and John Billock, CPO.

Exhibit Activity, Seventh World Congress.

Row 2. The New Generation Chorale sings at the Banquet.

Dr. James Reswick, Director of Research, NIDRR, addressing Opening Session.

Mr. Melvin Stills, CO, incoming President of ISPO.

Row 3. Examination of the "Intelligent Knee" in the Exhibit Area.

and finding is often dependent upon looking in the right places, which is one of the "arts" of research. "Research," Marburg taught Krebs, "is the art of finding problems that can be solved."

What does R&D do for us? What is its value to the field of prosthetics and orthotics? The values are many, a few of which are as follows:

**RESEARCH BRINGS US NEW FINDINGS.** It uncovers new knowledge that helps in the development of new prosthetic/orthotic principles and understanding, and new prosthetic/orthotic components. These in turn can enable people to function more effectively and to the maximum of their abilities. This is the obvious value of R&D. In this regard it is important to remember that not all R&D projects that are sponsored yield tangible, positive outputs. In fact, only a small proportion of R&D efforts result directly in major impacts on society or on a field like prosthetics and orthotics. As a result, without a broad front of R&D, outcomes with major impact become highly unlikely. The nature of scientific inquiry and technical development is that many results are negative or inconclusive. Nevertheless, science and engineering advance in important ways through negative results and so lack of positive outcomes are by no means indication of failure. One of the problems in orthotics and prosthetics is that the R&D effort does not have the broad front needed to produce the number of major breakthroughs desired.

New prostheses and/or orthoses are tangible expressions of R&D outcomes. They influence the field by going into commercial production, or by influencing the commercial production of a similar product. New devices frequently influence a field even though they are not produced widely themselves. As prototypes they herald new orders of devices but which, as the first of their kind, do not necessarily turn out to be commercial survivors themselves. Nevertheless, their development, demonstration, and existence are absolutely essential to the development of related and improved descendants.

**RESEARCH PLAYS A ROLE IN EDUCATION AND PREPARATION OF PROFESSIONALS AND ENTREPRENEURS.** This is a less obvious value of R&D, but one of no less importance. Sponsored research projects are often the attractions that bring brilliant young minds to a field and that prepare them for later careers in new areas of endeavor. These young people are the "seed corn" for the future. The support of one R&D project may result in the commitment of several people to lifetimes of activity in production, in service, in education, or in research. The dividends of R&D funds are greatly magnified by the people who are

involved in the R&D process, particularly when the R&D is conducted around educational institutions. Even when the research project itself does not have a highly successful outcome, the "people benefits" to society can be enormous. Their impact is multiplied through lifetime careers.

**RESEARCH CAN LEAD TO THE DEVELOPMENT OF A SCIENCE OF PROSTHETICS AND ORTHOTICS.** This is an important value that is a byproduct of R&D—a disclosure of basic principles and fundamental theories in a field. It is altogether fitting at this juncture that prosthetics and orthotics should be mainly empirical in nature. Most fields are empirical when they are youthful. A part of prosthetics and orthotics will likely always be empirical. However, most fields that advance from a primarily empirical nature find that advancements can be more rapid and more cost effective when science and engineering (which is based on science) become well developed in the field. Prosthetics and orthotics still does not have a strong scientific base even though the field has advanced capably over the last 45 years. Consequently, there are few textbooks in the field that present the material in more than an empirical way, which limits education and slows technical advancement of the field. I believe continued research and development is necessary in prosthetics and orthotics if the basic foundations and theories that are necessary for these fields to reach their true potential are to be realized.

**RESEARCH BRINGS CHANGE.** It points out new directions for advancement and highlights current shortcomings in a field. New ideas, principles, and devices often force fields to renew themselves. In general, such renewals are positive, often promoting efficiency and improvement of services. An example of change promoted by research in prosthetics is CAD/CAM. Originally the idea of a Canadian researcher, it was further developed by British researchers, and has now been evaluated, refined, and advanced by American researchers and developers.

I do not believe that disabled individuals can achieve their highest aspirations over the next decade without concomitant advancements in the fields of prosthetics and orthotics. These advances are critically dependent upon research and development work carried on in centers that have prosthetics and orthotics experience, that are embedded in clinical and educational settings, and that have consumer input to enable the development of cogent prosthetics and orthotics research agendas. ♦

*Dudley S. Childress is Director of Northwestern University's Rehabilitation Engineering Program & Prosthetics Research Laboratory, and Director of Northwestern University Medical School's Prosthetic-Orthotic Center.*



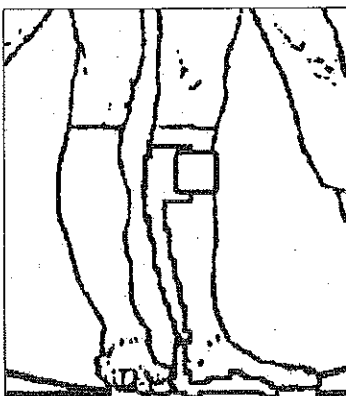
## Comments on Orthotics Research

by Dudley S. Childress, Ph.D.

Our research program involves both prosthetics and orthotics. Problems in orthotics are much more diverse than in prosthetics, making orthotics a more difficult field in which to generalize problem descriptions. Nevertheless, we have made progress with orthotics studies in several areas, particularly where generalizations can be made. Two of these areas are:

**MATERIALS.** Materials are common to all orthoses, and improved materials can have a positive impact on all orthoses. We have investigated how plastic materials commonly used in orthoses are altered by environmental conditions (moisture, sunlight, etc.) and how these alterations influence mechanical and structural properties (e.g., strength, toughness, etc.). These studies have increased our understanding of which plastics are least influenced by environmental factors and of how a plastic's properties (e.g., toughness) can be improved by processes such as cold quenching after the material has been shaped into an orthotic component. Simple control of material properties, as received, as handled, and as post-processed can greatly improve the performance of plastic materials in orthoses.

**WALKING AND AMBULATION.** Rehabilitation often revolves around efforts to restore a measure of a person's walking or ambulation abilities. Therefore, orthosis-aided ambulation is a general problem that potentially pertains to many orthoses. Orthoses of many kinds have been developed for the foot (pedorthics), ankle/foot (AFO), and knee/ankle/foot (KAFO). Crutches or canes may also be important balance and ambulation aids for orthosis users. We firmly believe that a better basic understanding of walking and aided walking is needed if we are to improve upon the orthotics devices now in use. We have several ongoing studies of human ambulation, and of ambulation on orthoses, taking place in the *Human Mechanics Measurement Lab*. These studies are giving us new knowledge about the mechanisms of ambulation. We feel these new insights will enable us to design improved orthotics systems that will require less energy for ambulation. ♦



## Leonardo Da Vinci: First Medical Engineer

Leonardo's Vitruvian image,\* modified on all Seventh World Congress of ISPO banners and publications, is appropriate to orthotics and prosthetics for more reasons than the orthosis and prosthesis that were added to it. See the image on the front of this newsletter.

The limbs of the idealized body are outstretched in the circle (the universe) and in the square (the earth) as if to represent the flowering of a field. The image connects the body with architecture. We can make the same connection between prosthetics, orthotics and architecture—all are a blend of art and engineering and serve people. The classical requirements of architecture: utility, strength, and beauty are similar to those for prostheses and orthoses. The circle and square allude to the Pantheon, a symbol of Rome's genius for architecture and her architects like Marcus Vitruvius Pollio.

In addition, these geometric forms may convey a notion of the ancient problem of *squaring the circle*, which is not unlike the problem of replacing or fixing a human part—it really can't be done with the tools available, although it can be approximated. Da Vinci uses the drawing to demonstrate many highly idealized, interesting, and perhaps ethnocentric proportions of the human body according to Vitruvius.

Leonardo integrated art and anatomy with science and engineering, and his life embodied the interdisciplinary nature of the orthotics and prosthetics field. Some regard him as the first medical engineer. He is consonant with the Columbian quincentenary. A contemporary and countryman of Columbus, he too found the new world. ♦

\**Proportions of the Human Figure*, after Vitruvius, Venice, Accademia di Belle Arti.

## Education

*(In this issue we premier our "Education" column, which will discuss educational opportunities in prosthetics and orthotics for professionals and laypeople.)*

### Northwestern University's Prosthetic-Orthotic Center

#### Certificate Programs

Northwestern University Prosthetic-Orthotic Center offers separate certificate programs for persons interested in pursuing careers as prosthetic or orthotic practitioners. The four and one-half month program provides a strong foundation upon which to build a career in prosthetics and orthotics. It is also designed to help prepare an individual for ABC's practitioner-level certification exam. The program has been expanded to include a clinical practicum which will enhance the student's experience.

Located within the McGaw Medical Center of Northwestern University and housed in the Rehabilitation Institute of Chicago, it is ideally situated to provide its students with unique educational opportunities. The school occupies a major portion of the 17th floor of the Rehabilitation Institute of Chicago building. All classroom and laboratory instruction is conducted on the premises, utilizing fully equipped, modern laboratory facilities. A library specific to orthotic-prosthetic information is also available to students and faculty for research and related projects. Because the program is part of the university, students have access to its Medical School Library, Learning Resource Center and computer labs. Students regularly attend clinics at NU's affiliated hospitals: the Rehabilitation Institute of Chicago, the Children's Memorial Hospital, the Veterans Administration and Weiss Memorial Hospital.

The program consists of didactic and laboratory instruction. Topics included are anatomy, kinesiology, pathology, normal and pathological gait, biomechanics, measurement, casting, cast modification, components, alignment and fitting and fabrication of upper and lower limb prostheses or upper limb, lower limb and spinal orthoses. A typical day would consist of six hours of didactic and lab instruction five days a week, beginning with lectures in anatomy and pathology, lecture-demonstrations in patient measurement and lab time to support the lectures. Five-hundred seventy two hours is taught in orthotics; 577 hours in prosthetics. As required by ABC, certificates are awarded after the completion of an additional 250 hours of clinical experience.

Prerequisites for either certificate program include the possession of a B.S. or B.A. degree in a field related to prosthetics and/or orthotics. Enrollment is limited to eighteen students for the prosthetic program; twenty students for the orthotic program. Tuition for either program is \$8500. Financial assistance and housing is available. The deadline for receiving completed applications for the programs scheduled to begin August 1993 is December 1, 1992; the deadline for the January 1994 program is May 1, 1993. For more information, contact the center at:

Northwestern University  
Prosthetic-Orthotic Center  
345 East Superior Street, 17th Floor  
Chicago, IL 60611  
(312) 908-8006

#### Courses for Physicians and Therapists

The Center also offers intensive continuing education and postgraduate courses to professionals serving the physically challenged. These programs are designed to train qualified personnel in fundamental and advanced techniques of prosthetic-orthotic management. Titles are listed below. For scheduling, registration and cost information, contact the Center.

##### Prosthetics 603:

##### Lower and Upper Limb Prosthetics for Physicians

This four-day prosthetic course provides orthopaedic and physiatry residents with a comprehensive knowledge of adult and juvenile amputee management. Lab, gait analysis. 27 credit hours awarded.

##### Orthotics 703:

##### Spinal, Upper and Lower Limb Orthotics for Physicians

This five-day course is designed to provide an in-depth knowledge of orthotic management. It will encompass all disciplines, spinal, upper and lower limb, for adults and pediatric populations. Lectures, patient demos, lab. 30 credit hours awarded.

##### Orthotics-Prosthetics 723:

##### Upper & Lower Limb Orthotics and Prosthetics for Physicians

The condensed format of this five-day course consists of lectures and laboratory sessions with patient demonstrations. It will provide the orthopaedic and physiatry resident with the basic skills to function in a clinical setting. Course content is upper and lower limb disabilities of the adult population requiring prosthetic-orthotic management. 33 credit hours awarded.

#### **Orthotics-Prosthetics 725:**

##### **Clinical Practice Update for Physicians**

The intent of this two and one-half day course is to offer the physician an opportunity to remain abreast of current advances in orthotics and prosthetics. Participants will have an opportunity to discuss orthotic and prosthetic recommendation for patient demonstrators. 18 credit hours awarded.

#### **Prosthetics 622:**

##### **Lower Limb Prosthetics for Therapists**

This four-day course focuses on the role of the physical therapist in managing lower-limb amputees from the pre-surgery phase to the prosthetic phase. It is designed to provide strong fundamental knowledge for all levels of amputation management and progresses to physical therapy skills needed in a clinical setting. Three continuing education credits awarded.

#### **Orthotics-Prosthetics 724:**

##### **Clinical Update for Therapists**

The intent of this three-day course is to provide the therapist with the most current advances in managing the patient requiring prosthetic or orthotic care. Participants will have an opportunity to discuss orthotic and prosthetic recommendation with patient demonstrators.

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### **Courses for Prosthetists and Orthotists**

#### **Review Course in Prosthetics for Prosthetists**

Three-day, non-laboratory course. Material to be reviewed will relate to Syme, below-knee, above-knee, hip disarticulation, hemipelvectomy, below-elbow, above-elbow and shoulder disarticulation prostheses. Continuing education approval pending.

#### **Review Course in Orthotics for Orthotists**

A comprehensive, three-day non-laboratory review in spinal, lower and upper limb orthotics will be offered. Course content will include didactic reviews in anatomy, biomechanics and pathologies. There will also be reviews in componentry, biomechanical solutions to pathomechanical problems, case studies, gait analysis, and fitting criteria. Continuing education approval pending.

#### **NU-RIC Ischial Containment Above-Knee Prosthesis**

This is a three-day instructional course in the NU-RIC ischial containment above knee prosthesis for the experienced prosthetist. Participants will be able to take an impression, modify a cast, fit one evaluative interface and fit and align the definitive prosthesis. Continuing education approval pending.

#### **Orthotic Management of the Unstable Cervical Spine**

This one day course will include a review of cervical anatomy and an overview of the surgical management of cervical injuries. There will be a detailed description of various Halo systems. Fitting laboratory and case studies included. Continuing education approval pending.

#### **Pedorthic Management of the Foot: Fabrication Techniques**

This laboratory course will include sessions on impression techniques for custom molded shoes and total contact internal inserts; and fabrication of total contact inserts, full and three-quarter length rigid and semi-rigid inserts, and external modifications.

The following subjects will be reviewed: normal human locomotion, shoe construction, properties of materials, foot pathology and pedorthic management, and pre-fitting analysis and the measuring and fitting of shoes.

#### **Clinical Pedorthic Management of the Foot**

This six-day course is designed to expose the allied health professional to the theory and practice of clinical pedorthic management of the foot. The course will include anatomy, biomechanics, pathomechanical conditions of the ankle and foot, normal gait, diseases and disorders affecting the ankle and foot, properties of materials, pedorthic management of foot disorders, pedorthic evaluation and techniques.

## Coping with a Physically Challenged Brother or Sister

by Linda Lee Ratto, M.Ed.

© 1992, Linda Lee Ratto. Order from The Rosen Publishing Group, Inc., 29 East 21st Street, New York NY 10010. (800) 237-9932. 139 pp. Includes glossary, resources and book list. \$12.95 plus postage and handling.

"Feeling special is what every child needs to grow up into a confident adult...although they (siblings of the physically challenged) don't have an injury or physical pain,...they do experience inner pain. Brothers and sisters of the physically challenged feel their sibling's pain, they share their sibling's struggles, and many times they are as distressed and saddened about the daily challenges to be faced...Every member of a family lives the challenges the other family members are experiencing. Everyone in the family must change too. Every family member needs to take care and take the time to be treated well—and with specialness. Often the pain and confusion of the uninjured...is not understood or simply overlooked...(but) You do count...know that you are just as special in your own ways as your brother or sister."

Although written primarily for young adults, this touching book is for anyone who shares their life with someone who has a disability. Ms. Ratto, herself the parent of two physically challenged children, has correctly identified the issues and feelings of young people

dealing with family change and disability. From the first chapter, "The Change," where Ms. Ratto encourages youth to face the reality of trauma and to begin communicating about it, to "Hate" and "Forgiveness and Acceptance," where grief and its results are discussed, to the last chapter, "A Special Kind of Love," the book is filled with helpful, realistic suggestions for coping and getting back to living. Some of these include:

- Ideas for celebrating the positive, like a "Health Party,"
- Dealing with anger using the "Better Way Chart,"
- Ideas for changing one's attitude, and making a positive attitude a life skill,
- Making the care of your sibling a sharing and personal time between friends,
- Meeting your own needs by taking time-outs and establishing personal goals,
- Ideas for spending time with parents when one feels neglected, and
- Developing communication skills through dialogs, diary-keeping, and learned listening.

Although easy to read, the book is not lightly written and guarantees no "quick fixes"—but it abounds with hope, a crucial life element that all young people deserve to have. "Please read this book and cry. Cry for all that sadness that you've felt...cry for your brother or sister and what they have to go through...Then dry your tears and look at what you do have...decide to see that a glass of water is half full, rather than half empty." Ms. Ratto is adept at telling us that positives abound. ♦ EMT

12 *Capabilities*

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Northwestern University

Rehabilitation Engineering Program

345 E. Superior St., Room 1441

Chicago, IL 60611-4496

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