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# Building Prosthetics & Orthotics Capacity in the Balkans

The government of Bosnia and Herzegovina (BiH) has been working with the Northwestern University Prosthetics/Orthotics Center in developing the Center for International Rehabilitation's distance learning program to give formal training to experienced prosthetic technicians since 2003. In January 2006, the program's first students graduated with an International Society of Prosthetics and Orthotics Category II certificate.<sup>1</sup> The efforts of the CIR have led to the formation of the BiH Association of Orthopedic Technology, which is in the process of creating an ISPO regional center.

by Nikola Prvulov, Justyna Przygocka and Dr. William K. Smith  
[ Center for International Rehabilitation ]

**T**he 1992–1995 war in BiH left the country heavily contaminated with landmines and unexploded ordnance. During the conflict, landmines and UXO were used to protect the front lines. After the war, these devices were set next to roads and around houses to prevent people from returning to their homes. As a result, BiH is among the most mine-affected countries in the world, with the largest and most complex landmine-contamination problem in Europe.

Unreliable information on minefield locations and a lack of minefield records make this situation extremely dangerous.<sup>1</sup> Since the beginning of the war, there have been 4,921 mine/UXO casualties.<sup>2</sup> Members of the international community and various nongovernmental organizations have responded to this urgent humanitarian problem by initiating a variety of programs, working with the local government to clear landmines, promoting landmine education/awareness, and offering landmine assistance programs that provide education, employment and rehabilitation services to landmine survivors.

There are currently 2,280 men, women and children living in BiH who have suffered the amputation of one or more limbs due to mine/UXO incidents.<sup>3</sup> As a result, there is a tremendous need for specialists who are able to provide high-quality prosthetic services quickly and efficiently. To address the demand for more trained prosthetic practitioners, the Center for International Rehabilitation introduced a Distance-Learning Program in prosthetics in BiH in early 2003. The CIR is establishing a regional hub in Bosnia to provide training upgrades to technicians working in rehabilitation centers throughout the Balkan region.

## Implementation of the CIR's Distance Learning Program

In June 2002, the CIR conducted a program assessment as the first step toward establishing a distance learning program in the Balkans. Based on this assessment, the CIR selected a group of centers to participate in network activities. A few of the activities were distance-learning data collection and reporting, technology development and clinical consultation.

The CIR Distance Learning Program was launched in January 2003 and is headquartered in the Prosthetics Department at



The CIR students discussing modifications to a plaster mold before making a test socket.  
ALL PHOTOS COURTESY OF THE CIR ARCHIVES

the Univerzitetski Klinicki Centar in Tuzla, BiH. A Category I<sup>4</sup> International Society of Prosthetics and Orthotics certified prosthetic educator was hired to develop the capacity of the prosthetic services and staff at the UKC. Four local individuals were employed in supporting roles as a prosthetics assistant, IT specialist, translator and regional administrator.

The CIR's program was designed for prosthetic technicians who had three to five years of experience providing prosthetic services but had not received any formal training. This innovative education program stresses collaborative, interactive learning and is designed to be adapted to different cultures, learning styles and technological resources. The online portion of the program is supplemented with hands-on instruction, periodic evaluations, weekly quizzes, and theoretical and practical examinations. The content incorporates text, graphics, photographs, case presentations, videos and hybrid CD-ROMs. To facilitate online communication and interaction, the CIR initiated a cooperative agreement with WebCT, an enterprise

software and services company serving the education industry, to develop the first ever Serbo-Croatian (Bosnian dialect) language plug-in for WebCT's Campus Edition 3.8 software. The CIR later switched its on-line platform to a system called Moodle, an open-source distance-education platform that offers over 50 language packages, of-line course-delivery options, and customizable communication and assessment tools.

The CIR's distance education courses were developed in collaboration with the Northwestern University Prosthetics/Orthotics Center. To date, four courses have been developed: Lower Extremity Prosthetics, Upper Extremity Prosthetics, Lower Extremity Orthotics and Upper Extremity Orthotics. Relevant topics within each course are designed based on module sets, which are comprised of individual

from 11 different rehabilitation centers located in BiH and one center in the Republic of Slovenia. These students completed the program in approximately three years. In January 2006, 19 graduates of the program took the ISPO Category II Prosthetic Technologist Certification examination, conducted by the Chairman and one member of the ISPO Education Committee. Independent international examiners from Bosnia, Germany and Macedonia also assisted with the evaluation. The exam was comprised of both theoretical and practical components, and students were required to make a case presentation and fabricate a prosthetic device for a patient. Seventeen of the participating students received ISPO Category II Certification in lower extremity prosthetics (transtibial and transfemoral), and the other two students were given the

thotic training programs. As a result of these discussions, the Ministry of Education appointed a liaison to work with the CIR and review its curriculum for possible incorporation into a national curriculum for P&O.

The CIR is working in close collaboration with Tuzla UKC and the Cantonal Ministry of Education to explore ways of increasing local recognition and integrating the CIR's program into the higher-education system in BiH. In 2006 the CIR participated in a roundtable discussion with the UKC, representatives of ISPO, the president of the Association of Orthopedic Technology in BiH, and the Federal Ministries of Health and Education (Tuzla cantonal and federal) of both the Federation of Bosnia and Herzegovina and the Republika Srpska. All parties engaged in a positive dialogue regarding the future of P&O education in the region and agreed to work towards recognition of practicing technicians.

Institutional development. Following the ISPO accreditation in January 2006, the CIR began to formally transfer its distance learning program to the UKC. The CIR is licensing the course content and materials to the UKC while continuing to assist its faculty in the delivery of the online portions of the training and oversight of the planning and implementation of all hands-on practical evaluations.

The CIR will provide program development support and assist the UKC in securing human and financial resources to develop new educational content in other areas of rehabilitation. The CIR and the UKC have been working with the Federal Ministry of Health of Bosnia and Herzegovina to leverage funding from the International Trust Fund for Bosnia to support the implementation of a distance learning program for a new generation of prosthetic technicians and an additional orthotics course for the CIR's recent graduates. When the process is complete, the UKC will be in the position to train local and foreign technicians from neighboring countries. It will charge tuition to recover all costs.

The CIR, in partnership with the UKC, is in the process of increasing its efforts to provide assistance to Iraqi prosthetists. They are currently working with the Iraqi Ministry of Health to negotiate the launch of an Emergency Disability Project that would provide upgraded training to Iraqi prosthetists. Furthermore, the CIR, in partnership with the UKC, is currently negotiating with the Iraqi Ministry of Health and the World Bank to provide training to a number of Iraqi professionals in the Rehabilitation sector at the UKC facility in Bosnia. The proposal

opportunity to successfully complete the exam at a later date. This marked the first time that this certification was awarded to students in the region.

#### Federal Health and Education in BiH: Incorporating the Distance Learning Program

Creation of a learning environment. Since the program's inception, the CIR has been engaged in a dialogue with the Federal Ministries of Health and Education of the Federation of BiH and the Republika Srpska<sup>5</sup> to facilitate a process for formal government accreditation of prosthetic and or-



Student in the CIR's distance learning program working on a transtibial socket during the ISPO practical exam.

modules covering specific topics. For example, the Lower Extremity Prosthetics course is comprised of the transtibial module set, the transfemoral module set, the ischial-containment module set and the partial-foot amputation module set. The transtibial module set is comprised of 12 modules covering topics such as anatomy, casting and evaluation. ISPO Category II curriculum guidelines were used to develop the course content so that students would be able to obtain Category II certification upon completion of their studies.

The first class to participate in the program included 25 prosthetic technicians



Students preparing test sockets during the ISPO practical evaluation in Bosnia and Herzegovina.

calls for short courses lasting up to six weeks to be taught to professionals in three different disciplines including physicians, physical therapists and prosthetists/orthotists.

Community participation. Another positive outcome of the CIR's distance learning program activities in the region was the formation of the BiH Association of Orthopedic Technology, which acts as a representative body for prosthetic technicians working in BiH. One of the association's tasks is to create a regional chapter of the International Society of Prosthetics and Orthotics. Once a regional chapter is established, members will be able to participate in ISPO activities and hold regional conferences. An affiliation with ISPO will give local prosthetists access to ISPO resources, including important professional contacts and networks.

Strengthening management and human resources. While running its distance learning program in BiH, the CIR worked closely with administrators from collaborating clinics and centers to discuss management issues, often providing advice and guidance on effective management strategies for prosthetic and orthotic workshops and laboratories.

The prosthetic assistant the CIR hired was an employee of the UKC who had prior experience in provision of prosthetic services. He provided guidance and instruction to students and assisted with logistics and asset management during the evaluation of students. He continues to work for the UKC and now has the advanced program-

management skills to assist the UKC in the implementation of future programs.

The UKC will participate in the CIR's Train-the-Trainer program, designed to transfer advanced technical and management skills. Through this program, the UKC lead prosthetics instructor will travel to the United States for further training at the CIR and Northwestern University.

#### Summary

From 2003–2006, the CIR successfully ran an innovative distance learning program in prosthetics in BiH. Of the initial cohort of 19 students, 17 received ISPO Category II certification upon completion of their studies. The CIR also worked with local and governmental ministries to begin the process for national adaptation of its prosthetics curriculum and made strides toward securing professional recognition for prosthetic technicians in BiH. Going forward, the CIR will continue to build capacity in the region by developing new collaborative initiatives with the UKC and government officials. The CIR will provide technical assistance to the UKC to support the development of a P&O training program and will support the expansion of professional resources and networks such as the Association of Orthopedic Technology. Ultimately, these efforts will improve the services available to landmine survivors throughout the region and strengthen the rehabilitative care infrastructure in BiH. ♦

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**Nikola Prvulov**, the Center for International Rehabilitation's Field Operations Manager, is bilingual in English and Serbian (Serbo-Croatian) and has extensive experience in the Balkans, having previously worked with organizations that included the United Methodist Committee on Relief, CARE and the American Refugee Committee. Nikola has a master's degree in outdoor therapeutic recreation administration with an emphasis on special populations from Aurora University (Illinois) and an undergraduate degree from Unity College in Maine.



**Justyna Przygocka** recently joined the Center for International Rehabilitation after graduating from the University of Massachusetts at Boston where she received a bachelor's degree in political science with a certificate in international relations and a minor in economics. Justyna is Office Manager and Administrative Assistant to the CIR's President.



**Dr. William Smith** is President of the Center of International Rehabilitation and founder of Physicians Against Land Mines. He is a board-certified physiatrist, trained prosthetist and principle architect of the CIR's distance-education program. Dr. Smith serves as adjunct clinical instructor at Northwestern University Medical School and as Principal Investigator on the CIR's International Disability Educational Alliance grant from the U.S. Department of Defense.

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