

Advances in eHealth and Telemedicine International



# Book of Abstracts

A@HTI  
Warsaw, POLAND  
23-26 October 2008  
Editor: Wojciech Glinkowski

Advances in eHealth and Telemedicine International



Scientific Board

Josep Fernandez Bayó (Spain)

Erwin Bellon (Belgium)

Bernd Blobel (Germany)

Bogdan Ciszek (Poland)

Andrzej Górecki (Poland)

Antoni Grzanka (Poland)

Hermie Hermens (Netherlands)

Andras Javor (Hungary)

Malina Jordanova (Bulgaria)

Ivica Klapan (Croatia)

Ekaterine Kldiashvili (Georgia)

Krzysztof Kochanek (Poland)

Elizabeth A. Krupinski (USA)

Heinz U. Lemke (Germany)

Frank Lievens (Belgium)

Krzysztof Marasek (Poland)

Sandro Scattareggia Marchese

(Italy)

Maurice Mars (South Africa)

Izet Masic (BiH)

Michael Nerlich (Germany)

Tadeusz Pałko (Poland)

Ewa Piętka (Poland)

Jarmo Reponen (Finland)

Francesco Sicurello (Italy)

Leszek Sikorski (Poland)

Henryk Skarżyński (Poland)

Peter Soegner (Austria)

Peter Soyer (Australia)

Andrzej Staniszewski (Poland)

Csaba A. Szabo (Hungary)

Vlad Valeanu (Romania)

Anton Vladzimirskyy (Ukraine)

Jerzy Walecki (Poland)

Konrad Wojciechowski (Poland)

Maria Zolfo (Belgium)

# Advances in eHealth and Telemedicine International



**FRIDAY October , 24th, 2008**

**Advances in eHealth and Telemedicine International - A@HTI 2008**

**INSTITUTE OF BIOCYBERNETICS AND BIOMEDICAL ENGINEERING POLISH ACADEMY OF SCIENCES, ul. Ks. Trojdena 4, Warsaw, Poland,**

10.00 Opening Ceremony Part I  
 10:00 - 10:05 Welcome to POLAND and A@HTI 2008 Chairmen of the conference  
 10:05 - 10:20 Opening lecture - Maria E. Orłowska - Ministry of Science and Higher Education  
 10:20 - 10:35 Opening Lecture – Leszek Sikorski CSIOZ Ministry of Health  
 10:35 – 10:50 Opening Lecture - Peter Soyer -International Society of Teledermatology Videoconference  
 10.50 Opening Ceremony Part II  
 Telebridge Ukrainian - Polish Telemedicine Conferences Link  
 10:50 Polish-Ukrainian Telebridge Opening Ceremony  
 10:50 - 10:55 Representatives of Ukrainian Association and Organizing Committee  
 10:55 - 11:00 Representatives of Polish Society and Organizing Committee  
 11:00 - 11:15 Ukrainian Presentation– (from Ukraine)  
 11:15 - 11:30 Marek Pilch-Kowalczyk New Technologies In Teleradiology – Voxel Teleradiology Network - A Success Story – (from Ukraine)  
 11:30 - 11:45 Coffee break  
 11:45 - 12:40 X-th Anniversary of Polish Telemedicine Society Awards Ceremony  
 12:40 - 12:50 – Ryszard Piotrowicz - Telecardiology  
 12:50 – 13:30 Lunch  
 13:20 - 13:40 Musical opening with national folk music - *Ludowy Zespół Artystyczny PROMNI im. Zofii Solarzowej*  
 13:40 - 13:45 Technical break

**Videoconference session**  
**Chair - Frank Lievens, Jerzy Walecki**

13:45 - 14:05 Frank Lievens - International Society for Telemedicine and eHealth - Global Scope of Telemedicine/eHealth  
 14:05 - 14:15 Bogdan Ciszek - eHealth and telemedicine in Medical Education

14:15 – 14:30 Ukrainian Presentation  
 14:30 - 14:45 Grażyna Kamińska-Winciorek eHealth and Telemedicine Teledermatology-new strategies and perspectives  
 14:45 – 15:00 Ukrainian Presentation  
 15:00 - 15:15 Wojciech Glinkowski, Andrzej Górecki - eHealth and telemedicine in orthopedics and traumatology  
 15:15 – 15:30 Ukrainian Presentation  
 15:30 – 15:45 - Elizabeth Krupinski - update on the International activities of the American Telemedicine Association  
 15:45 – 16:00 - Marek Pilch-Kowalczyk eHealth and telemedicine - Perspectives of Teleradiology  
 16:00 -16:15 Coffee break eHealth, Telediagnosics, Teledermatology and IT medical systems - Chair - Grażyna Kamińska-Winciorek, Andrzej Staniszewski  
 16:00 -16:10 Andrzej Staniszewski eHealth Trends: Poland vs. Europe (2005-2007)  
 16:10 -16:20 Paweł Masiarz - From Electronic Health Record in hospital to National Patients Health Records  
 16:20 -16:30 Grażyna Kamińska-Winciorek Analysis of viewer ratings of the internet domain dermatologia.gazeta.pl  
 16:30 -16:40 Grażyna Burzyńska - Website "dermatologia-forum.pl" - a new tool of sharing experiences and dermatological education  
 16:40 -16:50 Łukasz Preibisz - The Use of High Frequency Skin Ultrasound in Teledermatology  
 16:50 -17:00 Grażyna Kamińska-Winciorek The telederm.org platform and leader network in teledermatology  
 17:00 -17:15 Paweł Masiarz Implementation of a Fully Integrated HIS/RIS/PACS Systems – case study  
 20:00 Evening event - Get together

**Telerehabilitation Conference**  
**SATURDAY October , 25th, 2008**

8:15 - 8:55 Telemedicine Continental breakfast  
 Lecture Hall 1 - Telerehabilitation Conference  
 Chair - Sandro Scatterreggia Marchese, Wojciech Glinkowski  
 10:00 - 10:10 Sandro Scatterreggia Marchese - Telerehabilitation –

Italian experience  
 10:10 - 10:20 Wojciech Glinkowski - Telerehabilitation Orthopaedic patient's attitude to telerehabilitation  
 10:20 - 10:30 Wojciech Glinkowski - Telerehabilitation - Knowledge and attitude to telerehabilitation among physiotherapy students  
 10:30 - 10:40 Sandro Scatterreggia Marchese - Telerehabilitation – European project experience  
 10:40 - 10:50 Wojciech Glinkowski - Telerehabilitation experiences in orthopedics and traumatology  
 10:50- 11:00 Marcin Witkowski - Analysis of 4D markerless surface measurement for medical applications  
 11:00 – 11:10 Jerzy Chrzanowski, Marzena Walenda, Bożena Glinkowska, Ireneusz Wojtkowski – Mobile phone application "PulsTester" for sports medicine and rehabilitation  
 11:10 – 11:20 Wojciech Glinkowski, Robert Sitnik, Marcin Witkowski, Bożena Glinkowska, Joanna Skrzypczyk, Andrzej Górecki - Kyphotic deformations telescreening for elderly population

**Workshops – Lecture Hall 2**

9:00 - 10:00 Technology for telescreening system for posture assessment and spinal curvatures – Robert Sitnik, Marcin Witkowski, Wojciech Glinkowski, Andrzej Górecki  
 10:00 - 11:00 Preoperative planning in orthopedic surgery – Alan Shaw  
 11:00 - 13:00 Teleradiology - Workshop PACS/RIS workshop – Marek Pilch-Kowalczyk,  
 13:00 - 14:00 Telediagnostic system for fracture healing assessment – Orthopedic Intelligence - Wojciech Glinkowski, Piotr Orłowski, Adam Karpowicz, Dariusz Zambrowski, Marek Pilch-Kowalczyk, Artur Wojciechowski, Krzysztof Marasek, Andrzej Górecki  
 14:00 - 14:30 Lunch break  
 14:30 - 15:00 IHE Poland Initiative Meeting (Agfa and Polish Telemedicine Society)  
 15:00 – 17:00 Telerehabilitation meeting / Project CLEAR Workshop – Chair: Sandro Scatterreggia Marchese, Wojciech Glinkowski  
 17:00 - 17:05 Closing Remarks and Adjourn - Chairmen of the Conference



**Grażyna Burzyńska**

**Website "[dermatologia-forum.pl](http://dermatologia-forum.pl)" - a new tool of sharing experiences and dermatological education**

**Dermatologia Estetyczna**

**Abstract:**

Several months ago, we asked ourselves: why are certain dermatology topics, though important and difficult, rarely brought up? Seeking professional advice, we contacted the national consultant in the field of dermatology and venereology professor Waldemar Placek. The consultation resulted in an idea and subsequent establishment of the Internet portal [Dermatologia-forum.pl](http://Dermatologia-forum.pl). On this forum, it became possible to discuss and explore topics that are often complex, important, groundbreaking, rarely mentioned, or less known (for example those, which are problematic to people taking their specialties exams). Thanks to its broad scope, the portal can serve as a support tool not just for dermatologists, but also for doctors with an interest in this field. Naturally, the portal will be interactive – it will enable visitors to exchange ideas as well as seek opinions on specific issues.



**Andrzej Staniszewski<sup>1</sup>, Maria Magdalena Bujnowska-Fedak<sup>2</sup>, Tove Soerensen<sup>3</sup>**

## **eHealth Trends: Poland vs. Europe (2005-2007)**

<sup>1</sup> Polish Telemedicine Society

<sup>2</sup> Wrocław Medical University, Wrocław, Poland

<sup>3</sup> Norwegian Centre for Telemedicine, Tromsø, Norway

### **Abstract:**

To analyse consumer preferences, health information needs, and health information use, an opinion poll was conducted in November 2005 and April 2007, as a part of the international „WHO/European survey on eHealth consumer trends”, co-funded by the European Commission. Seven countries participated in this project; lead partner was the Norwegian Centre for Telemedicine. In Poland the surveys were carried out by research centres CBOS and TNS-OBOP. Telephone interviews, using random digital dialling, were conducted with a representative sample of Poles in the age range 15-80. A purpose-designed questionnaire consisted of 24 questions was used. The survey found that 47% of Poles used the Internet, of which almost half were everyday users. They had access to the Internet mainly at home (62.6%), school or workplace. Nearly 62% of respondents recognized the Internet as a source of information on health, illness and health problems. For 40% of them, the Internet was an important or very important source of such information. In Europe, the percentage of the population that had used the Internet for health purposes increased from 42.3% in 2005 to 52.2% in 2007. There were regional differences in the relevant use, with the lowest use recorded in Greece (at 32.1%), and the highest in Denmark (71.6%). Significant growth in the use of Internet for health purposes (9.9% on the average) was found in all the seven countries participating in the survey. The highest growth was noted in Germany (12.2%) and Poland (11.8%), whereas the lowest in Greece (8.9%), and Norway (6.6%).



**Marcin Witkowski, Robert Sitnik**

## **Analysis of 4D markerless surface measurement for medical applications**

**Institute of Micromechanics and Photonics, Warsaw Univ. of Technology, Warsaw, Poland**

### **Abstract:**

This paper presents the use of new shape parameters describing local features of surface as well as a new data analysis path for 4D data input. The custom shape parameters C1 and C2 allow analysis of full 3D surface in a very similar way to one provided by mean and Gaussian curvatures. However, the time of calculations for C1 and C2 is approximately 15 times shorter than for curvatures what is particularly important in medical practice. The presented 4D data analysis path allows locating characteristic areas on the body surface, so called anatomical landmarks, and tracing them in time along the measurement sequence. In order to process 4D data a dedicated processing path has been developed. Data from the measurement system comes as a time-sequence of point clouds. First, a preliminary processing of point clouds is performed. Directional point clouds are merged and the result is interpolated in every time-frame. Next, a feature searching takes place. Maps of newly developed surface parameters are calculated, regions of interest are selected and point groups related to desired anatomical landmarks are traced. The trajectories of traced groups may be used by an external biomechanical module to calculate the parameters of a lower limbs skeleton model. These parameters may be used to support the clinician in medical diagnosis. Besides, the data generated by the biomechanical module may be used for visualization purposes. The algorithms were implemented and tested on real and computer generated data representing the surface of lower limbs and provided promising results.



**Grażyna Kamińska-Winciorek**

## **Teledermatology-new strategies and perspectives**

**Dermatological Department, Silesian Medical University, Katowice, Poland**

### **Abstract:**

Teledermatology as well as a telemedicine revolutionize medical services, not only for general practitioners, dermatologists but also for teaching students and continuous teleeducation. Dermatology is well-suited for telemedicine. Teledermatology application consists of three main goals such as: teleconsulting, continuous medical education and teleteaching with standard e-tools such as internet forums, videoconferences, mobile phones and PDA data transfers. Teledermatology is used in teleconsultations-general dermatological analysis of clinical cases and more particular areas of dermatology such as teledermoscopy, telepathology etc. Teledermoscopy is helpful in doubtful cases of melanocytic lesions seen by primary-care practitioners and dermatologists. Telepathology may serve as a reliable technique for the diagnosis of cutaneous diseases when experts in dermatopathology are not available locally. The possibility of automatically scanning histological slides at high resolution is a new dimension in teleconsulting and teleteaching. Teleteaching programmes provide new didactic possibilities (sending text, graphics, pictures, films, animations, audio and video). Author presents the new strategies in teledermatology with its future perspectives.



**Grażyna Kamińska-Winciorek**

## **Analysis of viewer ratings of the internet domain dermatologia.gazeta.pl**

**Dermatological Department, Silesian Medical University, Katowice, Poland**

### **Abstract:**

The internet domain dermatologia.gazeta.pl has been existed since March 2008 as a platform dedicated to the clients who would like get information concerning with typical dermatological problems of particular skin types, aesthetic procedures, popular skin tests and dermatological forum conducted by experts. Total number of site's users was 32 550, total visits: 38 778, total page views: 150 208 times; average duration of a visit- 3 min 32 s , time on domain: 2 min 58 s and average length of a visit: 3.8 page views. Advertising campaigns gave rise to visits of the site; the highest viewer ratio was observed in the period subsequent to the launching (that is in March and April 2008); an increase was also recorded in July 2008). In the light of the analysis including the whole period (March- August) it can be seen those two subdomains: skóra (skin) and dermatologia estetyczna (aesthetic dermatology) were most popular among domain's visitors. In August 2008, in the overall viewing structure an increasing ratio of visits to słońce (sun) domain was observed (due to a new content that became accessible end of June), other popular domains were Registration and Expert sections. Films, ,ABC of active substances and glossary were less popular. Total visits about the expert (main page) was counted as 877 visits, experts answers- 1391 visits and ask a question- 269 visits. Time on page - 6 min 41 s (between May and August 2008 from about 7 to 2 min 30s).





**Grażyna Kamińska-Winciorek**

## **The telederm.org platform and leader network in teledermatology**

**Dermatological Department, Silesian Medical University, Katowice, Poland**

### **Abstract:**

The concept of telederm.org homebase is open Access Teleconsultation in Dermatology. The Teledermatology project: telederm.org was initiated in 2002 by P.Soyer, R.Hofmann-Wellenhof and G.Gabler and is aimed towards the exchange of knowledge and expertise on a worldwide level under the auspices of the International Society of Teledermatology. The goal of the Community for Teledermatology |Dermatology is to create a surplus value for experts, physicians and healthcare workers interested in teledermatology. Basic aim of the community teleconsultation service is creation of place where physicians can quickly and easily seek diagnostic advice in dermatology from a pool of expert consultants and where they can present and discuss particular dermatological cases. This online teledermatology community is moderated according to the general rules of online communities. This teleconsultation service is based on the transmission of digital images following the store-and-forward method. Secure connection is available and registration is required. Every user (clients or experts) are also given the user name and password. Requests are integrated with JPG images (maximum 3), patient's history and clinical data which will send directly to the discussion forum. In this way consultations will be visible for all users. Nearly 1097 requests have been answered and 1039 new comments since April 2008 have been posted. New requests per month are 28 and new comments per month are 173. Moreover the community of new users is steadily growing, and is almost at 1241 registered colleagues (new members per month is 36) (based on reference date: 04.10.2008).

Acknowledgement: I would like thank for telederm.org data to Prof. H.Peter Soyer (President of International Society of Teledermatology-ISTD), Simon Pucher ( Telederm.org. Community, e-derm-consult-GmbH) and Gerald Gabler (Secretary of Executive Board of ISTD).



**Paweł Masiarz**

## **Implementation of a Fully Integrated HIS/RIS/PACS Systems – case study**

**The Holycross Oncological Centre, Kielce, Poland**

### **Abstract:**

Holycross Oncological Centre is a specialised center for health services in oncology. It provides the complex diagnostics and treatment of all oncological cases for the whole region. We treat 16000 inpatients and over 150000 outpatients per year. Our diagnostic departments perform over 70000 examinations (X-ray, CT, MRI, mammography, scintigraphy, panendoscopy) and 30000 histology and 25000 cytological examinations each year. In August, 2005 we start the use of Integrated Hospital IT System. System includes HIS, RIS, LIS, EPR, PACS, Pharmacy System, Managing Information System. The heart of the Integrated Hospital IT System is CliniNET System. Its main modules are ADT, Order Entry, Result Reporting, Multimedia Electronic Patient Record, Casenote Tracking system, etc. The system ensure an on-line circulation of information in medical systems (HIS, LIS, RIS, PACS) and bidirectional communication with laboratory and diagnostic medical apparatus. Currently in Integrated Hospital IT System connects CT, MRI in imaging department, endoscopy units in Endoscopy Dept., PET/CT in Nuclear Medicine Department and all laboratory analyzers. Accordance with international standards (HL7 and DICOM) ensures the integration and use of medical software and easy interfacing of almost any modality or diagnostic device offered on the market. Medical patient record includes physician's and nurse's notes and observations, biochemical test results, tumor markers, radiological reports and imaging and video data all available at any user station in the hospital. All patient medical data are accessible on-line in hospital computer network and in the near future – with development of telemedical services – will be accessible in every place and time.



**Wojciech Glinkowski<sup>1,5,6</sup>, Piotr Orłowski<sup>2</sup>, Adam Karpowicz<sup>2</sup>, Dariusz Zambrowski<sup>3</sup>, Marek Pilch-Kowalczyk<sup>3</sup>, Artur Wojciechowski<sup>4</sup>, Krzysztof Marasek<sup>2</sup>, Andrzej Górecki<sup>1</sup>**

## **Telediagnostic system for fracture healing assessment – Orthopedic Intelligence**

**<sup>1</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System, Center of Excellence "TeleOrto", Medical University of Warsaw**

**<sup>2</sup> Polish-Japanese Institute of Information Technology, Warsaw, Poland**

**<sup>3</sup> Alteris Ltd., Katowice, Poland**

**<sup>4</sup> I Department of Clinical Radiology, Medical University of Warsaw**

**<sup>5</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw**

**<sup>6</sup> Polish Telemedicine Society, Poland**

### **Abstract:**

Authors present originally designed Web based application that allows enhancing fracture healing assessment. The common physiological process is clinically relevant and frequently observed but not easy measured. There is a lack of consensus with regard to the definition of fracture healing in the current orthopaedic literature. Experienced orthopaedic surgeon uses manual grip and radiographic image subjective evaluation to assess bone union clinically. Web-based system combines EHR with Orthopaedic Fracture Healing Analytic System. An approach based on open Internet technology provides a support for a quantitative, accurate and cost-effective assessment of fracture healing. General overview of the system presents implemented modules including database, descriptive radiologic module, analytic and graph creator to show the healing prediction.



**Wojciech Glinkowski<sup>1,2,3</sup>, Andrzej Górecki<sup>1</sup>**

## **eHealth and telemedicine in orthopedics and traumatology**

<sup>1</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System, Center of Excellence "TeleOrto", Medical University of Warsaw

<sup>2</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw

<sup>3</sup> Polish Telemedicine Society, Poland

### **Abstract:**

Authors present a review of eHealth and telemedicine implementations in the field of orthopedics and traumatology of locomotor system. Teleradiology is considered as interdisciplinary, multipotential approach to utilize telemedicine in clinical orthopaedic practice. Examples of its frequent and effective use are evident. Teleeducation is available over Internet or dedicated teleinformatic connection. Telepresence at the operating theatre can support surgical performance. Many more implementations are able to enhance orthopaedic surgeons abilities.

Telemedicine in orthopaedics and traumatology may utilize various telecommunication environments namely, Internet, GSM, satellite and cable as well. It may affect diagnostics, data storing, interpersonal consultation and treatment when operated remotely with telemedicine enhanced instruments. Presented solutions are opportunities but not obligatory.



**Robert Sitnik<sup>1</sup>, Marcin Witkowski<sup>1</sup>, Wojciech Glinkowski<sup>2,3,4</sup>, Andrzej Górecki<sup>2</sup>**

## **Technology for telescreening system for posture assessment and spinal curvatures**

<sup>1</sup>Institute of Micromechanics and Photonics, Warsaw Univ. of Technology, Warsaw, Poland

<sup>2</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System, Center of Excellence "TeleOrto", Medical University of Warsaw

<sup>3</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw

<sup>4</sup> Polish Telemedicine Society, Poland

### **Abstract:**

Presentation describes the technology designed to improve tediagnostic approach to spinal and thoracic deformities. Presented system combines posture tediagnostic screening with data transmission and remote access. The presented screening system operates remotely with tediagnostic technical team, implementing semi automated initial evaluation on site for screening examinations. The design is based on 3D shape measurement that utilizes structured light measurement method. Data transmitted to clinical center consists of cloud of dots build on sinusoidal fringes and Gray codes representation.



**Wojciech Glinkowski<sup>1,3,5</sup>, Robert Sitnik<sup>2</sup>, Marcin Witkowski<sup>3</sup>, Bożena Glinkowska<sup>4</sup>,  
Joanna Skrzypczyk<sup>1</sup>, Andrzej Górecki<sup>1</sup>**

## **Kyphotic deformations telescreening for elderly population**

**<sup>1</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System,  
Center of Excellence "TeleOrto", Medical University of Warsaw**

**<sup>2</sup>Institute of Micromechanics and Photonics, Warsaw Univ. of Technology,  
Warsaw, Poland**

**<sup>3</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure  
Research, Medical University of Warsaw**

**<sup>4</sup> Department of Sport and Physical Education, Medical University of Warsaw**

**<sup>5</sup> Polish Telemedicine Society, Poland**

### **Abstract:**

Kyphotic deformations telescreening for elderly population

Elderly population may suffer kyphotic deformation due to osteoporotic compressive vertebral fractures. Early detection of kyphotic deformity may become important for OCVF detection. Authors present a methodology how to easily assess elderly population on remote and potentially set further diagnostics and treatment.



**Wojciech Glinkowski<sup>1,2,3</sup>**

## **Telerehabilitation Orthopaedic patient's attitude to telerehabilitation**

<sup>1</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System, Center of Excellence "TeleOrto", Medical University of Warsaw

<sup>2</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw

<sup>3</sup> Polish Telemedicine Society, Poland

### **Abstract:**

Groups of patients who are going to attend telerehabilitation have been recognized using surveying. Most of patients are able to use Internet application but some of them would prefer mobile phone or TV for this purpose. The attitudes of patients toward telerehabilitation is described in details.



**Wojciech Glinkowski<sup>1,2,3</sup>**

## **Telerehabilitation - Knowledge and attitude to telerehabilitation among physiotherapy students**

**<sup>1</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System, Center of Excellence "TeleOrto", Medical University of Warsaw**

**<sup>2</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw**

**<sup>3</sup> Polish Telemedicine Society, Poland**

### **Abstract:**

The survey using PAPI method was performed to assess attitudes among average population of Poland. More the 2000 respondents were surveyed. The knowledge about telemedicine and other telehealth services was assessed.





**Wojciech Glinkowski<sup>1,2,3</sup>**

## **Telerehabilitation experiences in orthopedics and traumatology**

**<sup>1</sup> Chair and Department of Orthopaedics and Traumatology of Locomotor System, Center of Excellence "TeleOrto", Medical University of Warsaw**

**<sup>2</sup> Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw**

**<sup>3</sup> Polish Telemedicine Society, Poland**

### **Abstract:**

The use of telerehabilitation via remotely controlled internet application is presented. Forty sessions of remotely supervised exercises were provided. Telecare focused on physical activity and remotely supervision of physiotherapy devices use was found successful in this preliminary study. Telerehabilitation may significantly improve the process of function regaining. Remotely supervised rehabilitation via the Internet may also overcome patient's absence in outpatient offices during bad weather conditions or to reach the most distant patients who have no abilities to attend.



**Jerzy Chrzanowski<sup>1</sup>, Marzena Walenda<sup>1</sup>, Bożena Glinkowska<sup>1</sup>, Ireneusz Wojtkowski<sup>1</sup>**

## **Mobile phone application “PulsTester” for sports medicine and rehabilitation**

<sup>1</sup> Department of Sport and Physical Education, Medical University of Warsaw

<sup>5</sup> Polish Telemedicine Society, Poland

### **Abstract:**

Physiological endurance testing remains the one of most important tasks for Sports Medicine. Those tests remain crucial for sportsmen, coaches, physiologists and sports medicine specialists. Many tests were developed for aerobic endurance evaluation during simple activities. Some of those tests does not require specialized equipment and laboratory environment. PulseTester application operating on a mobile phone was developed to serve for such testing. The application was implemented in J2ME technology. Authors present the results of testing the group of adolescents and young adults actively participating in sports activities showing the applicability and usefulness of presented application.



# Odznaczenia PTTM 2008



**Odznaka X-cio lecia PTTM**



**Odznaka „Bene Meritus” dla Telemedycyny**

# Advances in eHealth and Telemedicine International



## Sponsors and business partners

