


1. Monday 2010/05/10 | 10:30 - 13:45 | Hall 1 | Session

[4080]

Opening Ceremony followed by Welcome Reception

1 / 5	Welcoming Speech	Forst , Raimund (DE) Orthopädische Universitätsklinik der FAU Erlangen-Nürnberg
2 / 5	Greeting	Jung , Burkhard (DE)
3 / 5	Greeting	Jüttner , Frank (DE) Bundesinnungsverband für Orthopädie-Technik
4 / 5	Oration	Blocka , Daniel (CA) International Society for Prosthetics & Orthotics
5 / 5	Knud Jansen Lecture: ISPO and USAID's Leahy War Victims Fund - A Fifteen Year Partnership to Strengthen P & O Services in Developing Countries <i>In this presentation, Mr. Feinberg will discuss the history, accomplishments and current plans of the fifteen year relationship between USAID's Patrick J. Leahy War Victims Fund and ISPO. He will talk about the evolution of the relationship between the two organizations, lessons that have been learned and the myriad challenges that must be addressed in building sustainable, P&O and Physical rehabilitation capabilities in the "Developing World"</i>	Feinberg , Lloyd (US) USAID United States Agency for International Development

2. Monday 2010/05/10 | 14:00 - 14:30 | Hall 1 |  Keynote Speech

[3620]

Learning Systems

Keynote Speaker: **Riedmiller**, Martin , Prof. Dr. (DE) | Albert-Ludwigs-Universität Freiburg

Abstract: *When technical systems encounter more and more complex real world environments, the classical paradigm of pre-programming their behaviour clearly reaches its limits. Therefore, there is a growing need for intelligent learning systems: software systems, that can adapt and improve their behaviour based on experience - just like humans do. In this talk, I will give an overview over me*

3. Monday 2010/05/10 | 15:00 - 16:30 | Hall 1 |  Symposium | Subtopic/Track: Amputation/Prosthetics

[3498]

Customized Upper-limb Prostheses: Art, Design, and Rapid Manufacturing

Session Chair: **Heckathorne**, Craig (US) | Northwestern University

Session Chair: **Meier**, Margrit , Dr. (UK) | University of Strathclyde National Centre for Prosthetics and Orthotics

Abstract: *Customization of upper-limb prostheses is a crossroads of art, design, and fabrication technology. It addresses the functional needs of the user from aesthetics to manipulation. This symposium will present examples of custom upper-limb prostheses, both anthropomorphic and non-anthropomorphic, drawn from a variety of disciplines, including art, industrial design, engineering research, product development, and clinical prosthetics. Rapid prototyping and rapid manufacturing techniques will be examined for their role in customization and impact on the future of upper-limb prostheses.*

1 / 3	High Performance in Upper Extremity Prosthetics <i>High Performance in Upper Extremity Prosthetics: Surpassing the Limitations Imposed by Purely Anthropomorphic Design High performance activities are possible and achievable for persons wearing an upper extremity prostheses if the prosthesiss design is allowed to expand beyond the limitations imposed by trying to imitate human morphology.</i>	Radocy , Robert (US) TRS Inc.
2 / 3	Customized Upper-limb Prostheses: An Introduction to Rapid Manufacturing <i>The State of the Art of rapid manufacturing will be reviewed. Technology for single unit and short-run production will be presented highlighting strengths and weaknesses of various methods in terms of cost, production time, mechanical characteristics and versatility.</i>	Rolock , Joshua (US) Northwestern University
3 / 3	Customized Upper-limb Prostheses: Art, Design, and Rapid Manufacturing, Designing and Fitting Custom Prostheses <i>Despite our best efforts to replicate the human hand and arm, current prostheses fall far short of this goal. Current upper limb prostheses may best</i>	Uellendahl , Jack (US) Hanger Prosthetics and Orthotics, Inc.

be categorized as assistive tools. These may serve the purpose of providing a more natural appearance and/or provide manipulation functions.

4. Monday 2010/05/10 | 15:00 - 16:30 | Hall 2 | SY Symposium | Subtopic/Track: Amputation/Prosthetics

[3243]

Virtual Reality Based Training and Assessment in Persons with a Lower Extremity Amputation

Session Chair: Gailey, Robert , PhD, PT (US) | University of Miami Miller School of Medicine

Abstract: *The use of virtual reality (VR) and gaming systems during rehabilitation has increased dramatically in recent years as clinicians seek to improve outcomes beyond that obtained using conventional techniques. VR technologies allow the ability to provide controlled physical and cognitive challenges while simultaneously obtaining quantitative feedback on patient performance. Although such technologies show great promise for enhancing physical rehabilitation, and may present an opportunity to enhance prosthetics and orthotics care, data supporting their use in a clinical setting is limited. The presentation will provide an overview of recent developments within the field of virtual reality based rehabilitation, highlight ongoing efforts to improve care for individuals with lower extremity amputation and discuss potential implications for clinical care independent of such advanced technology.*

1 / 1 **Virtual Reality Based Training and Assessment in Persons with a Lower Extremity Amputation**

Darter, Benjamin (US) | Center for the Intrepid- Brooke Army Medical Center

Wilken, Jason (US) | Center for the Intrepid- Brooke Army Medical Center

Ferguson, John (US) | Center for the Intrepid- Brooke Army Medical Center

5. Monday 2010/05/10 | 15:00 - 16:30 | Hall 3 | Session | Subtopic/Track: Orthotics

[3670]

Orthotics - Knee and Arthrosis

Session Chair: Laube, Wolfgang , PD Dr. med. sc. (AT) | Landeskrankenhaus Feldkirch / Rankweil

1 / 7 **Effects of a Knee Soft Orthosis on Function and Performance in Jumping Tasks in Patients Five Years after ACL Reconstruction**

Research on orthoses in rehabilitation after knee surgery has shown inconsistent results. This study with 54 patients after ACL surgery demonstrated significant clinical benefits such as increased muscle force, power, and sports performance when wearing a knee soft orthosis.

Laube, Wolfgang (AT) | Landeskrankenhaus Feldkirch / Rankweil

2 / 7 **Evaluation of Orthotic Treatment for Osteoarthritis Knee by Pressure Mapping and WOMAC Osteoarthritis Score**

The peak plantar force during stance phase is significantly reduced by using lateral wedged insole with scaphoid pad. From the results of WOMACTM 3.1 Index of osteoarthritis(OA), knee pain of patients was reduced and their daily functions were improved by the orthotic treatment.

Wong, Kenneth Wai Hing (HK) | Hospital Authority, Hong Kong

3 / 7 **Biomechanical Effectiveness of a Valgus-inducing Knee Orthosis for Arthritis of the Knee**

The presentation offers evidence of the biomechanical efficiency of a gonarthrosis orthosis with valgus effect on 16 patients. The orthosis compensates for approximately 9% of the external load resulting in pain reduction and an improved gait pattern.

Schmalz, Thomas (DE) | Otto Bock HealthCare GmbH

4 / 7 **Relieving the Unicompartmental Arthritic Knee Joint with an Ankle Foot Orthosis**

This paper introduces a novel orthosis concept in which relief for the knee joint can be provided in either the lateral or the medial compartment with the implementation of a special AFO. This provides an alternative treatment method for unicompartmental knee disorders with great patient compliance.

Drewitz, Heiko (DE) | Otto Bock HealthCare GmbH

5 / 7 **Knee Joint Loads on a Knee Ankle Foot Orthosis**

This is the first report of knee joint loads in patients prescribed a KAFO. Peak loads were highest in the sagittal plane. Malalignment contributed to higher loads. All subjects demonstrated flexion moments at toe off. It is important to look at multiple factors when choosing orthotic components.

Bernhardt, Kathie (US) | Mayo Clinic

- | | | |
|-------|--|---|
| 6 / 7 | <p>Evaluation of Short Term Effects of a Valgus Orthosis on Knee Moments, Pain and Physical Capacity in Patients with Medial Compartment Osteoarthritis
<i>The knee orthosis GenuArthro is designed to apply a valgus moment to the knee joint and to re-distribute the intra-articular load of the knee. The results of a short term intervention indicate an increase in walking distance and speed; pain (WOMAC, stiffness and the adduction moments decreased).</i></p> | <p>Brüggemann, Gert Peter (DE)
 Institut für Biomechanik und Orthopädie</p> |
| 7 / 7 | <p>Clinical Trial Examining the Effect of a Unloading Knee-brace on a Varus Knee with Osteoarthritis
<i>The study should show the effect of different kinds of treatment to a knee with osteoarthritis. There have been three groups (without treatment/knee soft support/unloading knee brace) and different clinical scores to evaluate the effect.</i></p> | <p>Herold, Klaus (DE) medi GmbH & Co. KG</p> |

6. [3777] Monday 2010/05/10 | 15:00 - 16:30 | Hall 4 | Symposium | Subtopic/Track: Amputation/Prosthetics

Phantom Pain and Residual Limb Pain supported by medi GmbH & Co. KG

Session Chair: **Kern, Kai-Uwe**, Dr. med. / MD (DE) | Schmerz - und Palliativzentrum Wiesbaden

- | | | |
|-------|--|---|
| 1 / 5 | <p>Epidemiology of Phantom Pain and Phantom Sensations in Germany
<i>The lecture will present data of a current survey of 537 amputees, discuss new aspects of phantom pain and feelings as well as connections between pain and prosthesis use and explains the pathophysiology in video-examples.</i></p> | <p>Kern, Kai-Uwe (DE) Schmerz - und Palliativzentrum Wiesbaden</p> |
| 2 / 5 | <p>Management of Phantom Pain
<i>New Concepts and Results of a Nationwide Survey in Germany will be presented.</i></p> | <p>Kern, Kai-Uwe (DE) Schmerz - und Palliativzentrum Wiesbaden</p> |
| 3 / 5 | <p>Residual Limb Pain
<i>Epidemiology, Reasons and orthopaedic/surgical management</i></p> | <p>Reichhalter, Robert (AT) Wilhelminenspital Wien</p> |
| 4 / 5 | <p>Prosthetic Supply in the Case of Phantom Pain and Residual Limb Pain
<i>Basic Principles, Snares and Prospects</i></p> | <p>Bitter, Elmar (DE) Technische Orthopädie Auguste Viktoria Klinik N.N.</p> |
| 5 / 5 | <p>Imaging of Phantom Pain
<i>Current Status of Research</i></p> | <p>N.N.</p> |

7. [4087] Monday 2010/05/10 | 15:00 - 16:30 | Hall 5 | Symposium

Special Seating Policy and Practice in Low Income Nations

8. [3655] Monday 2010/05/10 | 17:00 - 18:30 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

Upper Extremity Prosthetics - / Socket Prostheses Control

Session Chair: **Miller, Laura**, Dr. (US) | Rehabilitation Institute of Chicago

Session Chair: **Egger, Hubert** (AT) | Otto Bock HealthCare Products Ges.m.b.H, Wien

- | | | |
|-------|---|--|
| 1 / 7 | <p>Targeted Reinnervation—Surgical Outcome of 30 Patients
<i>Targeted Muscle Reinnervation (TMR) is a surgical technique that creates myoelectric control signals in the residual limb of amputees using the remaining nerve and remnant musculature in the residual limb. Outcomes of 30 TMR patients will be presented.</i></p> | <p>Miller, Laura (US) Rehabilitation Institute of Chicago</p> |
| 2 / 7 | <p>EMG Sensor and Controller Design for a Multifunction Hand Prosthesis System - The UNB Hand
<i>A controller and EMG sensors are being developed to control a three axis hand that can perform six basic grip patterns. The modular system communicates via CAN bus using a standardised bus protocol. The main controller incorporates several control strategies including pattern classification of EMG.</i></p> | <p>Wilson, Adam (CA) University of New Brunswick</p> |
| 3 / 7 | <p>Feedback Integration in the Control Loop of Prosthetics
<i>The study addresses the TMR transradial/transhumeral amputation. The impression that the prosthesis is following the desired intent and providing correspondent feedback motivates the wearer during the training sessions and daily life, thereby increasing the acceptance rate.</i></p> | <p>Ninu, Andrei (AT) Otto Bock Healthcare Products GmbH</p> |

- | | | |
|-------|--|---|
| 4 / 7 | Multidegree of Freedom Simultaneous Control of Arm Prosthesis - a Natural Motion Case Study
<i>Current myoelectrical prostheses allow single control of the joints only. The aim of this work is to enable a new control. In a unique pan-European case study a 17 year old shoulder-ex-amputatee underwent surgery in order to achieve a novel prosthesis-control: "thought-controlled prosthesis".</i> | Egger, Hubert (AT) Otto Bock HealthCare Products Ges.m.b.H, Wien |
| 5 / 7 | Moving Towards an Open Standard: The UNB Prosthetic Device Communication Protocol
<i>UNB has released a draft protocol to the Standardised Communication Interface for Prosthetics group in the hopes that it could further advance the initiative's goal of developing an open standard for the communication of prosthetic limb components. The benefits of its implementation are highlighted.</i> | Losier, Yves (CA) University of New Brunswick |
| 6 / 7 | EMG Pattern Recognition Based Control of a Two Degree of Freedom Powered Prosthetic Wrist
<i>A myoelectric pattern recognition based control scheme was modified to control a novel two degree of freedom (DOF) powered wrist design in conjunction with a conventional electric hand design and was successfully tested by a trans-radial amputee.</i> | Scheme, Erik (CA) University of New Brunswick |
| 7 / 7 | Multimodal Sensor Control for Orientating the Hand of a 3-DOF Transradial Myoelectric Prosthesis
<i>The development of our multimodal sensor control for a 3 degrees-of-freedom hand is reported. An accelerometer is installed to compute the posture angles of the residual arm and drive the pronation joint and the wrist flexion joint. The experiments showed that it naturally reduces compensating shoul</i> | Ohnishi, Kengo (JP) Okayama Prefectural University |

9. [4001] Monday 2010/05/10 | 17:00 - 18:30 | Hall 2 | Symposium | Subtopic/Track: Amputation/Prosthetics

Hindfoot

Session Chair: **Greitemann, Bernhard**, Prof. Dr. med. Dipl. Oec. (DE) | Klinik Münsterland der Deutschen Rentenversicherung Westfalen

- | | | |
|-------|--|---|
| 1 / 4 | Rückfussamputationen beim Diabetiker und durchblutungsgestörten Patienten | Baumgartner, René (CH) |
| 2 / 4 | Hindfoot Amputation - Tendomyoplastic Procedure for Maintenance of Balance
<i>To avoid varus-equinus deformity after original Chopart disarticulation additional surgical methods are recommended. Marquardt's tenomyoplastic Chopart disarticulation, however, avoids contracture, maintains full ROM of the ankle joint and allows for total weight bearing.</i> | Neff, Georg (DE) Oskar-Helene-Heim, Freie Universität Berlin |
| 3 / 4 | Tendon Transfers in Balancing Amputation Stumps | Roukis, Thomas S. (US) Madigan Army Medical Center |
| 4 / 4 | Possibilities of a Prosthetic Fitting After Amputations in the Hindfoot Area | Schäfer, Michael (DE) Pohlig GmbH |

10. [3671] Monday 2010/05/10 | 17:00 - 18:30 | Hall 3 | Session | Subtopic/Track: Orthotics

Orthotics - Stroke and Central Disorders

Session Chair: **Fatone, Stefania**, Dr (US) | Northwestern University

- | | | |
|-------|---|---|
| 1 / 6 | Randomized Cross-over Study of AFO Ankle Components in Adults with Post-Stroke Hemiplegia
<i>A randomized cross-over study comparing the effect of ankle components on the gait of 21 adults with post-stroke hemiplegia wearing 3 differently articulated polymer ankle foot orthoses (AFO).</i> | Fatone, Stefania (US) Northwestern University |
| 2 / 6 | The Effect of the Flexibility of an Ankle-foot Orthosis (AFO) on Lower Limb and Trunk Kinematics in Stroke Hemiplegics
<i>Investigation on the effect of the flexibility of an AFO on the kinematics of stroke hemiplegic gait using an experimental AFO with adjustable flexibility suggested that its effect on kinematics would depend on the individual, but be diminished toward the proximal joints and trunk in general.</i> | Kobayashi, Toshiki (HK) The Hong Kong Polytechnic University |

- | | | |
|-------|---|--|
| 3 / 6 | Treatment of Foot Drop Combined with Genu Recurvatum
<i>When treating Patients with Stroke, CMT, Post Polio, we are involved with the results of nerve- and muscle failure such as Foot Drop, which we will recognize soon after the incident. On longer term we can be confronted with other problems resulting from the muscle weakness, such as Genu Recurvatum.</i> | Smits, Jan (NL) CAMP
Scandinavia |
| 4 / 6 | The Effect of Ankle-foot Orthoses on Quality of Life and Psychological Well-being in the Management of Stroke: a Review of the Literature
<i>This paper describes a review of the literature carried out to determine the effect of ankle-foot orthoses (AFOs) on quality of life (QoL) and psychological well-being for people with stroke and suggests avenues for further research in this area.</i> | McMonagle, Christine (UK)
University of Strathclyde |
| 5 / 6 | Pilot Investigation of Movement Smoothness in Post-stroke Hemiplegia: Evaluations with and without Ankle-Foot-Orthoses
<i>One goal of body movements may be to maximize smoothness. In people with post-stroke hemiplegia, an ankle-foot-orthosis (AFO) may partially restore movement smoothness. Center of mass and center of pressure movement smoothness during gait were evaluated in this population with and without an AFO.</i> | Zissimopoulos, Angelika (US)
Northwestern University |
| 6 / 6 | Polypropelyne Ankle Foot Orthosis in Central Neurological Patients: A Mechanical and Functional Evaluation
<i>We assessed the functional benefit and the mechanical contribution of AFOs prescribed to overcome drop foot gait in central neurological patients. The AFO was functionally beneficial in 4 out of 7 patients. This result could be explained by the mechanical contribution of the AFO.</i> | Bregman, Daan J.J. (NL) VU
University Medical Center |

11. Monday 2010/05/10 | 17:00 - 18:30 | Hall 4 | Session | Subtopic/Track: Rehabilitation

[3684]

Rehabilitation - Quality of Life

Session Chair: **Rommers, Gerardus M (Clemens) , MD, PhD (NL) |** University Medical Center Groningen, University of Groningen

Session Chair: **Burger, Helena (SI) |** Institute for Rehabilitation, Republic of Slovenia

- | | | |
|-------|--|--|
| 1 / 5 | Epidemiology of Lower Limb Amputations in the Netherlands: an Overview of 25 Years of National Registration
<i>In W-Europe about 80% of all lower limb amputations (LLA) are caused by vascular pathology. The majority of people is over 65 years of age. In de period 1982-2006 there are major changes in amputation level and age cohorts. There is a decrease in amputation incidence in the more elderly population.</i> | Rommers, Gerardus M (Clemens) (NL) University Medical Center Groningen, University of Groningen |
| 2 / 5 | Impact of Different Levels of Amputation on Quality of Life (QoL) of Iraqi Amputees
<i>An Arabic version of WHOQoL-BREF was administered to four groups of limb amputees (n=179) to determine and compare the impact of different levels of amputation on amputees QoL. It is found that the QoL of amputee population is poor in Iraq, with the effect being greatest for AK and less for UL amput.</i> | Alobaidi, Alaa S. H. (IQ) College of Health and Medical Technology |
| 3 / 5 | Effects of Lower Limb Prosthesis on Daily Living – A Systematic Review
<i>This systematic review determined the effectiveness of lower limb prosthesis in terms of activity, participation and quality of life in real-life contexts. From 818 references, nine studies were suitable for inclusion. Four studies reported significant improvements in the above-mentioned outcomes.</i> | Töytäri, Outi (FI) National Institute for Health and Welfare |
| 4 / 5 | Creating Consensus on the Important Outcomes and Predictors of Lower Limb Prosthetic Prescription
<i>A 3-round Delphi study surveying experts in prosthetic prescription to identify the important outcomes of lower limb prosthetic prescription, important predictors of prescription and important items to consider when optimising prosthesis use to improve user satisfaction, usage rates and the service.</i> | Schaffalitzky, Elisabeth (IE) Dublin City University |
| 5 / 5 | Factors Influencing Return to Work after Amputation
<i>The aim of the study was to find out how many people after amputation return to work. A questionnaire was sent to all (400) patients visiting the outpatient clinic. We received 230 filled-in questionnaires. Ninety-</i> | Burger, Helena (SI) Institute for Rehabilitation, Republic of Slovenia |

three (40.4%, 80.9% of those working before amputation) worked after amputation.

12. Monday 2010/05/10 | 17:00 - 18:30 | Hall 5 | Session | Subtopic/Track: Miscellaneous

[3682]


Open Topics 1

Session Chair: **Verschuren**, Jesse (NL) | UMCG Groningen

Session Chair: **Lineham**, Marion, MPP (NZ) | New Zealand Artificial Limb Board

- | | | |
|-------|---|--|
| 1 / 6 | General Joint Hypermobility in Chinese School Children Aged 6-11
<i>General joint hypermobility of 442 children aged 6 to 11 were examined using Beighton Score. The cut-off scores for each age group were defined as the nearest score at the 95% of the studied population. The general joint hypermobility of the studied group is age specific but not gender specific.</i> | Li , Nga Mei (HK) The Hong Kong Polytechnic University |
| 2 / 6 | The Care for Upper Limb Amputees in the Netherlands
<i>Apart from a multidisciplinary checkup for upper limb amputees in one day the organisation of other activities where patients can meet fellow patients is of great importance. Meeting fellowpatients and the importance of this is presented.</i> | Poelma , Margriet (NL) Sint Maartenskliniek |
| 3 / 6 | Sexuality and Limb Amputation: a Systematic Literature Review
<i>The purpose of this literature review is to systematically examine the state of research on sexuality and limb amputees. Five publication databases were searched. Eleven eligible studies were found. All studies found an impact of the amputation on some part of sexual functioning to some degree.</i> | Verschuren , Jesse (NL) UMCG Groningen |
| 4 / 6 | Health-Related Quality-of-life in Swedish Children and Adolescents with Limb Reduction Deficiency Present at Birth
<i>Health-related quality-of-life (HRQoL) was studied in 140 children and adolescents with limb reduction deficiency present at birth. The results show that, except for in the Social exclusion subscale, these children have a significantly higher HRQoL compared to children with other chronic conditions.</i> | Ylimäinen , Kari (SE) Örebro University Hospital |
| 5 / 6 | Current Opinions of Clinicians and Rate of Implementation of Evidence Based Practice (EBP) within Prosthetic and Orthotic Facilities in Canada
<i>Our current understanding of evidence based practices (EBP) in prosthetics and orthotics is limited due to a lack of studies. This abstract outlines the important initial first step in this process, namely the development of a survey tool designed to collect data about EBP.</i> | Christensen , James (CA) George Brown College |
| 6 / 6 | Organisational Outcomes Measures for a Prosthetics Service - a Framework and Key Performance Indicators
<i>The New Zealand Artificial Limb Board, caring for 4,300 amputees, now measures these outcomes: mobility, independence, health related quality of life, and employability. High level key performance indicators were introduced. This paper describes the methodology, and results. The project has been successful clinically and organisationally.</i> | Lineham , Marion (NZ) New Zealand Artificial Limb Board |

13.
[3599]

Tuesday 2010/05/11 | 08:00 - 09:15 | Hall 1 |  Basic Instructional Course | Subtopic/Track: Rehabilitation

Rehabilitation of Amputees I


Session Chair: **Greitemann**, Bernhard, Prof. Dr. med. Dipl. Oec. (DE) | Klinik Münsterland der Deutschen Rentenversicherung Westfalen

Abstract: *Rehabilitation of amputees is a real challenge. A multidisciplinary approach in an interdisciplinary working team is the base to overcome impairments and to reduce disabilities. The use of the ICF is of basic importance. The instructional courses gives an overview of the possibilities of rehabilitation in these patients.*

- | | | |
|-------|---|---|
| 1 / 4 | Rehabilitation of Amputated Patients, ICF System, Rehabilitation in France | Menager , Domenico (FR) Rehasentrum Valenton |
| 2 / 4 | Rehabilitation of Amputated Patients in Germany | Greitemann , Bernhard (DE) Klinik Münsterland der Deutschen Rentenversicherung Westfalen |
| 3 / 4 | The Role of Psychology in Rehabilitation of Amputees | Panning , Stephan (DE) Klinik Münsterland |

4 / 4 **Rehabilitation Problems Caused by Stump Problems**

**Brückner, Lutz (DE) | Moritz-Klinik
GmbH & Co. KG**

14. [3713] Tuesday 2010/05/11 | 08:00 - 09:15 | Hall 2 |  Advanced Instructional Course | Subtopic/Track: Back Trouble
Spinal Deformity

Session Chair: **Wong, Man-Sang**, PhD (HK) | The Hong Kong Polytechnic University

Session Chair: **Landauer, Franz**, Dr. (AT) | Universitätsklinik für Orthopädie Paracelsus Medizinische Privatuniversität

1 / 5 **Epidemiology and Screening Programs**

This advanced ICL presents the current knowledge and research outcome on Epidemiology for Idiopathic Scoliosis (IS) and a recent consensus report on School Screening for Scoliosis (SSS) programs. The objectives of the latter are numerous. The evolving role and aim of SSS and the recommendations for improvement of the procedure are highlighted.

**Grivas, Theodoros B (GR) |
"Tzanio" General Hospital of
Piraeus, Piraeus, Greece**

2 / 5 **Conservative Treatment**

Historically the treatment options for Adolescent Idiopathic Scoliosis (AIS), the most common form of scoliosis are; exercises; braces and surgery. Methods and modules of rehabilitation are described in more detail within this review.

**Weiss, Hans-Rudolf (DE) | Praxis
Dr. med. Weiß**

3 / 5 **The RSC® Brace Not just a brace – but a holistic treatment system**

The application of the Chêneau principles shows in practice that the scope of interpretation is very varied. The result: under the name of Chêneau, orthoses for scoliosis are produced that are inconsistent with the ideas and biomechanical construction principles of the inventor.

**Schildhauer, Stephan (DE) |
Orthopädietechnik Paul Schulze
GmbH**

4 / 5 **A Specific Scoliosis Classification Correlating With Brace Treatment: Description and Reliability**


The purpose of the study: to show the intra- and inter observer reliability of a curve classification system correlating with scoliosis brace treatment

**Wood, Grant I. (US) | Hanger
Orthopedic Group**

5 / 5 **Indication for Operation in Idiopathic Scoliosis**

Indication for operative treatment of idiopathic scoliosis in adolescent is a Cobbangle of more than 45°, a progression under nonoperative therapy in adolescent or juvenile scoliosis, or a Cobbangle over 50° to 60° in mature adolescent.

**Bullmann, Viola (DE) |
Universitätsklinikum Münster**

15. [3264] Tuesday 2010/05/11 | 08:00 - 09:15 | Hall 3 |  Advanced Instructional Course | Subtopic/Track: Amputation/Prosthetics

Bilateral Upper Limb Loss Case Study: A Team Approach to ADL Independence and Targeted Muscle Reinnervation (TMR)

Session Chair: **Swanson, Shawn**, OTR/L (US) | Advanced Arm Dynamics

Abstract: *This presentation will document a case study of a bilateral upper limb loss individual in the early stages of his rehabilitation process. The individual lost his arms in an electrical accident in October 2008. His levels of amputation are right transhumeral and left shoulder disarticulation. This individual also received Targeted Muscle Reinnervation (TMR) surgery on his left side in March of 2009. Occupational therapy intervention for ADL independence, socket design/prosthetic componentry, and the subsequent prosthetic training will be discussed as well as the important nature of the team. There will be an in depth look at the various adaptive equipment and home modifications the patient is utilizing for increased independence with daily tasks for self care and around his home.*

1 / 1 **Bilateral Upper Limb Loss Case Study: A Team Approach to ADL Independence and Targeted Muscle Reinnervation (TMR)**

This presentation will document a case study of a bilateral upper limb loss individual in the early stages of his rehabilitation process. This level of amputee poses a challenge to the rehabilitation team. Their needs are extreme and it demands creativity. To compound this fact, this patient received the Targeted Muscle Reinnervation procedure.

**Swanson, Shawn (US) |
Advanced Arm Dynamics
OSteen, Brooke (US) | St. Joseph
Hospital
Prigge, Patrick (US) | Advanced
Arm Dynamics**

16. [3690] Tuesday 2010/05/11 | 08:00 - 09:15 | Hall 4 |  Basic Instructional Course | Subtopic/Track: Rehabilitation
Community Based Rehabilitation (CBR) and Prosthetics/Orthotics Service Provision

Session Chair: **Khasnabis**, Chapal (CH) | World Health Organization


- | | | |
|-------|--|---|
| 1 / 4 | Challenges of Offering Prosthetics and Orthotics Services in Developing Countries - a Philippines Case Study | Bundoc , Josephine (PH) Physicians for Peace |
| 2 / 4 | Community-Based Rehabilitation (CBR) and Prosthetics/Orthotics Services Working Together - a Case Study from Nepal | Sen , Ajay (NP) Handicap International - Nepal |
| 3 / 4 | Using CBR Workers to Follow Up (Field) P&O Services
<i>Training of Community Based Rehabilitation (CBR) staff is a strong requirement when looking at the competencies needed to follow up with home beneficiaries of Prosthetics and Orthotics (P&O) devices so that they can eventually integrate themselves into the community. The International Society of Prosthetics and Orthotics (ISPO) is actively collecting information on good practices to ensure that these trainings are easier to access and to disseminate on a broader scale in developing countries.</i> | Ung , Claudie (KH) Task Officer ISPO |
| 4 / 4 | Multicountry Study on Follow Up System of Prosthetics and Orthotics Services in Developing Countries
<i>Providing quality standard prosthetics and orthotics service in a developing country is a challenge in itself with the huge amount of victims after war or civil unrest resulting from war ordnance (amputations), breakdown of vaccination programs (polio) and lack of midwives (cerebral palsy).</i> | Jensen , Steen (DK) ISPO International |

17. [3944] Tuesday 2010/05/11 | 08:00 - 09:15 | Hall 5 |  Basic Instructional Course | Subtopic/Track: Rehabilitation

Introduction to Wheelchair Assessment and Fitting

Session Chair: **Constantine**, David (GB) | Motivation


- | | | |
|-------|--|--|
| 1 / 1 | Introduction to Wheelchair Assessment and Fitting
<i>The workshop will demonstrate an assessment and fitting sequence outlined in two forms, and attendees will practice key techniques in the assessment and fitting process and subsequent adjustment of a range of available products. Attendees will have full access to all materials and documents used in the workshop.</i> | Rushman , Chris (GB) Motivation Charitable Trust UK
Frost , Sarah (GB) Motivation |
|-------|--|--|

18. [3783] Tuesday 2010/05/11 | 09:30 - 10:00 | Hall 1 |  Keynote Speech

Limb Amputations and Prosthetics

Keynote Speaker: **Wetz**, Hans-Henning , Prof. Dr. (DE) | Klinik und Poliklinik für TO und Rehabilitation

Abstract: *Partial or full amputations of the upper or lower limbs is always associated with serious damage to patients' physical and mental integrity. Well-executed surgery by the surgeon and mental stability on the part of the patient are the door to successful rehabilitation. Every amputee's social life and career depends on these early decisions, whereas the quality of rehabilitation begins on the operating table. This lecture will focus on several interfaces between the patients' personal ambitions and social environment and the surgeon's qualifications in decisionmaking about stump length and function and, later, about optimal socket shape and fit. The large and increasing number of individuals requiring stump improvement and reconstructive surgery underlines the problem. Technology in prosthetics is moving forward at a fast pace posing challenges to every member of the rehab team, especially surgeons. We need surgeons who are educated in P&O. The lecture will highlight how to build a good stump, describe pitf*

19. [3798] Tuesday 2010/05/11 | 10:30 - 12:00 | Hall 1 |  Symposium | Subtopic/Track: Orthotics

Innovative Technologies for Powered Upper Limb Orthoses

Session Chair: **Rupp**, Rüdiger , Dr.-Ing. (DE) | Stiftung Orthopädische Universitätsklinik Heidelberg

Session Chair: **Pylatiuk**, Christian , Dr. med. (DE) | Karlsruher Institut für Technologie

- | | | |
|-------|---|--|
| 1 / 5 | Interactive Upper Limb Robotic System for Stroke Rehabilitation | Tong , Raymond Kaiyu (HK) The Hong Kong Polytechnic University |
| 2 / 5 | Training of Functional Movements with the Arm Rehabilitation Robot ARMin
<i>Robot-assisted therapy has become a common tool in neurorehabilitation. To enhance the transfer from therapy to daily life a system for the training of functional arm movements was developed and evaluated.</i> | Guidali , Marco (CH) ETH Zürich, Institute of Robotics and Intelligent Systems (IRIS) |

3 / 5	Recent Advances in Upper Limb Functional Electrical Stimulation Technologies <i>This symposium will focus on the use of functional electrical stimulation as a tool to support the delivery of task-specific, voluntary-initiated upper limb therapy after stroke. A brief review of the evidence underpinning this approach will be followed by an overview of the technical challenges in delivering such an approach in clinical practice.</i>	Kenney, Laurence (GB) University of Salford, Brian Blatchford building
4 / 5	Development, Assessment and Clinical Applications of a Hybrid System for Upper Limb Rehabilitation in Tetraplegics	Cliquet Jr., Alberto (BR) Faculty of Medical Sciences, Universidade de Campinas-UNICAMP, Universidade de SãoPaulo-USP
5 / 5	Design Evolution and Evaluation of a Mobile Arm Support for People with Muscular Weakness <i>For people with muscular diseases, a spring balanced arm support was developed. Based on home visits, design criteria were set up for essential activities of daily living. Three generations of prototypes were created, the first to demonstrate the principle of single point support, the second to perform clinical testing, and the third as a product. Over a hundred units are produced so far. Clinical evaluation based on IPPA and Dquest showed that the device is considered as very useful.</i>	Herder, Just (NL) Delft University of Technology

20.
[3870]

Tuesday 2010/05/11 | 10:30 - 12:00 | Hall 2 | Symposium | Subtopic/Track: Amputation/Prosthetics

Amputation of the Lower Extremity and Healing of the Residual Limb

Session Chair: **Wetz, Hans-Henning**, Prof. Dr. (DE) | Klinik und Poliklinik für TO und Rehabilitation

1 / 4	Transtibial Amputations <i>Transtibial amputation (TTA) is the most proximal level at which near-normal function can be restored prosthetically due to retention of the knee joint. Basic principles of surgical technique are described as well as variations in technique related to etiology and the extent of tissue trauma or disease.</i>	Bowker, John H. (US) Miller School of Medicine, University of Miami
2 / 4	Knee Disarticulation and Through-knee Amputations <i>Knee disarticulation and through-knee amputations are classic levels of amputations, but relatively little used compared to transtibial and transfemoral amputations. But runners with knee disarticulations are winning the Gold Medals in the category of transfemoral amputees, which proves its superior performance.</i>	Baumgartner, René (CH)
3 / 4	Transfemoral Amputation: the Surgeon's Point of View	Baumgartner, René (CH)
4 / 4	Measures to Improve Healing of the Residuum	Wetz, Hans-Henning (DE) Klinik und Poliklinik für TO und Rehabilitation

21.
[3656]

Tuesday 2010/05/11 | 10:30 - 12:00 | Hall 3 | Session | Subtopic/Track: Amputation/Prosthetics

Upper Extremity Prosthetics - Functional Components 1

Session Chair: **Kyberd, Peter**, Dr. (CA) | University of New Brunswick

Session Chair: **Bertels, Thomas**, Dipl.-Ing. (FH) (DE) | Otto Bock HealthCare GmbH

1 / 7	Development of a Multifunctional Myoelectric Hand <i>This paper presents a myoelectric hand controlled by two EMG sensors. The developed prosthetic hand can grasp many type of object with the 5-independent fingers, possible to play a game or express intension with the five different hand gestures</i>	Heo, Yoon (KR) Korea Orthopedics & Rehabilitation Engineering Center
2 / 7	Assessment of Functionality of Prosthetic Hands using the Southampton Hand Assessment Procedure <i>The Southampton Hand Assessment Procedure (SHAP) was used to measure the relative performance of a range of commercial prosthetic hands. As the test aims to measure the functional capability of the subject, a single subject was used for repeated measures and to remove the inter-subject variability.</i>	Kyberd, Peter (CA) University of New Brunswick
3 / 7	Usability Analysis of the Multi Degree of Freedom Prosthetic Hand System "Michelangelo" - A First Case Study	Kalmar, Janos (AT) Otto Bock Healthcare Products GmbH

A case study shows that the Michelangelo hand system clearly brings advantages. In comparison to a hand system with a current state of technology, the user can successfully master a significant amount of additional tasks of daily living.

4 / 7	Mechanical Design of a Multifunction Hand Prosthesis System - The UNB Hand <i>In order to create a hand which can perform the 6 basic grip forms it was determined that 3-axis of motion are required. The index finger and thumb are individually actuated. The other fingers are linked via a differential mechanism so they can conformally grasp the detailed shape of the object.</i>	Clawson, Adam (CA) University of New Brunswick
5 / 7	A Collaborative Team Approach to the i-LIMB Hand and ProDigits: What are the Future Implications for Greater Partnerships with Each Other?" <i>The interaction and partnership of the team approach with the therapist, prosthetist and manufacturer, will be reinforced in this presentation. Since the i-LIMB Hand was developed, team members have worked together to explore its unique features and a solid workingpartnership has been the result.</i>	Atkins, Diane (US) Touch Bionics
6 / 7	Early Partial Hand Patient Outcomes Utilizing ProDigits Myoelectrically Controlled Prosthetic Digits <i>Creation of detailed patient evaluations, test socket design, signal site testing, dynamic and final fittings, covering options and pre and post occupational therapy training to provide powered prostheses to individuals with partial hand loss will be provided.</i>	Lindborg, Karl (US) Touch Bionics
7 / 7	Physiological Advantages of a Prosthesis with Wrist Joint Flexion <i>During active use, patients attempt to overcome limitations in range of motion with non-physiological compensating movements. This study of forearm patients shows that changes in the flexion angle of a prosthetic wrist joint significantly reduce compensating movements of the arm and torso.</i>	Bertels, Thomas (DE) Otto Bock HealthCare GmbH

22.
[3765]

Tuesday 2010/05/11 | 10:30 - 12:00 | Hall 4 | Symposium | Subtopic/Track: Education

From Student to Professional Prosthetist/Orthotist - Examining and Developing Professional Competencies

Session Chair: **Sexton, Sandra (UK)** | University of Strathclyde

Abstract: *A variety of models exist for clinical assessment of student orthopaedic technologists and prosthetists/orthotists. When included in courses, the final clinical examination can be either be based on specific patient presentations or can be a multi-station examination. Graduates of these programmes must then continue their professional development and often attend short courses to develop specific competencies about special techniques or patient conditions. This symposium will present different models of final clinical examination in depth for prosthetics and/or orthotics including: • examination of students presenting single patient cases • examination of student competencies using a 6 station simulation model • examination of student competencies using a multi-station simulation model • examination of student competencies using the orthopaedic assessment model Further to this, it is generally accepted that graduates need early career support following graduation.*

1 / 6	A Global View of Different Models of Competence Assessment and Development <i>An introduction to the symposium.</i>	Sexton, Sandra (UK) University of Strathclyde
2 / 6	Examination of Students Presenting Single Patient Cases	Kheng, Sisary (KH) Cambodia Trust
3 / 6	Examination of Student Competencies Using a 6 Station Simulation Model <i>At the National Centre for Prosthetics and Orthotics within the University of Strathclyde, Glasgow, Scotland the undergraduate programme is four years full time. The students have clinical exposure within the department followed by two clinical placement exposures, one in Prosthetics and one in Orthotics.</i>	Figgins, Elaine (UK) University of Strathclyde
4 / 6	Examination of Student Competencies Using a Multi-Station Simulation Model	Malas, Bryan (US) Moira Tobin Wickes Orthotics Program, Childrens Memorial Hospital
5 / 6	Examination of Student Competencies Using the Orthopaedic Assessment Model <i>A comprehensive review of developments in Orthopaedic Structured Clinical Examination in the last year is presented. The relevance of applying</i>	Sexton, Sandra (UK) University of Strathclyde

modified OSCE techniques to the assessment of prosthetist/orthotist clinical skills will be discussed.

- | | | |
|-------|--|---|
| 6 / 6 | Maintaining and Developing Employee Competencies
<i>Graduates of P&O study programmes must continue their professional development. Continuing professional development seems to be an effective way how to maintain general competency and develop specialist competencies.</i> | Rosicky, Jiri (CZ) ING
corporation, spol. s.r.o |
|-------|--|---|


23. [3688] Tuesday 2010/05/11 | 10:30 - 12:00 | Hall 5 | Session | Subtopic/Track: Rehabilitation

Rehabilitation - Amputation Lower Extremity

Session Chair: **Gailey, Robert**, PhD, PT (US) | University of Miami Miller School of Medicine

Session Chair: **Carroll, Kevin**, MS, CP, FAAOP (US) | Hanger P&O

- | | | |
|-------|---|--|
| 1 / 6 | Effectiveness of an Evidence Based Amputee Rehabilitation Program
<i>This randomized control trial was designed to determine whether an evidence-based amputee rehabilitation program could improve the functional mobility of transtibial amputees. The 6-minute walk test and Amputee Mobility Predictor detected significant improvements over 8 weeks.</i> | Gailey, Robert (US) University of
Miami Miller School of Medicine |
| 2 / 6 | Guidelines for Physical Fitness Levels Required for Older Hip Disarticulation (HD) Patients to Achieve Successful Prosthetic Walking in a Community
<i>Older HD amputees in good physical condition and a low prevalence of co-morbidities were able to successfully walk with prosthesis in a community setting. It is suggested a physical fitness of around 60%VO2max is necessary for older HD amputees to successfully walk.</i> | Chin, Takaaki (JP) Hyogo
Rehabilitation Center |
| 3 / 6 | A Single-blind, Cross-over Trial of Hip Abductor Strength Training to Improve Gait and Balance in Patients with Unilateral, Transfemoral Amputation
<i>Patients with unilateral, above-knee amputation (AKA) underwent hip abductor strength training or arm ergometry. During the experimental phase, patients demonstrated a 4.9s reduction in TUG score and a 7.2m increase in 2MW distance, as compared to only 1.0s and 2.2m during the control phase.</i> | Pauley, Tim (CA) West Park
Healthcare Centre, and Toronto
Central Community Care Access
Centre |
| 4 / 6 | Gait Training during Prosthetic Fitting Process-The Need of a Propriate Gait to Utilize the Prosthetic Components
<i>Ten transfemoral amputees were fitted with MPK, additional to the prosthetists fitting procedures they also offered prosthetic gait training. The intention was to help the user to take advantage of their prosthetic component. They all developed a better gait and 9 of ten also developed stair decent.</i> | Möller, Saffran (SE) Össur |
| 5 / 6 | Prosthetic Prescription in Clinical Practice: a Pilot Study in the Netherlands
<i>In a pilot study the usability of a prescription protocol for lower limb amputees was tested in clinical practice. Central feature was the match of aimed mobility level and specific prosthetic components. A match was realized in 80%.The protocol seems suitable for use in clinical practice.</i> | van der Linde, Harmen (NL)
University Hospital Nijmegen, the
Netherlands |
| 6 / 6 | Improving Outcomes for Bilateral Transfemoral Amputees: A Graduated Approach to Prosthetic Success
<i>This multi-media presentation will focus on how Prosthetists can use the graduated approach to prosthetic management of bilateral transfemoral amputees. 1, 2 This approach includes four phases: 1. Building confidence 2. Walking on short legs (shorties) 3. Graduated increase in</i> | Carroll, Kevin (US) Hanger P&O |

24. [3784] Tuesday 2010/05/11 | 14:00 - 14:30 | Hall 1 |  Keynote Speech

The Education of Prosthetists/Orthotists and Orthopaedic Shoe Technicians from the Perspective of ISPO

Keynote Speaker: **Sexton, Sandra** (UK) | University of Strathclyde

Abstract: Professional education for prosthetists/orthotists and orthopaedic shoe technicians continues to be defined and developed. Prosthetists, orthotists and orthopaedic shoe technicians all need to gain knowledge, skills and understanding of their disciplines through academic study aligned with practical clinical and technical experiences. There are a number of challenges in delivering quality managed educational programmes for these professions in

a tough economic climate, especially in providing sufficient content in the fields of engineering and health to ensure that competent, safe practitioners emerge as graduates. This presentation will explore global trends in professional education from the perspective of the International Society for Prosthetics and Orthotics and consider the way that these professions might continue to develop.

25. Tuesday 2010/05/11 | 15:00 - 16:30 | Hall 2 | Session | Subtopic/Track: Orthotics
[3672]

Upper Limb Orthotics

Session Chair: **Ott, Wolfgang**, Dr. (AT) | Rehabilitationszentrum Bad Häring

- | | | |
|-------|---|---|
| 1 / 7 | The Effect of Neoprene Shoulder Supports on Joint Reposition Sense in Men with Unstable Shoulders
<i>In this study we examined the effect of neoprene shoulder supports on passive joint reposition sense in subjects with stable and unstable shoulders.</i> | Hassan Beygi, Babak (IR) University of social welfare and rehabilitation |
| 2 / 7 | Model for Measuring Shoulder Orthosis Kinematics
<i>Modeling an impaired shoulder is complicated by the used of an orthosis. The purpose of this study is to develop a kinematic model of the upper arm. The model is based on reducing error from soft tissue motion by adding extra skin markers and using functional axes of rotation and optimization.</i> | Begon, Mickael (CA) University of Montreal |
| 3 / 7 | Upright MRI of the Shoulder Demonstrates Labrum Dynamics
<i>To examine glenoid labrum dynamics, the shoulders of 15 healthy subjects were imaged in standing position at different degrees of external rotation wearing the Omo Immobil Rotation orthosis and by using the UprightTM MRI. The functional length of the anterior labrum was measured.</i> | Michael, Joern W.-P. (DE) Universitätsklinikum Köln |
| 4 / 7 | Exotendon Glove Operated through Activation of Mastication Muscle
<i>An active prehension orthosis, called exotendon glove, which is made of flexible material only has been developed for people suffering cervical injury to complement their finger function. This exotendon glove system has a unique interface to operate fingers through activation of mastication muscle.</i> | Moromugi, Shunji (JP) Nagasaki University |
| 5 / 7 | Evaluation of a Shoulder Orthosis (Omo Neurexa) in the Rehabilitation of the Severely and Flaccid Arm after Stroke: a Prospective Study
<i>Shoulder subluxation and -pain after stroke is a limiting factor to promote motor control in the hemiparetic arm. The shoulder orthosis OmoNeurexa (ON) supported the arm while activities of daily live and improved the gait pattern in patients with hemiparesis.</i> | Werner, Cordula (DE) Charité Universitätsmedizin Berlin, Medical Park Berlin |
| 6 / 7 | Aids for Injured Hands
<i>We'll show some aids for injured hands, which makes life for disabled of the hands easier and more comfortable.</i> | Ott, Wolfgang (AT) Rehabilitationszentrum Bad Häring |
| 7 / 7 | Acceptance and Outcomes of the Dynamic Elastomeric Fabric Wrist Hand Orthosis in the Pediatric Population
<i>Dynamic Movement Orthosis (DMO) has been used in a team oriented cp clinic. A retrospective chart review was conducted to complete a quality audit and to document trends in DMO WHO use, including wearer profile, treatment plan, follow up schedule, and outcomes.</i> | James, Wynne (US) Boston Brace |

26. Tuesday 2010/05/11 | 15:00 - 16:30 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics
[3658]

Upper Extremity Prosthetics - Socket

Session Chair: **Kistenberg, Robert**, MPH, CP, LP, FAAOP (US) | Georgia Institute of Technology

Session Chair: **Jönsson, Stewe** (SE) | Sahlgrenska University Hospital

- | | | |
|-------|--|--|
| 1 / 7 | Osseointegration on Upper Limb Amputee - Prosthetic Treatment and Outcome
<i>The aim of this presentation is to illustrate the prosthetic procedure, prosthetic constructions and outcomes for all actual levels on upper limb.</i> | Jönsson, Stewe (SE) Sahlgrenska University Hospital |
| 2 / 7 | Limitations of Socket Support in Upper Limb Prostheses
<i>This study measured the effect of position and load on pressures at the socket/skin interface of three transradial, three transhumeral and three shoulder amputees (n=9). These pressure measurements provide a clinically useful picture of force magnitude and distribution in the socket.</i> | Daly, Wayne (US) OrthoCare Innovations, LLC |
| 3 / 7 | Utilization of Magnetic Resonance Imaging, Segmentation and Finite Element Analysis (FEA) to Automate and Optimize Fabrication of Prosthetic Sockets | Kistenberg, Robert (US) Georgia Institute of Technology |

MRI scans of lower extremity RLs were segmented into their component tissue parts, optimized for finite element analysis, rectified and then utilized for prosthetic socket fabrication. Prostheses were tested in successive iterations to optimize the models and test our tissue property assumptions.

4 / 7	Socket-Less Prosthetic System: Upper Extremity Applications <i>We introduce a new Prosthetic system that utilizes modified silicone liners acting as soft sockets, thus eliminating the traditional use of hard sockets in prosthetics. It mimics, to a certain extent, the benefits of Osseointegration techniques but does not require surgery.</i>	Salam, Youssef (LB) Orthocare International
5 / 7	Individual Fitting Solutions with HTV Silicone Sockets in Upper Extremity Prosthetics <i>This presentation describes the advantages of silicone sockets for upper limb prostheses in terms of comfort and adhesion. The application options and practical fitting benefits of this innovative concept are illustrated using real-life examples.</i>	Andres, Erik (DE) Otto Bock HealthCare GmbH
6 / 7	Age of First Prosthetic Fitting and Later Functional Outcome in Children and Young Adults with Unilateral Congenital Below Elbow Deficiency <i>Age at first fitting in children with an unilateral congenital transversal below-elbow deficiency was not associated with satisfaction with the prosthesis, functional use or motor skills. Early prosthetic fitting seems to have a limited impact on prosthesis use during later stages of life.</i>	van der Sluis, Corry (NL) University Medical Center Groningen
7 / 7	Congenital Limb Deficiencies – Epidemiology and Management <i>Congenital Limb Deficiencies (CLD) is a challenge in rehabilitation. Despite the introduction of screening ultra sound in pregnancy, certain populations refuse an abortion even if a severe fetal defect is diagnosed. We present 112 cases followed in our special clinic for CLD.</i>	Siev-Ner, Ytzhak (IL) Sheba Medical Center

27. [3501] Tuesday 2010/05/11 | 15:00 - 16:30 | Hall 3 |  Symposium | Subtopic/Track: Amputation/Prosthetics

Outcome Measures in Upper Limb Prosthetics

Session Chair: **Hill, Wendy (CA)** | Institute of Biomedical Engineering University of New Brunswick

Session Chair: **Swanson, Shawn , OTR/L (US)** | Advanced Arm Dynamics

1 / 5	Review of Outcome Measures Work from ULPOM	Hill, Wendy (CA) Institute of Biomedical Engineering University of New Brunswick
2 / 5	Summary of SSC Findings	Swanson, Shawn (US) Advanced Arm Dynamics
3 / 5	The Occupational Therapist Perspective on Outcome Measures	Norling Hermansson, Liselotte M (SE) Örebro county council
4 / 5	The Engineer Perspective	Stavdahl, Øyvind (NO) Norwegian University of Science and Technology
5 / 5	The Prosthetists Perspective	Miller, Laura (US) Rehabilitation Institute of Chicago

28. [3485] Tuesday 2010/05/11 | 15:00 - 16:30 | Hall 4 |  Symposium | Subtopic/Track: Miscellaneous

Psychosocial Issues in Amputation and Prosthetic Rehabilitation

Session Chair: **Gallagher, Pamela , PhD (IE)** | Dublin City University

Session Chair: **Desmond, Deirdre , Dr. (IE)** | National University of Ireland Maynooth

Abstract: *Psychological factors predict adjustment to amputation. Understanding of the psychological and social realities of limb loss and prosthetic use can contribute to a holistic rehabilitation and limb-fitting experience and the optimization of ongoing care. This symposium will present current research in the psychology of amputation and prosthesis use and will highlight future directions for research in this domain.*

1 / 5	Exploring Client Preferences: Children and Young People's Views of Their Prosthesis	Donovan-Hall, Margaret (UK) University of Southampton
2 / 5	Adjustment to Amputation and Body Image	Gallagher, Pamela (IE) Dublin City University

3 / 5	Gender, Sexuality, and Prosthesis Use: Implications for Rehabilitation	Murray , Craig (UK) Lancaster University
4 / 5	Early Self-Management Training May Improve Outcomes in Persons with Limb Loss <i>A community-based, randomized, controlled clinical trial of the effectiveness of a self-management program specifically designed for persons with major limb loss. Subgroup analyses indicated the impact of the intervention was greater for participants who were < 3 years post amputation.</i>	Wegener , Stephen (US) Johns Hopkins University
5 / 5	Quality of Life of Persons with Lower Limb Amputation During Rehabilitation and at 3 Month Follow-up <i>Quality of life of persons with lower limb amputation admitted for inpatient rehabilitation was assessed at admission, discharge and at 3 month follow-up. Results indicated that generic and specific quality of life of persons with lower limb amputation was high and remained relatively stable during inpatient rehabilitation and 3 months after discharge.</i>	Zidarov , Diana (CA) Montreal Rehabilitation Institute

29. [3685] Tuesday 2010/05/11 | 15:00 - 16:30 | Hall 5 |  Symposium | Subtopic/Track: Miscellaneous

Convention on the Rights of Persons with Disabilities and Mobility Devices

Session Chair: **Khasnabis**, Chapal (CH) | World Health Organization

Session Chair: **Heim**, Sepp (DE)

Abstract: *The Convention on the Rights of Persons with Disabilities and its Optional Protocol was adopted on 13 December 2006 and entered into force on May 3, 2008. The Convention further strengthens the United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities, adopted in 1993. Both Standard rules (article 3 and 4) and Convention (article 20 and 26) highlighted the importance of assistive/mobility devices. The Convention has further stated that people with disabilities have rights to access mobility devices and States are to facilitate this. However in most part of the world, there is very limited access to mobility devices. A greater impetus need to be given to ensure that Article 20 on Personal Mobility and Article 26 on Habilitation and Rehabilitation get operationalised. Convention is bringing new opportunities and at the same time challenges for the entire rehabilitation profession- Prosthetics/Orthotics and wheelchairs in particular. The Convention especially articles*

1 / 4	Convention on the Rights of Persons with Disabilities - Article 20 & 26 <i>The UN Convention on the Rights of Persons with Disabilities signified a watershed for disabled people worldwide. For those with mobility disabilities Articles 20 and 26 have significant relevance as they at last recognise that people require the correct equipment that brings independence and engagement to enable access to society.</i>	Constantine , David (GB) Motivation
2 / 4	Convention on the Rights of Persons with Disabilities and Mobility Devices - Article 20 and 26 and WHO	Khasnabis , Chapal (CH) World Health Organization
3 / 4	International NGOs Response in Implementation of the Convention <i>The aim of Making It Work is to provide a uniform methodology to share and exchange examples of good practices. The added value of MIW is to act as a clearinghouse for information on what works and how this knowledge can be used to advocate for both practitioner and policy change at all levels.</i>	Urseau , Isabelle (FR) Handicap International
4 / 4	Convention and Prosthetics/Orthotics Services	Harte , Carson (IE) Cambodia Trust

30. [3744] Tuesday 2010/05/11 | 15:00 - 16:30 | MZF 1/2 | Session

Open Forum 1

Session Chair: **Franke**, Jens (DE) | Bundesinnungsverband für Orthopädie-Technik

Session Chair: **Magnusson**, Lina (SE) | Jönköping University School of Health Sciences

1 / 8	Development of the Prosthetic Casting Simulator for Trans-Femoral Amputation in P&O Education <i>A casting for Trans-femoral prostheses is considered to be most difficult work, requiring advanced techniques for a prosthetist. For this reason we developed the Prosthetic Casting Simulator for Trans-femoral amputation which is available in P&O education.</i>	Oda , Takeshi (JP) Kobe college of medical welfare
2 / 8	Sudanese Diploma in Lower-limb Prosthetics and Orthotics (SDPO) – an ICRC 3-year Modular Training Course in Lower-limb Prosthetics and Orthotics	Matagne , Bernard (SD) International Committee of the Red Cross

Physical rehabilitation Centres in Sudan are struggling with their estimated 200000 physical disabled, as services capacity is way below the needs. The ICRC responds to the lack of P&O professionals by delivering in Khartoum a 3-year modular course in lower-limb prosthetics and orthotics (SDPO)

- | | | |
|-------|---|---|
| 3 / 8 | Prosthetist/Orthotist Educational Experience & Professional Development in Pakistan
<i>Pakistan graduates indicated that P&O services for Pakistan can be better provided by modifying program content, upgrading teachers' knowledge, improving access to information and addressing issues of gender equality.</i> | Magnusson , Lina (SE)
Jönköping University School of Health Sciences |
| 4 / 8 | The International Program of Prosthetics and Orthotics Education in Thailand
<i>The P&O International program will open on June, 2010 after the SSPO was accredited by ISPO category 1 education as the first school in Thailand and south East Asia.</i> | Rakbangboo , Thanyaporn (TH)
Sirindhorn School of Prosthetics and Orthotics |
| 5 / 8 | Continuing Professional Development in Post-Graduation Practice: Cambodian Prosthetist-Orthotists
<i>Key words: CPD, professional development, continuing education, capacity building, staff training, low income countries, Cambodia</i> | Kheng , Sisary (KH) Cambodia Trust |
| 6 / 8 | Prosthetics & Orthotics Undergraduate Education Programme for the Sichuan Earthquake Stricken Areas
<i>The Hong Kong Polytechnic University and the Sichuan University, have worked together and launched a 4-year full time Prosthetics & Orthotics undergraduate education programme at the Sichuan University to train prosthetics and orthotics professionals. The programme was started in September 2009.</i> | Leung , Aaron K. L. (HK) The Hong Kong Polytechnic University |
| 7 / 8 | Training Prosthetic Technicians in the Dominican Republic - A Report on Program Evaluation
<i>This program evaluation was designed to assess the effect of a training provided by an NGO. The program goal was to develop knowledge and skills in a group of prosthetic technicians in the Dominican Republic. Data were gathered from trainers and trainees using face to face interviews and surveys</i> | Phillips , Julia A. Gass (US) Phillips and Company |
| 8 / 8 | Exploring the Effectiveness of the Mental Health First Aid Course for Prosthetists and Orthotists in Australia | Steel , Andrew (AU) Ballart Health Service |

31. Tuesday 2010/05/11 | 17:00 - 18:30 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

[3657]

Lower Limb Prosthetics - Hightech Foot

Session Chair: **Moser**, David , Dr. (GB) | Blatchford

- | | | |
|-------|---|--|
| 1 / 7 | Use of Experimental Prosthetic Feet to Improve Understanding of Prosthetic Foot Function for Lower Limb Prosthesis Users
<i>This paper describes our approach of using experimental prosthetic feet to examine effects of prosthetic foot features on gait of prosthesis users. We describe the results of two double-blind studies (n=14 for each study) that examined effective keel length and forefoot flexibility effects.</i> | Fatone , Stefania (US)
Northwestern University |
| 2 / 7 | Evaluation of Biomechanical Optimization of Prosthetic Ankle-Foot Stiffness Using Intelligent Microprocessor Control
<i>A novel microprocessor controlled ankle-foot system has been developed. Analysis of the system showed that foot function can be enhanced by intelligently adapting and matching foot stiffness to better suit varied walking activities particularly on uneven surfaces.</i> | Moser , David (GB) Blatchford |
| 3 / 7 | Robust Terrain Detection System for the Foresighted Control of Active Terrain-adaptive Limb Prostheses
<i>Concepts for active limb prostheses cannot manage step-to-step real time adaption to ground. We present a method to overcome this problem with an optical simultaneous terrain detection system which is mounted of the prosthesis and generates the input for the control strategy of the prosthesis.</i> | Kleiner , Bernhard (DE)
Fraunhofer Institut für Produktionstechnik und Automatisierung |
| 4 / 7 | A Novel Below-knee Prosthesis for Snowboarding
<i>Snowboarding with a below-knee prosthesis is compromised by the limited rotation capabilities of existing below-knee prostheses. Based on snowboarding range of motion analyses, a novel below-knee prosthesis was designed with the aim to achieve similar range of motions like able-bodied snowboarders.</i> | Plettenburg , Dick (NL) Delft University of Technology |

5 / 7	The Contribution of a Flexible Prosthesis to Promoting Health <i>Each year we treat some 250 to 300 limb amputated patients and provide them with prostheses. One possibility is to incorporate a flexible rod system (Clever Bone®). We carried out a prospective, double-blind, randomised trial on 28 patients who had undergone below-knee amputation.</i>	Kickinger , Wolfgang (AT) Sonderkrankenanstalt Zicksee
6 / 7	A New Hydraulic Foot/Ankle <i>A new hydraulic foot/ankle system by Motion Control will be presented - the evolution of the design objectives, the development challenges, and the subsequent design trade-offs. Outcomes and wearer's impressions will also be presented from initial limited release to approximately 40 full-time wearers</i>	Iversen , Edwin K. (US) Motion Control Inc.
7 / 7	Analysis of the Effects of Different Prosthetic Feet on Forces and Moments in a Lower Extremity Prosthesis: A Pilot Study <i>Five lower extremity amputees performed walking trials with 4 different types of prosthetic feet and gave feedback via survey. A device was installed onto the prosthesis to measure forces and moments. Trends in the force and moment data will be correlated to subject performance and feedback.</i>	Brown , Ellenor (US) Georgia Institute of Technology

32. [3553] Tuesday 2010/05/11 | 17:00 - 18:30 | Hall 2 |  Symposium | Subtopic/Track: Miscellaneous

Biomimetics

Session Chair: **Buis**, Arjan, Dr. (GB) | NCPO University of Strathclyde

Session Chair: **Henderson**, Emma, Dr. (UK) | University of Strathclyde

1 / 3	Biomimetics for Medicine	Vincent , Julian (UK) University of Bath
2 / 3	Biomimetics in Prosthetics	Buis , Arjan (GB) NCPO University of Strathclyde
3 / 3	Biomimetics in Orthotics	Jones , Derek (UK) University of Strathclyde

33. [3659] Tuesday 2010/05/11 | 17:00 - 18:30 | Hall 3 | Session | Subtopic/Track: Amputation/Prosthetics

Upper Extremity Prosthetics - Functional Components 2

Session Chair: **Sensinger**, Jonathon, Dr. (US) | Rehabilitation Institute of Chicago

Session Chair: **Uellendahl**, Jack, CPO (US) | Hanger Prosthetics and Orthotics, Inc.

1 / 7	Changes in Prehension, Force Control, and Gaze when Learning to Use a Myoelectric Simulator with a MyoHand VariPlus Speed <i>Different ways to learn using a myoelectric simulator did not affect training results. Object rigidity affected coordination of reach and grasp in prehension and learning force control required more time than learning to control prehension. This can serve as a basis to set up prosthetic training.</i>	Bongers , Raoul (NL) University of Groningen
2 / 7	Clinical Trial of 6 Adaptive Hands in Comparison to Standard System Electric Hands, Advantages and Disadvantages from the Sight of the Users <i>In a two month evaluation 6 Patients, used to control standard electric hands, got the chance to try new adaptive hands to find out the advantages or disadvantages of this new handtyp in real life situations.</i>	Kretz , Dieter (DE) Orthopädietechnik von Bülzingslöwen
3 / 7	Biomechanical Evaluation of a Free-swinging Shoulder Prosthesis for Shoulder Amputees while Walking and Standing <i>This study shows that wearing an arm prosthesis due to a unilateral shoulder amputation has positive physiological effects while walking and standing. The varising moments on the knee joint are reduced by an arm prosthesis that harmonises the gait pattern and optimises body alignment.</i>	Bertels , Thomas (DE) Otto Bock HealthCare GmbH
4 / 7	Twenty Year Follow-up of a Bilateral Shoulder Disarticulation (BSD) Amputee <i>This presentation will outline the original prosthetic design rationale and describe subsequent changes to the bilateral shoulder disarticulation prostheses developed for this user. Video will be used to demonstrate the high level of function achieved by this highly motivated and innovative user.</i>	Uellendahl , Jack (US) Hanger Prosthetics and Orthotics, Inc.
5 / 7	A Weight Compensating Shoulder Joint to Assist the Short Transhumeral Amputee	Williams III , T. Walley (US) Liberating Technologies, Inc

A weight compensating mechanism has been developed that permits a short transhumeral amputee to use a powered prosthesis to work with the arm extended in front. Compensation is minimal at full shoulder extension and maximal at 90° of flexion. Abduction can be either free or compensated.

- | | | |
|-------|---|--|
| 6 / 7 | Activity-Specific Upper Limb Prosthetic Options
<i>This presentation will highlight several patient stories including their custom made activity- specific prostheses. A few examples include trans-humeral mountain biking prosthesis, trans-radial baseball/golf prosthesis and wrist-disarticulation lacrosse prosthesis.</i> | Spill, Ryan (US) |
| 7 / 7 | Cycloid Drives for Use in Motorized Prostheses
<i>Cycloid drives provide high efficiency and strength in a compact package. This study compared performance characteristics of cycloid drives and harmonic drives. Both drives have benefits and disadvantages. Cycloid drives should be considered for incorporation into the design of future prostheses.</i> | Sensinger, Jonathon (US)
Rehabilitation Institute of Chicago |

34. [3687] Tuesday 2010/05/11 | 17:00 - 18:30 | Hall 4 | Session | Subtopic/Track: Rehabilitation

Rehabilitation - Amputation Upper Extremity

Session Chair: **Stark, Gerald**, CPO/L, FAAOP (US) | The Fillauer Companies Inc.

- | | | |
|-------|--|---|
| 1 / 8 | Defining Success after Upper Limb Loss: Prosthesis Use, Activities and Participation, and Self Image
<i>A Delphi study with Rehabilitation professionals (RP's) and individuals with upper limb loss (ULL) was conducted to reach group consensus on what constitutes successful outcomes in three key areas, 'prosthesis use', 'activities and participation', and 'self image'.</i> | Ni Mhurchadha, Sinead (IE)
Dublin City University |
| 2 / 8 | Clinical Guidelines for Bilateral Upper Extremity Management
<i>The bilateral upper extremity patient presents with a number of fitting challenges that may be intimidating. Various factors that must be addressed with respect to evaluation, component selection, fitting timeline, interface design, and harnessing as well as overall functional optimization.</i> | Stark, Gerald (US) The Fillauer Companies Inc. |
| 3 / 8 | Prosthesis Training with a Fully Functional, Myoelectrical Upper Arm Prosthesis
<i>Different case examples will show a training with two different types of upper arm prosthesis (both electrical prosthesis). Also a brief overview will demonstrate the functional differences between a conventional, myoelectrical system hand and an adaptive hand with individually movable fingers.</i> | Banzhaf, Andre (DE) Brillinger OT |
| 4 / 8 | Development and Validity of the Children's Hand-use Experience Questionnaire
<i>A questionnaire for evaluation of children's experiences of using the affected hand in bimanual task performance was developed. Internal scale validity and the appropriateness of the rating scale structure were confirmed by Rasch analysis. The CHEQ is a useful tool for clinical work and research.</i> | Norling Hermansson, Liselotte M (SE) Örebro county council |
| 5 / 8 | Content Comparison of Outcome Measures in Upper Limb Prosthetics Based on the International Classification of Functioning, Disability and Health (ICF)
<i>The contents of eight outcome measures designed for upper limb prosthesis users were linked to the International Classification of Functioning, Disability and Health. The items/questions in these measures measure body functions, prosthesis use in activities and participation in major life areas.</i> | Lindner, Helen (SE) Örebro University |
| 6 / 8 | Acceptance of Prosthesis of the Upper Limb in Children and Adolescents
<i>To provide an prosthesis for the upper limb in children many factors need to be considered. Parents should be informed directly after birth and prosthesis supply should start early. Finding the right prosthesis is an individual task that should be done step by step in a specialized unit</i> | Illgner, Ulrich (DE) Uniklinikum Münster |
| 7 / 8 | Utilization of Lower-limb and Upper-limb Prostheses by Farmers and Ranchers in the U.S.
<i>Farming and ranching in the United States is a hazardous occupation. Many non-fatal farm accidents result in amputation. This paper describes the utilization of upper- and lower-limb prostheses by farmers and ranchers and improvements in prosthetic options needed for the farm and ranch enviro</i> | Waldera, Kathy (US) Northwestern University |

- 8 / 8 **Clinical Experience and Rehabilitation of Amputee Military Service Members at the Center For the Intrepid** Ebner, Christopher (US) | Center For the Intrepid, Brooke Army Medical Center
This lecture will discuss the clinical experiences at the Center For the Intrepid located at Brooke Army Medical Center providing rehabilitation of amputee military service members.

35. Tuesday 2010/05/11 | 17:00 - 18:30 | Hall 5 | SY Symposium | Subtopic/Track: Rehabilitation

[3945]

Benefits and Role of Good Seating and Peer Training in Less Resourced Settings

Session Chair: Rushman, Chris (GB) | Motivation Charitable Trust UK

Session Chair: Pryor, Wesley (IN) | Handicap International

- 1 / 2 **Review of Different Approaches to Address the Needs of Children Who Require Supportive Seating in Less Resourced Settings** Frost, Sarah (GB) | Motivation

- 2 / 2 **The Role of Peer Training in Less Resourced Settings** Constantine, David (GB) | Motivation

36. Tuesday 2010/05/11 | 17:00 - 18:30 | MZF 1/2 | Session

[3745]

Open Forum 2

Session Chair: Franke, Jens (DE) | Bundesinnungsverband für Orthopädie-Technik

Session Chair: Schlierf, Christian (DE) | Human Study e.V.

- 1 / 7 **Developing a National Qualification for Orthotic and Prosthetic Technicians** Adam, Ian (UK) | Yorkhill Hospital
There has never been a nationally recognised qualification for Orthotic and Prosthetic Technicians working in the United Kingdom. This paper will explain the process of bringing the various bodies together make this long needed qualification a possibility

- 2 / 7 **The Redesign Implementation and Accreditation of 4 years Honours and 5 years Masters Progr. in P&O at the NCPO University of Strathclyde, Scotland** Figgins, Elaine (UK) | University of Strathclyde
This paper will initially describe the review procedures of the new 4 year Honours programme at undergraduate level for the education and training for Prosthetists and Orthotists in the UK at Strathclyde University.

- 3 / 7 **Development of a Technology Enabled, Problem Based Learning Module for Teaching Knee Anatomy, Biomechanics and Knee Orthosis Design** Raschke, Silvia Ursula (CA) | British Columbia Institute of Technology
BCIT has developed a module for teaching knee orthotics, using the high quality graphics and easy to use interface of NGRAIN technology, which allows students to quickly and comprehensively grasp complex 3-D movements and relationships and apply them using a Problem Based Learning (PBL) approach.

- 4 / 7 **Prosthetics & Orthotics Education and Research in the United Kingdom – The University of Salford's Newly Developed and Validated Honours Degree Program** Head, John (DE) | Centre for Rehabilitation and Human Performance Research Brian Blatchford Building
Significant changes affecting p&o education and research have recently occurred in the UK. The University of Salford honours degree programme has been reviewed and restructured to reflect these changes in practice. The Health Professions Council commended the progr. team for consultation/preparation

- 5 / 7 **Upgrading Education in South East Europe on ISPO Cat.II Level for Experienced Orthopedic Technicians on the Job** Schlierf, Christian (DE) | Human Study e.V.
In order to improve the quality of orthotic and prosthetic services, medical health professionals and technicians in the South East Europe region require additional comprehensive professional training which has the potential for individual professional international recognition.

- 6 / 7 **University Education in Prothetics and Orthotics** Anderson, Sarah (AU) | LaTrobe University
Education in Prosthetics and Orthotics (P&O) is a relatively new health science with training for the profession changing from an apprenticeship to a University graduate degree in a relatively short period of time (Hughes, J. 1992).

7 / 7 **A New Era in Prosthetics and Orthotics Education at La Trobe University** English, Rowan (AU) | La Trobe University
Responding to increasing health care complexity in Australia, La Trobe University has introduced an innovative curriculum incorporating interprofessional education and Enquiry-Based Learning aimed at preparing graduates for the dynamic and challenging field of prosthetics and orthotics.

37. [3814] Wednesday 2010/05/12 | 08:00 - 09:15 | Hall 1 | Advanced Instructional Course | Subtopic/Track: Amputation/Prosthetics

Quantifying Trans-femoral Socket Fit

Session Chair: Murray, Kevin, Dr. (UK) | University of Strathclyde

Session Chair: Drerup, Burkhard, Prof. Dr. (DE) | Klinik für Technische Orthopädie und Rehabilitation

1 / 5 **The Use of Ultrasound as a Means of Quantifying Trans-femoral Socket Fit** Murray, Kevin (UK) | University of Strathclyde

This instructional course will present current research methods used to quantify trans-femoral socket fit. Engineering principles and current research will be presented to enhance an understanding of 'what is a successful socket fit'.

2 / 5 **Appreciation of Prosthetic Fitting from Basic Engineering Principles** Buis, Arjan (GB) | NCPO University of Strathclyde

Evidence based practice is important in providing the best possible care and to enhance quality of life. However, there is no consensus about what constitutes a good socket fit. Prosthetics and biology may be too complicated to allow identification and quantification of all relevant parameters. Nevertheless, we must endeavour to improve our understanding of the mechanisms and fundamentals of socket fit if we are to contribute to product quality. This presentation will address three main areas of interest in socket design and illustrate the arguments with reference to trans-tibial prosthetics. The areas of interest are • Definition of a good socket fit. • Socket fit and related tissue mechanics. • Implementation of a good fit. The load transmission systems which apply may be optimised with reference to elementary Physics, Mechanics, Fluid Mechanics and Strength of Materials and will be discussed. These include: 1. Elastic, unidirectional compressions of thin layers of soft tissues, 2. Quasi-hydrost

3 / 5 **Sonographic Investigations of the Movements of the Residual Femur in the Frontal and Sagittal Plane in Different Sockets** Balcaitis, Rolanas (DE) | Klinische Prüfstelle für orthopädische Hilfsmittel

4 / 5 **Intra-individual Comparison of Different Socket Designs: Biomechanical and Prosthetic Aspects** Tiemeyer, Kerstin (DE) | Universitätsklinikum Münster, Klinik und Poliklinik Technische Orthopädie

5 / 5 **Intra-individual Comparison of Different Socket Types: the Clinical Aspects** Schüling, Stefan (DE) | Universitätsklinikum Münster, Klinik und Poliklinik Technische Orthopädie

38. [3529] Wednesday 2010/05/12 | 08:00 - 09:15 | Hall 2 | Basic Instructional Course | Subtopic/Track: Neuroorthopaedics

Orthotics for Polio and Post-Polio Syndrome

Session Chair: Nollet, Frans, Prof. Dr. (NL) | Academic Medical Center University of Amsterdam

Abstract: *This basic instructional course focuses on when to apply lower extremity orthotics in post-polio syndrome patients; for which clinical indications and for what functional deficits. The biomechanical effects of the main types of AFO's and KAFO's will be discussed and the manufacturing of orthotics according to biomechanical principles using carbon composites. The course will be based on a case oriented approach and illustrated with 3D gait analysis data.*

1 / 2 **Functional Analysis Based Prescription of Orthotics in Post-Polio Syndrome** Nollet, Frans (NL) | Academic Medical Center University of Amsterdam

2 / 2 **Designing & Manufacturing Light Weight Full Contact Carbon Orthotics for Post-Polio Syndrome** Noppe, Kees (NL) | Noppe OIM

39. [3572] Wednesday 2010/05/12 | 08:00 - 09:15 | Hall 3 | Basic Instructional Course | Subtopic/Track: Rehabilitation

Decision Making in Fracture Care in Relation to Mobilisation

Session Chair: **Hemmen, Bea**, MD PhD (NL) | Adelante Zorggroep Hoensbroeck Revalidatie Centrum

Abstract: *Polytrauma patients have serious injuries of the locomotor system, often combined with damage to vital organs such as the brain and lungs. After surgery, a long rehabilitation period is needed that places high demands on the patient, the surgeon and the rehabilitation physician, who all need to work closely with physiotherapists, nursing staff and, to a lesser extent, orthotists. The treatment aim for polytrauma patients is not only fixation of fractures, but also functional after-treatment to allow muscles and joints to be exercised. To what degree this can be generalized is not clear and is often subject to debate - sometimes even controversy. In this instructional course, the speakers share their knowledge in this field by way of lectures and a workshop.*

1 / 4	Bone Healing	Brink, Peter (NL) Maastricht University Medical Centre
2 / 4	Different Ways of Treating Fractures in Relation to Axial Load Capacity	Verbruggen, Jan (NL) Maastricht University Medical Centre
3 / 4	Axial Load Capacity and Allowing Early Functional After-Treatment in Relation to Post-Operative Physiotherapy	Windolf, Markus (CH) AO Research Institute Davos
4 / 4	Early Rehabilitation of Polytrauma Patients	Hemmen, Bea (NL) Adelante Zorggroep Hoensbroeck Revalidatie Centrum

40. [3630] Wednesday 2010/05/12 | 08:00 - 09:15 | Hall 4 | Advanced Instructional Course | Subtopic/Track: Amputation/Prosthetics

Upper Limb Prosthetics

Session Chair: **Thurston, Alan**, Prof. (NZ) | Wellington School of Medicine and Health Sciences

Session Chair: **Beasley, Wyn** (NZ) | New Zealand Artificial Board

Abstract: *The course covers the problems of fitting prosthetic upper limbs, the choice of components and some the technical aspects of prosthetic upper limbs. There is also a selection on the latest developments.*

1 / 5	Basic Structure and Function of the Human Hand <i>This paper covers basic anatomy, sensory functions and movements of the joints of the digits and the wrist - Included are the different types of grip, appearance and cosmesis, the use of the hand for support (changing positions) and as an organ of expression.</i>	Thurston, Alan (NZ) Wellington School of Medicine and Health Sciences Beasley, Wyn (NZ) New Zealand Artificial Board
2 / 5	The Prescription (Choosing a Limb) <i>This paper covers assessments of the level of amputation, the condition of the stump, the level of activity of the amputee and a consideration of special requirements. It includes discussions on different power sources (passive to myoelectric) and choosing a terminal device.</i>	Thurston, Alan (NZ) Wellington School of Medicine and Health Sciences Beasley, Wyn (NZ) New Zealand Artificial Board
3 / 5	Matching the Prosthesis to the Amputee <i>This paper covers an assessment of the requirements of the amputee (weight, cosmesis, durability & etc), the prosthetists requirements (materials, components, strength, ease of working/manufacture and ease of alignment and adjustment) and the advantages and disadvantages of the different materials that are available. It also includes socket designs, suspension systems, harnesse</i>	Thurston, Alan (NZ) Wellington School of Medicine and Health Sciences Beasley, Wyn (NZ) New Zealand Artificial Board
4 / 5	Advances in Myoelectrics <i>This paper covers basic physiology of the nerve/muscle unit, electromyography and the components of a basic myoelectric prosthesis. It also includes a comparison of myoelectric versus body-powered prostheses, explaining the advantages and disadvantages of each system. Also included is an explanation of the control of myoelectric prostheses, battery durability and drain, signal processing and a section on targeted reinnervation.</i>	Thurston, Alan (NZ) Wellington School of Medicine and Health Sciences Beasley, Wyn (NZ) New Zealand Artificial Board
5 / 5	Study of Myoelectric Limbs in New Zealand	Thurston, Alan (NZ) Wellington School of Medicine and Health Sciences Beasley, Wyn (NZ) New Zealand Artificial Board

41. [3737] Wednesday 2010/05/12 | 08:00 - 09:15 | Hall 5 |  Advanced Instructional Course | Subtopic/Track: Orthotics

Lower Limb Orthoses

Session Chair: **Schulte**, John (US) | Fillauer Companies


Session Chair: **Owen**, Elaine (UK) | North West Wales NHS Trust

1 / 2 **The Utilization of Dynamic Orthoses in Your Practice**

Schulte, John (US) | Fillauer Companies

2 / 2 **The Importance of Being Earnest About Shank Kinematics, Especially When Using AFOs**

Owen, Elaine (UK) | North West Wales NHS Trust

42. [3785] Wednesday 2010/05/12 | 09:30 - 10:00 | Hall 1 |  Keynote Speech

Neuro-orthopaedics with a Focus on Orthopaedic Technology

Keynote Speaker: **Döderlein**, Leonhard , Dr. med. (DE) | Orthopädische Kinderklinik Aschau

Abstract: *Orthopaedic technology has always been one of the essential pillars of therapy in neuro-orthopaedics given that most functional deficits cannot be fully repaired by surgery alone. In individual cases, maximum benefit for the patient can be gained by combining the indicated surgical interventions with orthotic and prosthetic treatments. To date, prosthetic and orthotic treatment has focused on supports and braces to externally guide the joints that muscles cannot stabilise. New developments offer an opportunity to replace these muscles, at least partially. Patients whose orthoses are equipped with dynamic control not only experience an important increase in aesthetics but also gain functionality. Naturally, these treatments focus on lower limb problems. Dynamic treatment methods, however, are increasingly being taken into account for upper limbs and spinal orthoses as well. Close collaboration between the fields of orthopaedic technology, operative orthopaedics, motion analysis and physical therapy is an absol*

43. [3669] Wednesday 2010/05/12 | 10:30 - 12:00 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

Lower Limb Prosthetics - Functional Knee Components 1

Session Chair: **Blumentritt**, Siegmart , Prof. Dr. (DE) | Otto Bock HealthCare GmbH

1 / 3 **A Novel Approach to Swing Release and Adaptive Swing Control in Microprocessor Controlled Knees**

Seyr, Martin (AT) | Otto Bock Healthcare Products GmbH

A new control method for a microprocessor controlled knee has been developed that 1. allows robust detection of swing release, 2. minimizes initial swing resistance, 3. adapts swing control in real-time for various cadences.

2 / 3 **Functional Added-value of Microprocessor-controlled Knee Koints on Daily Life Performance in Medicare Functional Classification Level-2 Amputees**

Theeven, Patrick (NL) | Adelante

In this clinical study the level of functional performance of transfemoral amputees during daily activities was evaluated for 3 types of prosthetic knee joints. The majority of this heterogeneous group of prosthesis users seems to benefit from a microprocessor-controlled knee joint in daily life.

3 / 3 **Potential Safety of Current Microprocessor and Non-Microprocessor Controlled Prosthetic Knees**

Blumentritt, Siegmart (DE) | Otto Bock HealthCare GmbH

Knee safety was tested in 11 amputees wearing NMPC and MPC knees. The objective reason for knee stability or instability for each individual trial including the reason for knee collapse was identified. This study protocol proved to be suitable for defining the potential safety of tested knee joints.

44. [3681] Wednesday 2010/05/12 | 10:30 - 12:00 | Hall 2 | Session | Subtopic/Track: Neuroorthopaedics

Neuroorthopaedics

Session Chair: **Postema**, Klaas , Prof. Dr. (NL) | University Medical Center Groningen


Session Chair: **Swanepoel**, Jacques (ZA) | Tshwane University of Technology

1 / 9 **A Clinical Tool for Assessing and Improving Seating Positioning in Children with Quadriplegic Cerebral Palsy**

Swanepoel, Jacques (ZA) | Tshwane University of Technology

A standardized clinical tool for assessing and correcting seating positioning in children with quadriplegic cerebral palsy leads to significant impact for determining and improving quality of life.

2 / 9	Treatment of the Spastic Equinus Deformity in Cerebral Palsy Patients- is it Possible to Modify the Results by Previous Botulinum Toxin Injections?	Baise, Monique (DE) Orth. Kinderklinik Aschau
3 / 9	The Efficacy of Electrical Passive Pedal Cycling on Spasticity in Iranian Spinal Cord Injured Veterans <i>A major side effects of Spinal cord injury is spsticity, The purpose of this clinical trial was to evaluate the effects of Electrical Passive Pedal cycling (EPPC) usage on spasticity clinically and H-reflex electrophysiologically ,which showed positive results about therapeutic effects of EPPC.</i>	Shojaei, Hadi (IR) Janbazan medical and engineering research center
4 / 9	The Effect of Newly-designed Dynamic Cushion System with Spring Elements on Buttocks Pressure Distribution in Patients with Spinal Cord Injury <i>In this study, the effect of newly-designed dynamic cushion system with spring element in the buttocks pressure distribution in patients with spinal cord injury was evaluated by buttock pressure measurement. The efficacy of pressure sore prevention of this cushion system was also evaluated.</i>	Tang, Simon Fuk-Tan (TW) Chang Gung Memorial Hospital
5 / 9	Testing of a Novel Adaptive Seating System for Children with Neuromuscular Disorders <i>A novel adaptive seating system featuring a number of innovative features was developed and tested on children with CP against their current seating systems. Subjects were found to have a small improvement in head posture and function in the novel system.</i>	Telfer, Scott (UK) University of Strathclyde
6 / 9	A new Locomotion and Dynamic Functional Orthotic Concept for Stroke Survivors Using a Functional Dynamic Splinting System and Myoorthotic Treatment <i>The authors describe an innovative and complex treatment concept, for stroke survivors suffering from a loss of hand and arm function, and foot drop syndrome caused by a lesion in the central nervous system.</i>	Preisler, Benedikt (DE) Pro Walk GmbH
7 / 9	Treatment of Equinus Gait with the Pomarino® Pyramid Insoles <i>Im PTZ-Pomarino wird der Zehenspitzenang in 3 Stufen behandelt. Stufe 1: Versorgung mit Pyramideneinlagen nach Pomarino®, eventuell zusammen mit Physiotherapie; Erfolgsquote: ca. 90% . Stufe 2: Therapieerweiterung um individuell angefertigte Nachtschienen. Stufe 3: Behandlung mit Botox®.</i>	Pomarino, David (DE) Physiotherapiezentrum
8 / 9	Properties of Vibration to Improve Standing Balance in People with Diabetic Neuropathy <i>Different types of vibration were applied to the plantar surface of the feet in five patients with Diabetic Neuropathy, in order to improve balance control. An upper cut-off frequency of 200 Hz seems to be most effective. The applied amplitude seems to be of smaller influence on the effectiveness.</i>	Postema, Klaas (NL) University Medical Center Groningen
9 / 9	Potential and Limits of the Conservative Treatment in Neuromuscular Disease <i>In a retrospective investigation it will be demonstrated which conservative treatment methods, e.g. orthotic devices, physical therapy, are provided and as such effective.</i>	Lebek, Susanne (DE) Universitätsklinikum Halle

45. [3524] Wednesday 2010/05/12 | 10:30 - 12:00 | Hall 3 |  Symposium | Subtopic/Track: Orthotics

Development in Lower Limb Orthotics

Session Chair: **Nollet, Frans**, Prof. Dr. (NL) | Academic Medical Center University of Amsterdam

Abstract: *In recent years innovations in orthotic devices for the lower extremities have emerged after decades of inertia. Stance Control knee joints and the application of new materials, especially carbon composites are the most exciting. In this symposium the current standings regarding orthotic devices for the lower extremities in non-spastic disorders will be reviewed and future developments will be discussed. A concern is that the amount of research on the effectiveness of lower extremity orthotics is rather scarce. However, results of high-quality research will become more important in the future to demonstrate the benefits of new technology. The symposium will end with a presentation on the crucial methodological issue which outcomes should be applied in clinical trials.*

1 / 4	Current Standings of Lower Limb Orthotics in Non-Spastic Paresis	Nollet, Frans (NL) Academic Medical Center University of Amsterdam
-------	---	---

This presentation summarizes the lack of evidence to decide on the prescription of an orthosis and reports on the progress of an expert opinion based multidisciplinary guideline project.

- | | | |
|---|--|---|
| 2 / 4 | Finding the Optimal Ankle Foot Orthosis - The Influence of Mechanical Characteristics on Walking Efficiency
<i>The mechanical AFO characteristics, such as the stiffness and neutral angle around the forefoot and ankle joints, need to be well-tailored to the patients gait related problems in order to improve walking efficiency. AFOs with different stiffnesses have different effects throughout the gait phase.</i> | Bregman, Daan J.J. (NL) VU University Medical Center |
| 3 / 4 | Current and Future Trends for Stance Control and Powered Assist Orthoses
<i>The role of the orthotist is changing from a provider of passive devices to a clinician that provides intelligent assistive devices that adaptively control motion and, in the near future, actively enhance mobility. Recent advances will be discussed for stance control orthoses provide a wide range of control options and powered lower extremity orthoses.</i> | Lemaire, Edward (CA) The Ottawa Hospital Rehabilitation Centre |
| 4 / 4 | Considerations on Outcome Assessment in Clinical Trials on Lower Limb Orthoses
<i>This paper considers the outcome measures advocated in the literature that are most valid and applicable in clinical trials on lower limb orthoses to evaluate gait and functioning.</i> | Brehm, Merel Anne (NL) Academic Medical Center, University of Amsterdam |
| 46. Wednesday 2010/05/12 10:30 - 12:00 Hall 4 Session Subtopic/Track: Foot and Shoe | | |
| [3679] | Foot & Shoe - Diabetes and Rheumatoid Arthritis | |
| 1 / 6 | Pressure Relief by Means of a Lower-leg Total Contact Cast (TCC) in the Treatment of Diabetic Foot Ulcers - Results of a Multicenter Study in Germany
<i>Multicentre prospective clinical evaluation conducted at six DDG (German Diabetes Association)-certified foot treatment facilities to verify the efficacy and usability of the bivalved Total Contact Cast (TCC) for pressure relief in patients with diabetic foot ulcers.</i> | Zink, Karl (DE) Diabetes Klinik Bad Mergentheim GmbH & Co KG |
| 2 / 6 | Off-Loading of Diabetic Foot Ulcers: Experiences with the Bi-valved Total Contact Cast Using a Synthetic Cast Material
<i>The bivalved Total Contact Cast is a highly effective method of pressure relief. When the TCC is applied by well educated personnel, this method is well suited for the off-loading of the diabetic foot, even for the treatment of "problem feet".</i> | Trentmann, Hermann (DE) Trentmann - Gromotka Orthopädie-Schuhtechnik GmbH |
| 3 / 6 | Medial Longitudinal Arch Breakdown as a Trigger-mechanism for the Charcot Foot Syndrome
<i>Analyse the "medial longitudinal arch" (MLA) (Fig 1) and the extension of the first metatarso-phalangeal joint during the stance phase of gait. Detection of causes of the Charcot foot and thereby risk factors for the affected patients.</i> | Burgwal , Holger (DE) Fuß +Schuh Breidbach Orthopädie GmbH & Co. KG Sitz Fulda |
| 4 / 6 | Is it possible to correct the foot position of patients suffering from Diabetic-neuro-osteo-arthopathy with a lower leg orthosis?
<i>Analysis of the question, if it is possible to correct the foot position of patients suffering from Diabetic-Neuro-Osteo-Arthopathy with a lower leg orthosis. Demonstration with case reports approving this procedure.</i> | Stumpf, Jürgen (DE) Fuss und Schuh Breidbach Orthopädie GmbH & Co. KG |
| 5 / 6 | Prof. Seyfrieds Functional Concept for the Rheumatoid Foot – Proof of Concept
<i>Using kinemetry, pedobarography and electromyography, we investigate the effectiveness of orthotic treatment following Prof. Seyfrieds theory - Based on the functional conditions of the lower extremity and an appropriate staging treatment.</i> | Biber, Daniel (DE) IETEC Orthopädische Einlagen GmbH Produktions KG |
| 6 / 6 | Effect of Rocker Shoes on Pain, Disability and Activity Limitation in Rheumatoid Arthritis Patients
<i>Rheumatoid arthritis is chronic inflammatory disease that affects the foot and ankle. Rocker shoe prescribed for the symptomatic foot in RA. For 20 RA patients was prescribed heel-to-toe rocker shoe for 30 days and measurement pain, disability and activity limitation with FFI questioner.</i> | Bagherzade cham, Masumeh (IR) |

47. [3691] Wednesday 2010/05/12 | 10:30 - 12:00 | Hall 5 | Session | Subtopic/Track: Rehabilitation

Rehabilitation - Gait Training


Session Chair: **Oehler**, Simone , Dipl.-Ing. (DE) | Technische Universität Berlin

- | | | |
|-------|---|--|
| 1 / 6 | How Should we Define the Rockers of Gait and are there Three or Four?
<i>A three-event ankle model of the rockers in gait is inadequate. A four-event segment and joint model is preferable.</i> | Owen , Elaine (UK) North West Wales NHS Trust |
| 2 / 6 | Reference Values for Gait using Outcomes of the Gait Analysis System RehaWatch
<i>The knowledge of reference values is useful for the interpretation of gait analysis results. We present a method to receive reference values from measurements with healthy subjects. These standard values are determined depending on age, body height and gait velocity, based on a linear model.</i> | Kauert , Ralf (DE) Hasomed |
| 3 / 6 | Mobility Measurements of above Knee Amputees - Results of a 12 Months Field Study
<i>A six degree mobile measuring system was developed to investigate the mobility and activity of above-knee amputees with focus on the loads applied to the structure. The results of a one year study with 15 subjects will give insights into daily activities and loads for future standard testing.</i> | Oehler , Simone (DE) Technische Universität Berlin |
| 4 / 6 | Reliability of Five High-level Activity Measures established for Military Service Members with Traumatic Lower Limb Loss
<i>Inter-rater and test-retest reliability was determined for five measures of balance, coordination, power, speed, and agility on 83 Military Service members with war-related traumatic amputation. The results demonstrated excellent inter-rater and test-retest reliability for the five tests.</i> | Linberg , Alison (US) Walter Reed Army Medical Center |
| 5 / 6 | Speed and Agility Testing of Military Service Members with Traumatic Lower Limb Loss
<i>Sixty-two Military Service members with lower limb loss performed 3 speed and agility tests: modified Edgren Side Step Test (mEST), T-Test (TT), and Illinois Agility Test (IAT). Significant differences were found between service members with and without limb loss and between levels of amputation</i> | Gaunaurd , Ignacio (US) Bruce W. Carter Department of Veterans Affairs Medical Center |
| 6 / 6 | Balance Capacity and Confidence following a Wii Fit Video Game Intervention among Children with Unilateral Lower-limb Amputation
<i>A pilot study was conducted to examine the feasibility and potential benefit of Wii Fit games in promoting symmetrical shifting of weight between the sound and prosthetic leg in children with leg amputation. Compliance was high and small immediate improvement in mobility and balance was observed.</i> | Steinnagel , Bryan (CA) Bloorview Kids Rehab |

48. [3700] Wednesday 2010/05/12 | 12:00 - 14:00 | Foyer Halls | Poster Session | Subtopic/Track: Amputation/Prosthetics

Prosthetics

- | | | |
|-------|--|---|
| 1 / 1 | Self Organized Real Time Control of an Anthropomorphic Hand using Nerve Signals | Franke , Marc (DE) Universität Leipzig |
|-------|--|---|

49. [3786] Wednesday 2010/05/12 | 14:00 - 14:30 | Hall 1 |  Keynote Speech

P&O Visions – Future Developments in P&O Care

Keynote Speaker: **van der Linde**, Harmen , PhD (NL) | University Hospital Nijmegen, the Netherlands

Abstract: *Several changes within the care related to Prosthetics and Orthotics can be foreseen. Besides the development of high-technology P&O aids, the development of better directed treatment based on wishes, abilities and actual performance of patients, will be of importance. Indications and goal setting should probably be based more on activities and participation aspects according to the ICF model. While there is information available about biomechanical and physiological aspects when using a prosthesis or several orthoses, it would lead to significant improvement of care if research would also be aimed at disability and participation issues in the rehabilitation programmes. Based on the development of several guidelines in the field of prosthetics and orthotics there is more insight in the indication for specific P&O interventions. This leads to the development of more accurate training program's in which a medical aid is an essential part. Specific training modules should also be developed within the context*

50. [3512] Wednesday 2010/05/12 | 15:00 - 16:30 | Hall 1 |  Symposium | Subtopic/Track: Amputation/Prosthetics


Innovations in Multifunction Prosthetic Hand Systems

Session Chair: **Schäfer**, Michael (DE) | Pohlig GmbH

Session Chair: **Kyberd**, Peter , Dr. (CA) | University of New Brunswick

Abstract: Recent years has seen a rise in the number of multi-axis prosthetic hands being developed or marketed. The advantage of such devices is that they can perform a range of grasp patterns and so more closely match the natural hand in functionality and appearance. There is a long history of such devices, but often the means to control them has limited their utility. Recent advances in materials technology, has combined to allow lighter motors and batteries and compact enough electronics to make the idea of a practical multi-degree of freedom hands a reality. This symposium will bring together the results of a number of the latest projects to produce multi-axis hands, both commercial and experimental. This will allow the different technologies to be compared and contrasted and lessons over where such devices will take prosthetics over the next decade.

- | | | |
|-------|--|--|
| 1 / 5 | Historical Review of Multi Function Hands
<i>Multiple axis for a prosthetic hand creates flexibility in gripping. Barriers to use include the weight, reliability and price. The critical aspect is that the hand must be flexible and practical. Many solutions use flexible linkages so the grip is complaint. This paper reviews the choices made.</i> | Kyberd , Peter (CA) University of New Brunswick |
| 2 / 5 | New Developments on the i-LIMB System | Gill , Hugh (UK) Touch Bionics |
| 3 / 5 | Advanced Functionality of the New Axon-Bus® Prosthesis System: the Michelangelo Hand
<i>Future arm prostheses will enable simultaneous control of multi degrees of freedom. For this a new technology platform is needed. The Axon-Bus® prostheses system is such a platform. Its first component, the Michelangelo Hand, comes to the market. Its new functions and benefits are discussed.</i> | van Vliet , Hans-Willem (AT) Otto Bock Healthcare Products GmbH |
| 4 / 5 | Introducing a New Multiarticulating Myoelectric Hand System
<i>A new technology are presented; the motor driven modular VINCENT© Hand system, with allows the design of nearly anatomical partial hand prostheses and one of the worlds smallest and lightest multifunction hands within 6 motors. Both applications are discussed with his features and benefits.</i> | Schulz , Stefan (DE) VINCENT Systems Medical Technics GmbH |
| 5 / 5 | VA Studies to Optimize the DEKA Arm | Resnik , Linda (US) Providence VA Medical Center/Brown University |

51. [3830] Wednesday 2010/05/12 | 15:00 - 16:30 | Hall 2 |  Symposium | Subtopic/Track: Miscellaneous

Future Technology

Session Chair: **van der Linde**, Harmen , PhD (NL) | University Hospital Nijmegen, the Netherlands

- | | | |
|-------|---|---|
| 1 / 2 | Interfacing with Biological Structures – The Next Level of Rehabilitation | Dietl , Hans (AT) Otto Bock Healthcare Products GmbH |
| 2 / 2 | The Purpose and The Intent (What Bio Mechanical Function to Replace and Why) | Janusson , Hilmar Bragi (NL) Össur Europe BV |

52. [3157] Wednesday 2010/05/12 | 15:00 - 16:30 | Hall 3 |  Symposium | Subtopic/Track: Amputation/Prosthetics

Gait Analysis for Determination of Balance, Stability and Safety in Prosthetics

Session Chair: **Postema**, Klaas , Prof. Dr. (NL) | University Medical Center Groningen

Session Chair: **Wolf**, Sebastian , Dr.rer.nat. (DE) | Orthopädische Universitätsklinik Heidelberg

- | | | |
|-------|---|--|
| 1 / 5 | Lateral Balance during Walking and Standing on a Narrow Ridge | Postema , Klaas (NL) University Medical Center Groningen |
| 2 / 5 | Influence of Electronic Knee Joints on Safety and Dynamic of Amputees - a Clinical-Biomechanical Study | Wühr , Juliane (DE) Klinik für Technische Orthopädie und Rehabilitation |
| 3 / 5 | Assessment of Temporal and Loading Symmetries of Transfemoral and Transtibial Amputees during Walking in Daily-living Conditions | Cutti , Andrea (IT) INAIL Centro Protesi |

The symmetry of the stance time and of the vertical force peak at loading response was assessed on transfemoral and transtibial amputees by means of baropodometric insoles. Significant differences between groups were only found for the stance time symmetry.

- | | | |
|-------|--|---|
| 4 / 5 | Effects of Prosthetic Foot Stiffness on Swing Duration Variability in Amputee Gait
<i>Effects of prosthetic foot stiffness on swing duration variability (SDV) are reported. Subjects walked on an adjustable slope treadmill using a purpose-built prosthetic foot that allowed for stiffness modulation. Low dorsiflexion stiffness generally produced low SDV and was perceived as most stable.</i> | Major, Matthew (GB) University of Salford |
| 5 / 5 | Safety of Transtibial Amputees When Walking on Stairs
<i>According to 3D gait analysis results, TTAs show reduced values in safety indicators in stair descent which possibly explains their increased risk of falling. The ankle adaptation feature by a new microprocessor controlled ankle seems to improve safety in this condition.</i> | Wolf, Sebastian (DE) Orthopädische Universitätsklinik Heidelberg |

53. [3673] Wednesday 2010/05/12 | 15:00 - 16:30 | Hall 4 | Session | Subtopic/Track: Orthotics

Orthotics - Spinal Deformities

Session Chair: **Würsching, Andreas (HR) | Kuca Zdravlja d. o. o.**

- | | | |
|-------|---|--|
| 1 / 7 | Early Night-Time-Bracing – an Alternative in Idiopathic Adolescent Scoliosis (IAS) Management
<i>As a result of physical and psychological stress we often find very weak compliance for traditional Scoliosis-Full-Time-Bracing in comparison to Night-Time-Bracing. The investigation shows that Early Night-Time-Bracing (16-25° COBB) can effectively stop IAS progression and prevent Full-Time-Bracing.</i> | Selle, Andreas (DE) Orthopädie- & Rehattechnik Dresden GmbH |
| 2 / 7 | A 24-Month Prospective Study to Monitor the Process of Progress in the Active Control of Torso Symmetry in AI-scoliosis during Brace and PT Treatment
<i>The systematic 3-dimensional mirroring of trunc asymmetry in conservative adolescent idiopathic scoliosis (AIS) treatment with modern custom-made derotation braces (Cheneau-type) in the case of defined thoracic curvatures – A 24 month prospective study of surface optometry and radiological feature</i> | Matussek, Jan (DE) Asklepios Klinikum Bad Abbach |
| 3 / 7 | New Morphologic Classification of Scoliotic Deformations Based on Torsion Deformation of Vertebral Column Elements
<i>This article is about new morphological classification of idiopathic scoliosis based on the analysis of each vertebra and an intervertebral disk of the deformed vertebral column. The given classification can be used for forming tactics of conservative treatment and orthotics.</i> | Gregory, Lein (RU) St.Petersburg Albrecht Rehabilitation Centre |
| 4 / 7 | Effectiveness of OMC Brace for Treatment of Idiopathic Scoliosis – Taiwan Experience
<i>We investigate the effect of Osaka Medical College (OMC) brace on 95 patients with idiopathic scoliosis in Taiwan. After a year follow up, we found that initial diagnosis of idiopathic scoliosis at younger age symbolizes poorer prognosis. In addition, more alternatives for scoliosis is recommended.</i> | Wong, Alice MK (TW) Chang Gung Memorial Hospital |
| 5 / 7 | Best Practice Standard of Brace in the Treatment of Scoliosis
<i>Different bracing concepts are used today for the treatment of scoliosis. The use of the „Chêneau light“ brace and the Gensingen brace as described as the latest CAD CAM technology leads to correction effects above average when compared to the correction effects of other braces described earlier.</i> | Weiss, Hans-Rudolf (DE) Praxis Dr. med. Weiß |
| 6 / 7 | Preliminary Estimation of Correctional Options and the Scale of Brace Pressure of Corrective Spinal Support Using Brace-scan Device
<i>This article is about brace-scan device, which was made by Albrecht center's specialists. This device is intended for testing of correctional possibilities of a Sheno brace or others corrective braces directly on the patient.</i> | Maxim, Gusev (RU) St.Petersburg Albrecht Rehabilitation Centre |
| 7 / 7 | Fibrematerials in Corset Construction
<i>The presentation gives an overview of characteristics and special features of new materials. Examples are shown, possible combinations between diagnosis and design are discussed and the when and where for appropriate</i> | Würsching, Andreas (HR) Kuca Zdravlja d. o. o. |

use are presented. Individual specific handling techniques are not discussed.

54. [3759] Wednesday 2010/05/12 | 15:00 - 16:30 | Hall 5 | SY Symposium | Subtopic/Track: Foot and Shoe

Diabetic Foot - Current Concepts

Session Chair: **Böni**, Thomas , Dr. med. (CH) | Uniklinik Balgrist

Session Chair: **Bowker**, John H. , MD (US) | Miller School of Medicine, University of Miami

- | | | |
|-------|---|---|
| 1 / 6 | Evaluation of the Diabetic Foot
<i>The diabetic foot demands repetitive, complex decision making. A concise, complete, and time-saving evaluation of the diabetic foot is essential for correct and appropriate decision making. Based on pathophysiological concepts the lecture will give an algorithmic overview of the non-invasive evaluation of the diabetic foot with special emphasis on biomechanical impairments.</i> | Böni , Thomas (CH) Uniklinik Balgrist |
| 2 / 6 | Diabetic Foot Ulcers: Prevention and Management
<i>The prevention of diabetic foot ulcers is based on the identification of patients with certain risk factors, the determination of their level of ulcer risk and the implementation of preventive measures, including focused education and provision of protective footwear.</i> | Bowker , John H. (US) Miller School of Medicine, University of Miami |
| 3 / 6 | Diabetic Foot Infections
<i>With proper wound care, prompt, appropriate surgery, focused antibiotic therapy and optimum control of metabolic disorders including hyperglycemia, ketosis and nutritional deficiencies, infection can be controlled and a functional foot salvaged in most cases.</i> | Bowker , John H. (US) Miller School of Medicine, University of Miami |
| 4 / 6 | The Charcot Foot | Wetz , Hans-Henning (DE) Klinik und Poliklinik für TO und Rehabilitation |
| 5 / 6 | Could Biomechanical Screening Prevent Charcot Feet?
<i>This paper outlines a hypothesis linking repetitive biomechanical strain in the functional joints of the foot to atrophic or hypertrophic deterioration. This hypothesis implies that biomechanical factors can allow identification of the foot at risk of Charcot deterioration to be recognised early.</i> | Munro , William (UK) Anatomical Concepts (UK) Ltd |
| 6 / 6 | Off-Loading for the Diabetic Foot
<i>Diabetic foot ulcers due to internal or external pressure zones cause major problems in the treatment of those patients. As a result of the following infections a higher number of amputations occur out of these problems. Therefore pressure release, pressure distribution in the treatment of ulcers or infections, even in the prevention of ulceration on the diabetic foot are of main importance. In the literature there are several techniques of pressure reduction described. International literature mainly deals with a treatment by total contact casting, there is evidence of effectiveness for this technique. Due to the fact that in German speaking countries there is traditionally a high reputation for orthopaedic shoe fitting and orthotic treatment there are different other approaches as for instance orthopaedic shoe fitting with insoles and rocker bottoms or orthotic treatment with pressure release orthosis. These techniques are discussed with a view on evidence in literature. In the presentation the different ad</i> | Greitemann , Bernhard (DE) Klinik Münsterland der Deutschen Rentenversicherung Westfalen |

55. [3746] Wednesday 2010/05/12 | 15:00 - 16:30 | MZF 1/2 | Session

Open Forum 3

Session Chair: **Mallya**, Hortensia (TZ) | Kilimanjaro Christian Medical Centre

- | | | |
|-------|---|---|
| 1 / 6 | Implementation of Local Manufacturing for the Legs M1 Knee in the Developing World
<i>The authors have successfully developed and implemented the LEGS M1 polycentric knee . The M1 is designed to be an inexpensive, low maintenance knee option which helps improve patient gait while meeting the manufacturing, rehabilitation and cultural constraints of various international sites.</i> | Ayers , Stephen (US) LeTourneau University |
|-------|---|---|

- | | | |
|-------|--|--|
| 2 / 6 | Implementation of a New Polycentric Knee Technology in the Developing World
<i>The LEGS M1 Knee is a low-cost, polycentric knee unit which can be locally manufactured in the developing world. The knee has been transferred to 10 clinics in 4 different countries. The strategy used for dissemination of the M1 Knee technology to clinics in the developing world is reviewed.</i> | Ayers, Stephen (US)
LeTourneau University |
| 3 / 6 | A Detailed Study on Disability in India with Respect to SAARC Nations: Guidelines for Prosthetics & Orthotics Services through CBR
<i>The aspect of generating measures in P&O management for rehabilitation of locomotor disabled in India has been affected by dearth of resources, trained personnel & weak linkage effects. As no country-specific model of CBR in P&O is available, we would present our own Indian model for rehabilitation.</i> | Datta, Tarit (IN) National Institute of the Orthopaedically Handicapped
Ghosh, Dipanwita (IN) Hiralal Mazumdar Memorial College for Women |
| 4 / 6 | The Challenge of Prosthetics and Orthotics (P&O) Services and Community Based Rehabilitation (CBR) in Rural Tanzania
<i>This presentation provides an overview about the challenges and structure of CBR services in Tanzania related to P&O services and the mid-level rehabilitation workers in the Maasai villages of the rural area in northern Tanzania.</i> | Mallya, Hortensia (TZ)
Kilimanjaro Christian Medical Centre |
| 5 / 6 | Implementation of Sustainable and Appropriate Quality P&O Services in Low and Middle Income Countries
<i>Illustrated by the successful cooperation between Johanniter International and the Orthopaedic Centre Theranova in Oradea, Romania, we would like to emphasise our principal guidelines for planning and implementing sustainable and appropriate quality P&O services in low and middle income countries.</i> | Baeriswyl, Marcel (DE)
Johanniter-Unfall-Hilfe |
| 6 / 6 | Case Study: Testing and Evaluating the Plastic Soda Bottle Transradial Socket Prosthesis
<i>The project involved constructing and testing a prototype of a new, low cost, trans-radial prosthetic technology based upon a innovative design by Dr. Yeongchi Wu and his staff at the Center for International Rehabilitation in Chicago, USA. Productive outcomes resulted and additional research, development and testing are recommended.</i> | Radocy, Robert (US) TRS Inc. |

56. Wednesday 2010/05/12 | 17:00 - 18:30 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

[3660]

Lower Limb Prosthetics - MRI Socket

Session Chair: **Klasen, Sebastian**, Dipl.Ing.(FH) (DE) | Fraunhofer IPA

Session Chair: **McHugh, Brendan**, Dr (UK) | University of Strathclyde

- | | | |
|-------|--|--|
| 1 / 6 | Lower Limb Prosthetics I: Constructing an Anatomically-Correct Structural Model of the Residual Limb
<i>Magnetic Resonance Imaging (MRI) data are obtained for the residual limb. In a postsegmentation step of the MRI data, three-dimensional solid models of major tissues of the residual limb are constructed and optimized for enhanced performance of numerical analysis and simulation.</i> | Tawfik, Samer A. (US) School of Aerospace Engineering |
| 2 / 6 | The Error in Measurement of Transtibial Amputation Stumps in Vivo: a Comparison of Four Different Methods
<i>In our study we investigated the reliability of 4 methods to measure stump volume on in-vivo stumps. Calculated repeatability coefficients (RCs) vary from 129 ml until 158 ml and are substantially higher compared to measurements that were performed on stump-models (1).</i> | Bolt, Arjen (NL) |
| 3 / 6 | An Investigation into Prosthetic CAD Use in the UK
<i>A survey was conducted to investigate the use of CAD in prosthetic manufacture in the UK. The survey employed a questionnaire designed to determine the methods used, frequency of use and the perceptions of clinical staff.</i> | McHugh, Brendan (UK) University of Strathclyde |
| 4 / 6 | Ultrasound Pre-study of the Kinematics of the Residual Tibia within a Trans-tibial Socket during Gait
<i>The motion of the residual-tibia within a trans-tibial socket was examined so far only by X-ray. In this pre-study now the motion of the residual tibia is to be described during gait using ultrasound data. The results of measurement raised here are to adapt a better socket fit individually.</i> | Klasen, Sebastian (DE) Fraunhofer IPA |

- | | | |
|-------|--|---|
| 5 / 6 | Fitting a TTm pop® and TFm pop® Liner to 211 Patients who had had Lower Limb Amputations. Results of a French Multicentre Study
<i>TTm pop® and TFm pop® liners provides stability of residual limb(amputation stump)in 86% of cases, even when cicatrisation is not yet complete.This technique requires appropriate training to use it correctly, as well as an understanding of the few contraindications that absolutely must be observed.</i> | Ehrler, Solange (FR) Centre de Réadaptation Fonctionnelle Clemenceau |
| 6 / 6 | First Statistical Evidences about the Differences between the Use of an Assisted or Passive Vacuum Socket System in Unhealed Stumps of TT Amputees
<i>This study compares two prosthetic systems to generate vacuum suspension in trans-tibial amputees with unhealed wounds on the stump in terms of trend to heal the stump lesions, time to prosthesis fitting and start of gait rehabilitation, and mobility.</i> | Traballesi, Marco (IT) Fondazione Santa Lucia |

57. [3649] Wednesday 2010/05/12 | 17:00 - 18:30 | Hall 2 | Symposium | Subtopic/Track: Back Trouble

Modern Treatment in Chronic Low Back Pain

Session Chair: **Greitemann, Bernhard**, Prof. Dr. med. Dipl. Oec. (DE) | Klinik Münsterland der Deutschen Rentenversicherung Westfalen

Session Chair: **Kladny, Bernd**, Prof. Dr. (DE) | m&i-Fachklinik Herzogenaurach

- | | | |
|-------|--|---|
| 1 / 5 | Chronic (Low) Back Pain: Risk Factors, Differential Diagnostics and Treatment Strategies | Casser, Hans-Raimund (DE) DRK Schmerz-Zentrum |
| 2 / 5 | Best-Practice-Recommendations for Objectives, Contents and Methods in the Rehabilitation of Chronic Low Back Pain - A Review of Current Literature | Hofmann, Jana (DE) Institut für Sportwissenschaft und Sport |
| 3 / 5 | Multidisciplinary Team Approach in Rehabilitation of Low Back Pain Patients | Greitemann, Bernhard (DE) Klinik Münsterland der Deutschen Rentenversicherung Westfalen |
| 4 / 5 | The Role of Orthotics in Chronic Low Back Pain
<i>The presentation at hand will therefore provide an overview of the topic in presenting a mix of descriptive spinal anatomy of the relevant spinal segments, the effects of spinal patho-mechanics and will outline corrective effects and limitations of biomechanic correction provided through the means of spinal orthoses.</i> | Kaphingst, Wieland (US) Bauerfeind Inc. USA and Bauerfeind AG |
| 5 / 5 | NN | Landauer, Franz (AT) Universitätsklinik für Orthopädie Paracelsus Medizinische Privatuniversität |

58. [3661] Wednesday 2010/05/12 | 17:00 - 18:30 | Hall 3 | Session | Subtopic/Track: Amputation/Prosthetics

Lower Limb Prosthetics - Hip


Session Chair: **Ludwigs, Eva**, Dipl.- Ing. (FH) (DE) | Otto Bock HealthCare GmbH

Session Chair: **Raggi, Michele**, B.Sc. (IT) | INAIL Centro Protesi

- | | | |
|-------|--|--|
| 1 / 4 | Biomechanical Aspects of the Helix3D Hip Joint System
<i>Kinematics and kinetics of 6 hip disarticulation patients with the Helix and 7E7 Hip Joints were analysed during gait. The results show that the Helix offers functional advantages: A more symmetrical gait pattern results from knee and hip characteristics which are significantly more physiological.</i> | Ludwigs, Eva (DE) Otto Bock HealthCare GmbH |
| 2 / 4 | Gait Analysis of Newly Developed Hip Disarticulation Prosthesis Walking - Rotation Axis of Hip Joint is on the Side of Socket
<i>We developed a new hip disarticulation prosthesis (HDP) of which hip joint is attached on the side of socket. In order to evaluate the new HDP, walking experiment was performed on two subjects. Gait was clearly improved especially in motion of pelvis and knee joint of prosthetic side.</i> | Naito, Hisashi (JP) Osaka University |
| 3 / 4 | Application of a Motion Analysis Protocol for the Assessment of High-tech Prosthetic Components: a Case Study Concerning the Otto-Bock Helix3D | Raggi, Michele (IT) INAIL Centro Protesi |

The aim of this work was to assess the effect of the novel Otto-Bock (D) Helix3D hip joint, on the gait of a hip-disarticulated amputee, compared to the standard Otto-Bock 7E7. Results showed multiple improvements of gait with the Helix3D, including a lower net metabolic cost and improved symmetry.

- | | | |
|-------|--|---|
| 4 / 4 | An Alignment Method for Hip Disarticulation and Hemipelvectomy Prostheses: A biomechanical Evaluation
<i>By determining the load balance point on the prosthetic side and the individual pelvic tilt, a verified, functional sagittal plane alignment of HD style prostheses is provided and only plantar flexion needs to be adapted during static alignment optimisation using the L.A.S.A.R. Posture.</i> | Bellmann, Malte (DE) Otto Bock HealthCare GmbH |
|-------|--|---|

59. Wednesday 2010/05/12 | 17:00 - 18:30 | Hall 5 |  Symposium | Subtopic/Track: Miscellaneous

[3583]

ICF (International Classification of Functioning, Disability and Health)

Session Chair: **Burger, Helena (SI) | Institute for Rehabilitation, Republic of Slovenia**

Session Chair: **Kohler, Friedbert, Associate Professor (AU) | Sydney South West Area Health Service**

Abstract: *This symposium will give an understanding of the ICF, its current and future clinical applicability and potential use.*

- | | | |
|-------|--|---|
| 1 / 5 | An Overview of the ICF
<i>The International Classification of Functioning, Disability and Health (ICF) is the basis for the conceptualization of the rehabilitation strategy and is of relevance for the curative, preventive and supportive health strategies. The ICF and the ICF-based conceptualization of the rehabilitation strategy are again the basis for the organization of human functioning and rehabilitation research in distinct scientific fields and the development of research capacity with respect to academic training programs, interdisciplinary university centres and national/international collaboration networks. Next to these conceptual developments, there is now a wide range of activities throughout the world of rehabilitation in the development of practice tools and applications of the ICF. First of all, the ICF can serve as reference for the comparison, selection and further development of existing measures of human functioning. The mapping of the world of measures can now rely on established linkage rules. The development of</i> | Rauch, Alexandra (CH) Schweizer Paraplegiker-Forschung |
| 2 / 5 | Development of ICF Core Sets for Persons Following Amputation | Kohler, Friedbert (AU) Sydney South West Area Health Service |
| 3 / 5 | The ICF in Prosthetics and Orthotics
<i>Limb amputation and other health conditions due to which persons need orthoses results in significant alterations of Body Functions and Body structures. These people also experience a wide range of activity limitations and participation restrictions. Their problems also depend on the environment.</i> | Burger, Helena (SI) Institute for Rehabilitation, Republic of Slovenia |
| 4 / 5 | Outcome Measures Based on the ICF | Rauch, Alexandra (CH) Schweizer Paraplegiker-Forschung |
| 5 / 5 | The Use of the ICF in the Non-industrialized World
<i>The International Classification of Functioning, Disability and Health (ICF) was approved by the World Health Organization in May 2001 and has been introduced into China for 8 years. To investigate the literature on use of the ICF in China, with regard to type of use, aims and implementation problems.</i> | Zhang, Xia (CN) |

60. Wednesday 2010/05/12 | 17:00 - 18:30 | Hall 4 | Session | Subtopic/Track: Foot and Shoe

[3678]

Foot & Shoe - Deformities

Session Chair: **Matussek, Jan, Dr. (DE) | Asklepios Klinikum Bad Abbach**

- | | | |
|-------|---|---|
| 1 / 6 | The Effect of Shoe Sole Thickness on In-shoe Plantar Pressure and Perceived Comfort for Patient with Metatarsalgia
<i>Metatarsalgia is a common problem causing forefoot pain. The sole thickness is an important characteristic of a shoe especially for the patient with metatarsalgia of biomechanical cause. The effect of shoe sole thickness on in-shoe plantar pressure and the perceived shoe comfort will be reported.</i> | Chan, Wilson Y K (HK) The Hong Kong Polytechnic University |
|-------|---|---|

- | | | |
|-------|---|--|
| 2 / 6 | Wedge High Heel Effect on Pressure in Forefoot
<i>We measured pressure in forefoot with wedge high heel using the F-scan system. Fifteen female students participated in the study, wearing shoes with no high heel, 2 cm and 5 cm wedge high heel. We found increase in pressures under the big toe on both sides and under the first metatarsal head.</i> | Štajer, Tomaž (SI) Institute for Rehabilitation, Republic of Slovenia |
| 3 / 6 | A Prospective Dynamic Pedobarographic Study of Indirect Kinematic Changes in the Roll-over Process of Valgus Foot Deformities Pre/Post Surgery in CP
<i>Pre and post-surgical evaluation of indirect kinematics with dynamic pedobarography helps to finetune surgical interventions in CP valgus feet.</i> | Matussek, Jan (DE) Asklepios Klinikum Bad Abbach |
| 4 / 6 | Rate of Development of Medial Longitudinal Arch for Obese Children with Flexible Flatfoot Treated with Insole
<i>A longitudinal study was launched to compare the rate of development of medial longitudinal arch (MLA) for obese children, with flexible flatfoot. Results showed that medial longitudinal arch has a slow rate of development for obese children, compared with normal control group.</i> | Law, Sam YC (HK) North District Hospital |
| 5 / 6 | Treatment of Internally Rotated Gait with the Pomarino® Torqheel Insoles
<i>Im PTZ wurde der herkömmliche zur Therapie eingesetzte Torqueel-Absatz durch „Rotations-Korrekturereinlagen nach Pomarino®“ ersetzt. Die Ergebnisse zu Therapieverlauf, -dauer und -trend zeigen, dass den IR-Gängern mit dem neuartigen Hilfsmittel eine optimale Behandlung zur Verfügung steht.</i> | Pomarino, David (DE) Physiotherapiezentrum |
| 6 / 6 | How Do We Analyse Ground Reaction Forces Patterns to Insole Prescription in Structural Leg Length Discrepancy
<i>This study aims were to compare the GRF patterns and gait asymmetry in three types of insole for structural LLD patients and compare with barefoot walking</i> | Yazdani, Meria (IR) RehamedAria |

61. Wednesday 2010/05/12 | 17:00 - 18:30 | MZF 1/2 | Session

[3747]

Open Forum 4

Session Chair: Franke, Jens (DE) | Bundesinnungsverband für Orthopädie-Technik


Session Chair: Yadav, Shiv L. , Dr (IN) | All India Institute of Medical Sciences

- | | | |
|-------|---|--|
| 1 / 7 | Transfemoral and Transtibial Prosthesis: A Study on the Feasibility of Design Modification in Rural Setting in India
<i>In this paper we are going to discuss the outcome of questionnaire based survey on rejection/acceptability of the present prosthetic design used by them and with suggested modification contributed in improvement of day to day activities and participation in real life situations i.e. work or leisure.</i> | Yadav, Shiv L. (IN) All India Institute of Medical Sciences |
| 2 / 7 | Users Satisfaction with Orthoses and Prostheses: An Iranian Experience
<i>For the first time, the evaluation of consumers satisfaction with orthoses / prostheses performed in Iran.</i> | Bahramian, Hooman (IR) Ortopede Faneer Andamkar Shargh |
| 3 / 7 | The Effect of Electrical Passive Pedal Cycling on the Joints' Range of Motion of Lower Limbs in Iranian Spinal Cord Injured Veterans
<i>The purpose of this clinical trial was to evaluate the effects of electrical passive cycling usage on lower limb's joints' range of motion amongst spinal cord injured veterans. Findings suggest that it can causes improving hip, knee and ankle range of motions according to the intensity of exercise.</i> | Shojaei, Hadi (IR) Janbazan medical and engineering research center |
| 4 / 7 | Impact of Wheelchair Service Provision for Wheelchair Users Living in Urban and Semi Urban Slum - A study
<i>People with a disability have the right to good quality assistive devices and equipment to assist them to increase the level of independence in daily life. In low income countries, professional wheelchair service provision is an area of concern due to many challenges. In this paper, the purpose o</i> | Ghosh, Ritu (IN) Mobility India |
| 5 / 7 | A Historical Review of P&O and allied P&O profession in Japan ; the Kobe Model
<i>The education of the P&O is spreading to all over the world to all over Japan. But there aren't enough discussions about allied P&O professions such like an orthopedic shoe technologist and a technical aid technologist.</i> | Uchida, Mitsuhiko (JP) Kobe College of Medical Welfare |

Kobe College has developed a P&O course in 1997, and then a course for orthopedic

- | | |
|---|---|
| <p>6 / 7 Limb Amputation and Limb Prosthetic Repair in West Siberia: A Population-based Study
<i>We performed an analysis of the number and outcomes of major amputations for vascular disease or complications of diabetes mellitus and of the outcomes of subsequent limb prosthetic repair in the population of one of the regions of West Siberia.</i></p> | <p>Vasilchenko, Elena (RU) Federal Centre for medical and social evaluation and rehabilitation of people with disabilities</p> |
| <p>7 / 7 Challenges Faced by Prosthetist in the Management of Trans Tibial Amputee, Prosthetist Perspective
<i>This study was conducted in PIPOS (Pakistan Institute of Prosthetic and Orthotic Sciences Peshawar Pakistan) in 2008.</i></p> | <p>Aziz, Ahmad (PK) PIPOS</p> |

62.
[3556]

Thursday 2010/05/13 | 08:00 - 09:15 | Hall 1 |  Basic Instructional Course | Subtopic/Track: Amputation/Prosthetics

Physical Activity, Exercise and Sports: the Bar is being Raised in Prosthetic Rehabilitation

Session Chair: **Sexton**, Sandra (UK) | University of Strathclyde

- | | |
|--|--|
| <p>1 / 5 Motivations and Barriers to Participation in Physical Activity and Exercise</p> | <p>Deans, Sarah (UK) University of Strathclyde</p> |
| <p>2 / 5 Enhancing Athletic Performance by Maximizing Prosthetic Capabilities</p> | <p>Gailey, Robert (US) University of Miami Miller School of Medicine</p> |
| <p>3 / 5 The Role of Fitness Training in Prosthetic Rehabilitation</p> | <p>Hirons, Carolyn (GB) Pace Rehabilitation Limited</p> |
| <p>4 / 5 Prosthetic Considerations for Improving Athletic Performance</p> | <p>Harsch, Peter (US) Naval Medical Centre</p> |
| <p>5 / 5 An overview of two United Kingdom Exercise Master Classes for Prosthesis Users</p> | <p>Deans, Sarah (UK) University of Strathclyde
Sexton, Sandra (UK) University of Strathclyde</p> |

63.
[3739]


Thursday 2010/05/13 | 08:00 - 09:15 | Hall 2 |  Basic Instructional Course | Subtopic/Track: Education

e-Learning Applications for Prosthetic and Orthotic Care

Session Chair: **Lemaire**, Edward (CA) | The Ottawa Hospital Rehabilitation Centre

Abstract: *This e-Learning instructional course will be provided by the ISPO International e-Learning Working Group and will cover information and examples for practical applications for three learning aspects: 1) e-Learning for Students and Continuing Education 2) Using Desktop Conferencing for Mentoring and Peer-to-Peer learning 3) Web resources for continuing education The participants will leave this course with an understanding of the currently available resources for e-Learning in the prosthetics and orthotics field, an expanded perception of how e-Learning could be used for continuous learning in their practice, data security considerations when using e-Learning in a peer-to-peer setting, and the future direction for e-Learning within ISPO. Participants will also become knowledgeable about the various contacts and institutions that can be approached for more advanced information on these topics.*

- | | |
|---|---|
| <p>1 / 3 e-Learning Resources and Opportunities in P&O Education
<i>This section of the Instructional Course will present current and future e-Learning resources and opportunities for course-based learning and new practitioner education. The focus will be on e-Learning used by education institutions for undergraduate students and the support of those currently in the field who require ongoing education at an ever-increasing level.</i></p> | <p>Blocka, Daniel (CA) International Society for Prosthetics & Orthotics
Wong, Man-Sang (HK) The Hong Kong Polytechnic University</p> |
| <p>2 / 3 Using Desktop Conferencing for Mentoring and Peer-to-Peer Learning
<i>This section will present methods for using accessible and low-cost multimedia communication technology for continuous learning. Topics will include available technologies for internet-based audio-visual-data communication, peer-to-peer learning applications, and information security considerations.</i></p> | <p>Lemaire, Edward (CA) The Ottawa Hospital Rehabilitation Centre
Schlierf, Christian (DE) Human Study e.V.</p> |
| <p>3 / 3 Web Resources for Continuing Education
<i>This section will present prosthetic and orthotic related learning opportunities and consideration for web-based learning. This includes the full range from information web sites to interactive web-based learning.</i></p> | <p>Pryor, Wesley (IN) Handicap International
Boone, David (US) OrthoCare Innovations</p> |

64. [3507] Thursday 2010/05/13 | 08:00 - 09:15 | Hall 3 |  Advanced Instructional Course | Subtopic/Track: Amputation/ Prosthetics

Partial Hand Prostheses – Functional Demands and Constructional Innovations

Session Chair: **Schäfer**, Michael (DE) | Pohlig GmbH

Abstract: Die prothetische Versorgung von partiellen Handamputationen konnte durch die Einführung moderner Schaftbettungstechniken und neuartiger Konstruktionswerkstoffe in den vergangenen Jahren erhebliche Fortschritte in der Akzeptanz und Funktionsverbesserung erzielen. Der folgende Advanced Instructional Course soll zunächst einen Überblick über moderne Versorgungsmethoden geben. Ferner sollen erstmals zwei unterschiedliche neuartige Partialhand-Prothesensysteme mit aktiver, myoelektrischer Steuerungsfunktion vorgestellt werden. Die Referenten sind auf diesem Versorgungsgebiet der Partialhand-Prothetik hoch spezialisiert und verfügen über einen großen Erfahrungsschatz in dieser anspruchsvollen Versorgungstechnik. Es sollen Vor- und Nachteile aller Prothesensysteme kritisch beleuchtet und in der anschließenden Diskussion hinterfragt werden.

1 / 4	Introduction and Overview <i>Through the use of modern materials, i. e. silicone(1), the quality of the stump embedding and the resulting options of a functional fitting have been significantly improved. The following lecture shall, besides an introducing overview, show the possibilities of applying and integrating new mechanical joint constructions as well as finger systems driven by an external power.</i>	Schäfer , Michael (DE) Pohlig GmbH
2 / 4	Use of Rapid Prototyping in Producing Partial Silicone Hand Prostheses <i>Today's technological procedures involved in the fabrication of prostheses following partial amputation of the hand require a lot of time and modelling by hand. Using the Rapid Prototyping technology enables the making of a mirror image of the healthy hand and reduces the time necessary to model a prosthesis.</i>	Maver , Tomaz (SI) University Rehabilitation Institute, Republic of Slovenia
3 / 4	Experiences with ProDigits <i>ProDigits by Touch Bionics is the world's first commercially available powered bionic finger solution for patients with missing fingers (partial hand). This presentation paper will address the experience garnered through over 35 patient fittings.</i>	Gill , Hugh (UK) Touch Bionics
4 / 4	Anatomical Socket Interface Fitting for Partial Hand Amputations	Lake , Chris (US) Advanced Arm Dynamics


65. [3478] Thursday 2010/05/13 | 08:00 - 09:15 | Hall 4 |  Advanced Instructional Course | Subtopic/Track: Orthotics

Orthotic Stance Control

Session Chair: **Nollet**, Frans , Prof. Dr. (NL) | Academic Medical Center University of Amsterdam

Session Chair: **Kaufman**, Kenton , Dr. (US) | Mayo Clinic

1 / 4	Stance Control Orthoses: Research Results	Kaufman , Kenton (US) Mayo Clinic
2 / 4	Biomechanical Principles and Functional Deficits	Campbell , James (US) Becker Orthopedic Company
3 / 4	Stance Control Orthoses: Clinical Applications	Michael , John (US) CPO Services, Inc.
4 / 4	Stance Control Better Than a Locked KAFO?	Nollet , Frans (NL) Academic Medical Center University of Amsterdam

66. [3173] Thursday 2010/05/13 | 08:00 - 09:15 | Hall 5 |  Advanced Instructional Course | Subtopic/Track: Back Trouble

Spinal Muscular Atrophy (SMA)


Session Chair: **Fujak**, Albert , Dr. med. (DE) | Orthopädische Universitätsklinik der Friedrich-Alexander-Universität Erlangen-Nürnberg

Session Chair: **Forst**, Raimund , Prof. Dr. (DE) | Orthopädische Universitätsklinik der FAU Erlangen-Nürnberg

Abstract: The spinal muscular atrophy (SMA) is a genetically and clinically heterogeneous group of hereditary diseases mostly with symmetrical weakness and atrophy of the skeletal muscles. Though up to now no causal treatment for SMA is available, their disease process and above all the quality of life of these patients can be decisively

improved by established medical procedures, specialist provision of orthoses and assistive devices. The fundamental orthopaedic problems for SMA patients are contractures in the lower and upper extremities and sitting instability caused by progressive scoliosis with increasing pelvic obliquity. The orthopaedic treatment includes conservative methods, e.g. physiotherapy, orthotic devices and aids as well as surgical spine stabilisation and correction of the contractures of the lower extremities. Very important are the early prophylaxis and treatment of the respiratory insufficiency by regularly respiratory therapy to learn breath and cough techniques and self-exercises as well as th

1 / 4	Introduction, Classification, Diagnosis and Therapy of SMA	Hirsch , Almut (DE) Sozialpädiatrisches Zentrum (SPZ), Kinder- und Jugendklinik, Universitätsklinik Erlangen
2 / 4	Orthopaedic Problems and Orthopaedic Treatment in SMA Patients	Fujak , Albert (DE) Orthopädische Universitätsklinik der Friedrich-Alexander-Universität Erlangen-Nürnberg
3 / 4	Orthoses and Orthopaedic Technical Devices in SMA	Fuchs , Markus (DE) Völk-Orthopädie
4 / 4	Treatment of Respiratory Insufficiency in SMA	Wollinsky , Kurt Hannes (DE) Orthopädische und Neurologische Klinik der Universität Ulm

67. Thursday 2010/05/13 | 09:30 - 10:00 | Hall 1 |  Keynote Speech

[3787]

A Review of Orthotic Management to Patients with Adolescent Idiopathic Scoliosis – Past, Present and Future

Keynote Speaker: **Wong**, Man-Sang , PhD (HK) | The Hong Kong Polytechnic University

Abstract: *Scoliosis is a three-dimensional spinal deformity usually with lateral curvature of the spine and vertebral rotation. Most cases are with unknown cause and found in adolescence, therefore, it is termed as adolescent idiopathic scoliosis (AIS). Generally, regular observation is suggested for mild cases and surgery will be considered for severe cases. For patients with moderate AIS, the conventional treatment method is to apply rigid spinal orthoses to patients during their puberty to mechanically support the spine and prevent further deterioration. A review of the orthotic management to AIS from the past interventions to the future possibilities will be discussed in the keynote speech.*

68. Thursday 2010/05/13 | 10:30 - 12:00 | Hall 1 |  Symposium | Subtopic/Track: Amputation/Prosthetics

[3614]


Osseointegration Technique - Surgical Procedures, Postoperative Management

Session Chair: **Branemark**, Rickard , MD PhD (SE) | Sahlgrenska University Hospital

Session Chair: **Wetz**, Hans-Henning , Prof. Dr. (DE) | Klinik und Poliklinik für TO und Rehabilitation

1 / 5	Development of Surgical Procedures and Postoperative Management of Transfemoral Amputees (TFA) with Osseointegration (OI) in Sweden <i>The development of TFA-OI procedures has been a stepwise introduction from custom-made design to standardized equipment, surgical technique and postoperative care and rehabilitation.</i>	Berlin , Örjan (SE) Sahlgrenska University Hospital
2 / 5	Endo-Exo-Prostheses - Improving Rehabilitation for Amputees - the Lübeck Approach <i>Endo-Exo-Prostheses are all about the improvement of gait following amputation upon an intramedullar, osseointegrated, percutaneous conducted implant as a hard point for the Exoprosthesis. The so called Endo-Exo-Femoral-Prosthesis (EEFP) is for above knee amputees (AKA), for below knee amputees (BKA) an Endo-Exo-Tibial-Prosthesis is available. It will be reported about 39 EEFP-patie</i>	Aschoff , Horst-Heinrich (DE) Klinik für Plastische, Hand- und Rekonstruktive Chirurgie
3 / 5	The Stanmore Approach	Blunn , Gordon (UK) University College London, Royal National Orthopaedic Hospital
4 / 5	The Stanmore Approach	Briggs , Tim (UK) Royal National Orthopaedic Hospital
5 / 5	Where Are the Limits - Surgical Approach and Case Reports from Sweden <i>When can bone anchored amputation prostheses be considered? This presentation will report on some cases illustrating possibilities and limitations.</i>	Branemark , Rickard (SE) Sahlgrenska University Hospital

69.
[3204]

Thursday 2010/05/13 | 10:30 - 12:00 | Hall 2 |  Symposium | Subtopic/Track: Children

Assistive Devices for Children with Cerebral Palsy - How to Get the Whole Picture?

Session Chair: Kraus de Camargo, Olaf , Dr. med. (CA) | McMaster University, McMaster Childrens Hospital, McMaster Child Health Research Institute

Abstract: Kinder mit einer infantilen Cerebralparese sind in der Hilfsmittelversorgung komplex. Es gilt dabei, anatomische und physiologische Gegebenheiten mit den Ansprüchen an kindgerechte Aktivitäten und Teilhabe zu verbinden. Dies erfordert eine gute interdisziplinäre Zusammenarbeit und häufig individuelle und kreative Lösungen. In diesem Symposium soll gezeigt werden, wie die ICF-CY (Version fuer Kinder und Jugendliche) genutzt werden kann, um die funktionale Gesundheit von Kindern mit einer Cerebralparese zu erfassen und daraus Empfehlungen fuer die Hilfsmittelversorgung abzuleiten.

1 / 4 **The Non Ambulant Child, Options in the Treatment with Wheelchair and Seat-support-orthoses**

According to international and national legal norms an individual right to participate in community life as well as to ensure personal mobility is accepted. CP-children, especially when they are non ambulant, are greatly aggrieved in this. It will be shown in which way concerned children benefit from mobility aids.

Stockmann, Norbert (DE) |
Bundesfachschule für Orthopädie-
Technik

2 / 4 **Surgical and Conservative Methods in the Treatment of Children with CP**

For the management of children with cerebral palsy (CP) a team is necessary since there are different treatment aspects during the development of the child. With age there are both operative and conservative treatment options. For the conservative treatment, orthoses, Botulinum-toxin and casts are used. The surgical options vary with the degree of involvement. In mild cases only isolated calf muscle lengthenings are needed whereas in more severe cases multi-level soft tissue procedures often including bony procedures are indicated. In every case an interdisciplinary postoperative management is required. The gross motor function classification scale (GMFCS) hereby serves as a reliable tool for treatment planning and control.

Braatz, Frank (DE) |
Orthopädische Universitätsklinik
Heidelberg

3 / 4 **The Model of the International Classification of Functioning, Disability and Health - Its Importance for Providing Assistive Devices**

This presentation will demonstrate how the framework of the ICF-CY allows to describe the functioning and the needs of children with cerebral palsy and how this can be used to communicate with the different stakeholders in order to provide the best fit between patients/family needs and the assistive devices that are chosen.

Kraus de Camargo, Olaf (CA) |
McMaster University, McMaster
Childrens Hospital, McMaster
Child Health Research Institute

4 / 4 **Orthotic Concepts in Children with CP: From Conventional up to Soft-Orthotics**

There are many appearances of Patients with Cerebral Palsy (CP). Therefore a wide bandwidth of orthosis is needed that fits to the different requirements. An overview of these concepts will be shown by taking the issues into account that have to be included into the design of the orthotic treatment.

Weichold, Claudia (DE) |
Orthopädische Uniklinik
Heidelberg

70.
[3662]

Thursday 2010/05/13 | 10:30 - 12:00 | Hall 3 | Session | Subtopic/Track: Amputation/Prosthetics

Lower Limb Prosthetics - Socket Technology

Session Chair: Günther, Michael , Dipl.-Ing. (FH) (DE) | Günther Bionics GmbH

1 / 6 **CIR TF Casting System for Making Transfemoral Sockets**

This paper presents a plaster-less casting system for forming of transfemoral sockets. With a polystyrene-beads-filled casting bag and adjustable vacuum pressure, one can rapidly form the negative mold for making positive sand model, minimal modification and vacuum forming the transfemoral socket.

Wu, Yeongchi (US) | Northwestern
University

2 / 6 **Gaitanalytical and Functional Analysis and Survey of Rigid and Flexible TF-Socket Systems**

To review the functionality of socket systems by means of gait analysis to verify patient experience with objective figures is scientifically virgin soil. The described study shows measurements that allow a comparison of different socket systems.

Schmidt, Arno (DE) | Otto Bock
HealthCare GmbH

- | | | |
|-------|--|--|
| 3 / 6 | The Milwaukee - Socket: Scientific Findings as the Foundation of an Improved General Trans-Femoral Socket Design Concept
<i>Experimental assessment of isometric hip moment in amputees, as well as biplanar fluoroscopy studies provided the basis for several conceptual modifications of current trans-femoral socket designs. The developing of the theoretical framework was followed by a first practical trial of the new socket.</i> | Günther, Michael (DE) Günther Bionics GmbH |
| 4 / 6 | Improved Technologies and Procedures for Custom Made Prosthesis Transfemoral Sockets
<i>INAIL Centro Protesi, as partner of European Project Custom-Fit, in order to improve transfemoral socket design and manufacturing, developed and tested with good results a productive process based on 3D modelling and RM manufacturing.</i> | Hamoui, Giovanni (IT) Centro Protesi INAIL |
| 5 / 6 | An Advanced Method for the Characterisation of the Biomechanical Properties of the Living Tissues of an Amputee's Residual Limb
<i>The P&O group of the University of Strathclyde, have developed a system which takes in account the external and internal geometry of a residual limb, the biomechanical properties of each tissue layer and the boundary conditions of the prosthesis to produce a functional prosthetic socket.</i> | Kapatos, Christos (UK) University of Strathclyde |
| 6 / 6 | Computer Aided Fabrication of a Carbon Fiber Prosthetic Limb Socket
<i>A prosthetic limb socket was fabricated using a process solely based on computer aided design/manufacturing. The socket was designed from MRI data and fabricated using automated milling and fiber braiding devices. It was tested on a trans-tibial amputee, exhibiting good fit and excellent strength.</i> | Kondor, Shayne (US) Georgia Institute of Technology |

71. Thursday 2010/05/13 | 10:30 - 12:00 | Hall 4 | Symposium | Subtopic/Track: Education
[3637]

Biomechanics in P&O Training: The Realities and Issues

Session Chair: **Blocka, Daniel (CA) | International Society for Prosthetics & Orthotics**

Session Chair: **Blumentritt, Siegmars, Prof. Dr. (DE) | Otto Bock HealthCare GmbH**

- | | | |
|-------|--|--|
| 1 / 4 | Introductory Presentation: The Importance of Addressing this Topic | Blocka, Daniel (CA) International Society for Prosthetics & Orthotics |
| 2 / 4 | The Views from the Educator & Prosthetic/Orthotic Practitioner | Ruder, Gordon (CA) George Brown College |
| 3 / 4 | Biomechanics in P&O Training: the Realities & Issues From the Perspective of Industrial Research
<i>The support and locomotion organs represent the largest organ system of the human organism. These organs fulfil primarily mechanical tasks such as posture and movement. Many people are in need of orthopaedic aids because the function of this system is limited.</i> | Blumentritt, Siegmars (DE) Otto Bock HealthCare GmbH |
| 4 / 4 | The Views from the Researcher
<i>The National Commission on Prosthetic and Orthotic Education (NCOPE) defines an entry-level prosthetist-orthotist as someone who has achieved entry-level competence through a combination of academic and clinical experience education; who upholds the clinical standards and values of the prosthetics-orthotics profession; and who is an effective consumer of research</i> | Fatone, Stefania (US) Northwestern University |

72. Thursday 2010/05/13 | 10:30 - 12:00 | Hall 5 | Session | Subtopic/Track: Orthotics
[3674]

Orthotics - AFO

Session Chair: **Muraru, Luiza (BE) | Central Research Laboratory for Biomedical and Rehabilitation Technology (MOBILAB)**

- | | | |
|-------|--|---|
| 1 / 7 | The Effect of Two Types of Ankle-Foot Orthosis on EMG Activity of Peroneus Longus Muscle in Athletes with Functional Ankle Instability
<i>The purpose of this study was to determine whether there was a difference in latency of the peroneus longus muscle using two types of ankle orthoses in response to sudden ankle inversion perturbation.</i> | Sohrab, Marjaneh (IR) Iran university of Medical Science |
| 2 / 7 | A Systematic Review to Determine Best Practice Reporting Guidelines for AFO Interventions in Studies Involving Children with CP | Ridgewell, Emily (AU) La Trobe University |


This review used a customised data extraction and quality checklist to evaluate the level and quality of detail reported about the AFO intervention, participants and testing protocol in AFO intervention studies. Best practice reporting guidelines were developed.

3 / 7	Quantification of the Path of the Center of Pressure (COP) after Application of an Ankle Brace during Daily Activities <i>On the basis of plantar pressure measurement the influence of an ankle brace on the path of the center of pressure (COP) was studied.</i>	Werner, Simone (DE) Orthopädieschuhtechnik Möller
4 / 7	Evaluation of Functional Parameters of Ankle Foot Orthoses for Different Materials and Design Characteristics <i>This study investigates the effect of different materials and different design characteristics on functional parameters of ankle foot orthosis (AFO). Preliminary results of finite element (FE) simulations are presented.</i>	Muraru, Luiza (BE) Central Research Laboratory for Biomedical and Rehabilitation Technology (MOBILAB)
5 / 7	Observations of Peroneal Functional Electrical Stimulation (FES) with CP Pediatric Population <i>1961 Liberson published the first study of FES. 2 computerized FES devices were introduced lately. Few researches have been published about the use of FES, less were published about FES in pediatrics. We will show examples of FES with CP children, report our observations and describe the potential</i>	Alexander, Michael (IL) stride Orthopedics Ltd.
6 / 7	The Effect of Ankle Foot Orthosis Stiffness in the Energy Cost of Walking: A Simulation Study <i>We used a computer simulation model to assess the influence of AFO stiffness on the energy cost of walking, and the amount of energy stored in the AFO. We found an optimal AFO stiffness, which was determined by the amount of energy stored and returned by the AFO, and by the timing of the energy return</i>	Bregman, Daan J.J. (NL) VU University Medical Center
7 / 7	A Follow-up Study of Simplified AFO by Minimum Invasive Surgery (MIS) to Spastic Foot Deformity for which Heavy Duty AFO had been Used <i>In order to adjust Japanese life style, we need simplified AFO for stroke patients with high degree of spastic foot deformity. Bare foot activities are also required in some moment. MIS were performed which didn't need post operative bed-rest. Successful results were obtained.</i>	Asayama, Ko (JP) Nagao Hospital

73. Thursday 2010/05/13 | 12:00 - 14:00 | Foyer Halls | Poster Session | Subtopic/Track: Orthotics

[3701] **Orthotics**

1 / 1	In-brace Corrections Using a New Brace Design in the Treatment of Thoracic Kyphosis <i>Our efforts to reduce brace material have resulted in a special bracing design. Aim of this presentation is to study possible in-brace corrections which can be achieved with this brace. An average in-brace correction of > 15° as achieved with this new kyphosis brace seems to be favourable.</i>	Weiss, Hans-Rudolf (DE) Praxis Dr. med. Weiß
-------	--	---

74. Thursday 2010/05/13 | 14:00 - 14:30 | Hall 1 |  Keynote Speech

[3788]

Rehabilitation: the Key to Ability ...

Keynote Speaker: **Geertzen, Jan**, Prof. Dr. (NL) | University Medical Center Groningen

Abstract: *In the Netherlands the incidence of major lower limb amputation is about 19 per 100.000 inhabitants. Every day clinicians such as surgeons, rehabilitation doctors, prosthetists, physical therapists, psychologists and other members of the multidisciplinary rehabilitation teams, who are involved in the care of amputee patients, have to make choices in the treatment of their amputee patients. There are in the world very few clinical guidelines in the field of amputation and (prescribing) prostheses which can help the clinician. However, none of these are complete Evidence Based guidelines. One or two are (partially) evidence based but only for one profession or for a small area in this field. Evidence based practice is a hot topic in the last decade. Evidence based practice is the conscious and systematic use of the best available research evidence in making decisions about the care of individual patients. It is not a mandate for daily practise but it can assist the clinician in the decision making process ab*

75. Thursday 2010/05/13 | 15:00 - 16:30 | MZF 1/2 | Session

[3833]

Open Forum 5

Session Chair: Heim, Sepp (DE)

1 / 6	The Rehabilitation of a Chinese Hemicorporectomy Amputee after Pelvic Trauma	Yang, Ping (CN) China Rehabilitation Research Center Xuejun, Cao (CN) Tian, Gang (CN)
2 / 6	Alternative of Upper Limb Prosthesis	Kajunjumele, Tufwane Samuel (TZ)
3 / 6	An Alternative Method for Fabricating Trans-Tibial Sockets through the Use of Socket Cones	Bireda, Girma (ET)
4 / 6	Quality of Life of Wheelchair Users in Moshi	Ludada, Ncedo (ZA)
5 / 6	Sand Casting an Alternative Method for Fabricating Trans-Tribal Sockets	Mwaijande, Violet T. (TZ)
6 / 6	Effect of Lateral Wedged Insole on Knee Mechanics	Huang, Meng (HK) The Hong Kong Polytechnic University

76. Thursday 2010/05/13 | 15:00 - 16:30 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

[3663]

Lower Limb Prosthetics - Socket

Session Chair: Babbar, Ajay (IN) | All India Institute of Medical Sciences, Ansari Nagar, New Dehli

1 / 8	Anatomical Socket vs. Ischial Containment Socket: First Results in an Intraindividual Comparison Under Clinical, Biomechanical and Prosthetic Aspects <i>In a prospective study patients after transfemoral amputation are provisioned with an ischial containment socket and with an anatomical or ramus containment socket. The two provisions are compared intraindividually from clinical, biomechanical and prosthetic aspects.</i>	Linkemeyer, Ludger (DE) Klinik und Poliklinik für Technische Orthopädie und Rehabilitation
2 / 8	Lower Limb Prosthetics II: Analysis and Design Considerations of a Prosthetic Socket <i>A three-dimensional solid model of major tissue of the residual limb is developed from MRI data. To conduct further analysis and simulations, solid models of major tissues are to be assigned respective material models and specific interaction properties in Abaqus Finite Element software.</i>	Tawfik, Samer A. (US) School of Aerospace Engineering
3 / 8	Skin Problems of the Stump in Lower Limb Amputees; Influence on Vocation and/or Hobbies <i>Influence of skin problems on vocation and/or hobbies was assessed with a questionnaire (giving a sum score, range 0-27). There were 805 participants (507 had skin problems). The mean sum score was 5.5 (SD=4.1). The sum score significantly correlated with the number of complaints ($r = .483, p = .01$).</i>	Meulenbelt, Henk (NL) University Medical Center Groningen, University of Groningen
4 / 8	Prosthetic Limb Sockets: Replacement of Acrylic Resins, Carbon and Glass Fibres with Vegetable based Materials <i>Manufacturing of prosthetic limbs sockets produces irritant gases and dusts. We are working towards developing a safer composite material derived from plant based resins with a view to subsequent production and ISO testing.</i>	Campbell, Andrew (UK) University of Strathclyde
5 / 8	Study of Residual Limb/Prosthetic Socket Compliance in Transtibial Amputees <i>This project investigates the effect of prosthetic gel liner thickness on compliance at the residual limb-prosthetic socket interface, pressure distribution on the residual limb, and selected gait parameters related to shock absorption.</i>	Boutwell, Erin (US) Northwestern University Prosthetics Research Laboratory and Rehabilitation Engineering Research Program
6 / 8	Observed Socket Forces During Running <i>With recent developments in technology that provide the ability to observe forces placed on the residual limb, the investigation of how high impact activities will effect these forces becomes possible. Using running as experimental condition and walking as a baseline we collected force data sets.</i>	Martin, Jay (US) Orthocare Innovations-Engineering
7 / 8	An Introduction to Methods used for Assessing the Socket Fit in Above Knee, #Below Knee and Knee Disarticulation Prostheses <i>This article is aimed to provide a summarized understanding of the methods #used to evaluate the socket fit in lower limb prostheses for prosthetists or #specialists and includes a brief introduction, accuracy, pros and cons and #limitations to each method.#</i>	Fallahian, Nader (IR) University of Social Welfare and Rehabilitation Sciences

- 8 / 8 **A Comparative Study on Transtibial Prosthesis between Sand Casting Technique & Normal Casting Methods** Babbar, Ajay (IN) | All India Institute of Medical Sciences, Ansari Nagar, New Dehli
The sand casting system uses the dilatency phenomenon to its best use by fabricating the socket with some material which can be reutilized and the socket/liner too in more accurate,quicker and cost effective way.The time reducing factor is important for a developing country with large no of amputees

77.
[3615]

Thursday 2010/05/13 | 15:00 - 16:30 | Hall 2 | Symposium | Subtopic/Track: Amputation/Prosthetics

Osseointegration Technique - Rehabilitation, Long-Term Results, Complication Management

Session Chair: Greitemann, Bernhard , Prof. Dr. med. Dipl. Oec. (DE) | Klinik Münsterland der Deutschen Rentenversicherung Westfalen

Session Chair: Hagberg, Kerstin , PhD (SE) | Sahlgrenska University Hospital

- 1 / 5 **OPRA Rehabilitation Protocol and Outcome of Transfemoral Osseointegration in Sweden** Hagberg, Kerstin (SE) | Sahlgrenska University Hospital
Patients treated with OI-prostheses report significantly increased amount of prosthetic use. At 2-years follow-up 93% used the OI-prosthesis.
- 2 / 5 **Rehabilitation and Outcome of Upper Extremity with Bone Anchored Prostheses in Sweden** Winterberger, Kerstin Caine (SE) | Sahlgrenska University Hospital
Twenty years of experience of bone anchored upper-limb prosthesis indicate improved functionality due to the increased motion in the shoulder and elbow joints for short transhumeral and transradial level and improved gripfunction for thumb level. Patients state better quality of life and increased daily use of prosthetic device compaired with previous conventional prostheses. For thumb amputation there is no good prosthetic alternative.
- 3 / 5 **Rehabilitation and Outcome of Endo-Exo-Femurprostheses in Lübeck** Hoffmeister, Thomas (DE) | Sana Kliniken Lübeck GmbH
Since 1999 40 patients in Lübeck have been treated with EEFP. The results of a retrospective study including 20 patients using the EEFP for one year or longer show a significantly increased mobility level and quality of life as well as less problems in everyday use.
- 4 / 5 **Complications and Problem Solving Including Studies in Lübeck** Clausen, Astrid (DE) | Unfallchirurgie SANA Kliniken Lübeck GmbH
Complications and number of remedial treatment could be reduced by changing the prosthesis design.
- 5 / 5 **Dealing with Complications and Long Term Results** Branemark, Rickard (SE) | Sahlgrenska University Hospital
This presentation will report on how to deal with complications when using bone anchored amputation prostheses as well as report on the long term results from the experience with this treatment since 1990

78.
[3772]

Thursday 2010/05/13 | 15:00 - 16:30 | Hall 3 | Symposium | Subtopic/Track: Education

Life Long Learning in the OT Business, Needs, Musts and Ways to Improve

Session Chair: Blocka, Daniel (CA) | International Society for Prosthetics & Orthotics

Abstract: *Idea of this symposium is to discuss what has to be done to ensure a continuous life long learning of practitioners and technicians to be able to provide best treatment of customers with the right products. What can we do to make continuous learning attractive? Which are the right methods? Are there differences between emerging and developed countries?*

- 1 / 5 **The Need of (Further) Education And the Way of Otto Bock. Education as Part of the Company Business Strategy** Näder, Hans-Georg (DE) | Otto Bock HealthCare GmbH
- 2 / 5 **New Ways of Training Development and Train the Trainer Approaches** Hehn, Roland (DE) | Otto Bock HealthCare GmbH
- 3 / 5 **ISPO Level 2 Exam Preparation, Example Germany** Becker, Karl (DE) | Otto Bock HealthCare GmbH
- 4 / 5 **The Development of a Public Private Partnership in Education: an ISPO perspective** Blocka, Daniel (CA) | International Society for Prosthetics & Orthotics
The importance of collaboration within the field of Prosthetics and Orthotics is critical for the long term development of the field and to ensure that services for those we serve is at a high level in terms of quality and standards. Due to the ever changing and evolving nature of our field and

demands on practitioners, it is critical that there is a focus around the importance of education and "life long learning" for professionals. In turn, it follows that we must collectively work together to develop collaborative partnerships in education as a means to support this objective.


- | | | |
|-------|--|--|
| 5 / 5 | New Study Course "Orthobionic" at PFH Private University of Applied Sciences Goettingen | Albe, Frank (DE) Private Fachhochschule Göttingen
Blumentritt, Siegmar (DE) Otto Bock HealthCare GmbH |
|-------|--|--|

79. Thursday 2010/05/13 | 15:00 - 16:30 | Hall 4 | Session | Subtopic/Track: Foot and Shoe
[3680]

Foot & Shoe - Sports

Session Chair: **Peikenkamp, Klaus**, Prof. Dr. (DE) | Fachhochschule Münster

- | | | |
|-------|--|---|
| 1 / 6 | Influence of Custom-Moulded Footorthoses (NFO) with Neuromuscular Operating Elements on Muscle Activity – a Randomized Control Study
<i>NFO are controversially discussed and still not evaluated. In contrast to recent studies we are interested in muscular activation. Based on the detected effects, a better understanding and an individual treatment of NFO should be resulting in increasing benefit for patients.</i> | Stief, Thomas (DE) FH-Muenster |
| 2 / 6 | The Influence of Different Sports Shoes on the Pronation and Pressure Distribution under the Foot
<i>This project evaluates the influence of shoe type on the unroll of the foot by measuring kinematics and the pressure distribution under the foot during barefoot running and wearing 5 different types of sports shoes.</i> | Vertommen, Helga (BE) K.H. Kempen University College |
| 3 / 6 | Results of an Evidence-based Orthotic Supply System for Reducing Pain Caused by Chronic Overuse Injuries of Athletes
<i>A successful and long-ranging reduction of chronic overuse injuries, can be guaranteed by the evidence-based orthotic supply system of "movecontrol" which is predicated on the prospective studies of Dr. phil. Heiner Baur & Prof. Dr. med. Frank Meyer (University of Potsdam, Center of sports medicine.</i> | Lang, Sarah (DE) IETEC Akademie |
| 4 / 6 | Mechanical and Biomechanical Comparison of a Bonded and a Vulcanized Insole for Running Shoes
<i>A multifactor comparison between a bonded and vulcanized insole for jogging was performed in this case study. After using 470 km the vulcanized insole shows (i) a reduced asymmetry in mean pressure, (ii) no reduced thickness and (iii) a lower density compared to the bonded version in the heel area.</i> | Peikenkamp, Klaus (DE) Fachhochschule Münster |
| 5 / 6 | Changes in Ground Reaction Force and Pressure Distribution during the First Four Weeks of Wearing MBT-Shoes
<i>In load response the MBT-shoe causes pressure shifting from the heel to the midfoot, it hampers forward motion and prevents damping of plantarflexion. This increases impulse, forcerate und force maximum, respectively. The curved sole decreases the pressure in the forefoot area.</i> | Müller, Stephan (DE) FH-Münster |
| 6 / 6 | Optimized Production and Selection of Orthopaedic and Sports Footwear with a novel „multi-sensorial“ 3D Foot Scanner
<i>A new low-cost photogrammetric 3D foot scanner integrates a sole pressure map scanner to produce in one run a 3D model combining registered (aligned) geometric and pressure data of the patient foot. This allows for precise and fast production of customized shoes including a personalized foot-bed.</i> | Massen, Robert (DE) corpus.e AG |

80. Thursday 2010/05/13 | 15:00 - 16:30 | Hall 5 |  Symposium | Subtopic/Track: Rehabilitation
[3696]

Innovative Aids in Rehabilitation and for the Disabled

Session Chair: **Kraft, Marc**, Prof. Dr.- Ing. (DE) | Technische Universität Berlin

- | | | |
|-------|---|--|
| 1 / 6 | Development of an Innovative Balance Prosthesis
<i>Balance prostheses are neurofeedback systems to support the maintenance of balance. The present project was aimed at developing a vibrotactile device which helps patients with a vestibular disorder and elderly which are prone to fall.</i> | Ernst, Arneborg (DE) Unfallkrankenhaus Berlin |
|-------|---|--|

2 / 6	Control Method for End Effector Based Reha Robotic in Combination with Electrical Stimulation in Gait Therapy after Stroke	Schmidt, Henning (DE) Fraunhofer-Institut für Produktionsanlagen und Konstruktionstechnik (IPK)
3 / 6	Compact Assistive Motion Therapy Devices with Rotary Soft Fluidic Actuators <i>On the market existing patient-cooperative devices for motion therapy and rehabilitation are very expensive and designed for clinical use only. Compact, low-cost and light-weight assistive devices, fit also for ambulant use, can be realized using novel soft pneumatic actuators of direct rotary type.</i>	Ivlev, Oleg (DE) FWBI Friedrich-Wilhelm-Bessel-Institut Forschungsgesellschaft mbH
4 / 6	Estimating Risk Situations in Daily Living of Amputees with Bone Anchored Exoprostheses <i>We describe theoretical and biomechanical analysis of risk situations in the daily life of amputees. Our aim is to provide an opportunity to develop risk reducing mechanisms for amputees with bone anchored Exoprostheses, with focus on fall situations.</i>	Bunke, Sebastian (DE) Technische Universität Berlin
5 / 6	Hybrid Upper Limb Orthosis <i>The project aims at the development of a portable system for the upper extremity, that combines joint stabilisation, external power from fluidic actuators with inherent compliance, FES and a natural control system that allows the tetra-plegic user to regain independence.</i>	Pylatiuk, Christian (DE) Karlsruher Institut für Technologie
6 / 6	TExoPro - Antimicrobial Surface Coatings for Permanent Transcutaneous Passage in the Concept of Endo-Exo-Limb-Prosthesis <i>The clinical implementation of bone anchored transcutaneous limb prosthesis is still limited due to infections at the side of the percutaneous passage. Therefore we have designed antimicrobial, but biocompatible polymere surface coatings. First results of in vitro and in vivo experiments are presented.</i>	Calließ, Tilman (DE) Medizinischen Hochschule Hannover

81. Thursday 2010/05/13 | 17:00 - 18:30 | MZF 1/2 | Session

[3839]

Open Forum 6

Session Chair: **Heim, Sepp (DE)**

1 / 5	Load Distribution Features and Association between Primary Cognitive Ability Level and Balance Function in Post Stroke Patient	Li, Jibin (CN) Sun Yat-sen University
2 / 5	Study on Orthosis for Patients with Large Femoral Bone Defect and Leg Length Discrepancy	Yao, Shensi (CN) China Rehabilitation Research Center
3 / 5	Comparison of Plantar Pressure between Weightlifters with Flatfeet and Normal Feet	Feng, Beibei (CN) The Hong Kong Polytechnic University
4 / 5	Ischial Containment Negative Cast Taking System - Socket Abarca-UDB	Abarca, Gilberto (SV) Don Bosco University
5 / 5	Sudanpro is an Alternative High Tech BK Prosthesis to the High Priced Ones	Ismail, Mohammad (SD) Tawsol Al Amal Charity Organization for the Treatment and Care of Wounded and Disabled

82. Thursday 2010/05/13 | 17:00 - 18:30 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

[3664]

Lower Limb Prosthetics - Functional Knee Components 3

Session Chair: **Pusch, Martin**, Dipl.-Ing. (DE) | Otto Bock HealthCare GmbH

1 / 5	Microprocessor Controlled Prosthetic Knee Joints: Designs and Performances <i>The linear hydraulic system of the C-Leg in combination with the control algorithm provides functional advantages in many everyday situations. Compared to other knee components, it offers the user reliable and predictable function during challenging motion patterns and in safety-critical situations.</i>	Bellmann, Malte (DE) Otto Bock HealthCare GmbH
2 / 5	Clinical Evaluation of the Second Generation Microprocessor Controlled Prosthetic Knee with Artificial Intelligence	Johansson, Sven (SE) Össur Nordic AB

This study investigated amputees subjective experiences of the second generation of a user-adaptive micro processor controlled knee. This was evaluated using a questionnaire with Likert designed questions. The results indicate that the use of microprocessors enhances the users performance.

- | | | |
|-------|---|--|
| 3 / 5 | Novel Safety Concepts for Microprocessor Controlled Knees
<i>Microprocessor controlled knees shut down in cases of malfunction, increasing the risk for the user. Intelligent concepts can be used to maintain electronic support in these cases, which enables the user to safely use the device to "drive to the garage". Trials confirmed the ideas developed.</i> | Kampas, Philipp (AT) Otto Bock Healthcare Products GmbH |
| 4 / 5 | Who Framed Gravity? A Novel Microprocessor Controlled Knee Supports Alternating Stair Ascent
<i>Alternating stair ascent as a TF amputee without the use of external power is described. The technical, cosmetic and sound limb relief aspects of the solution are explained. The residual limb and socket conditions essential to achieve the technical solution are discussed.</i> | Pusch, Martin (DE) Otto Bock HealthCare GmbH |
| 5 / 5 | Smart Mobility - a New Microprocessor Controlled Knee Specifically Supports Activities of Daily Living
<i>The potential to extend the range of activities of daily living supported by microprocessor controlled knees has been evaluated. A prosthesis has been developed that automatically detects and supports activities beyond the basic support for walking, standing and sitting.</i> | Kampas, Philipp (AT) Otto Bock Healthcare Products GmbH |

83. Thursday 2010/05/13 | 17:00 - 18:30 | Hall 2 | Session | Subtopic/Track: Amputation/Prosthetics

[3665]

Lower Limb Prosthetics - Biomechanics 1

- | | | |
|-------|--|---|
| 1 / 7 | Hip Moment after Trans-femoral Amputation - Comparison of Isometric and Auxotonic Hip Moment in Amputees and Normals
<i>The presented results allow a good assessment of muscle changes associated with an amputation its late effects. The comparison of isometric and auxotonic measurements shows which hip moments occur during gait, and which isometric maximums are possible.</i> | Günther, Michael (DE) Günther Bionics GmbH |
| 2 / 7 | Comparison of Maximum Isometric Hip and Knee Joint Moments in Trans-tibial and Trans-Femoral Amputees with Moments During Gait
<i>Maximum isometric moments of transtibial (TT) and transfemoral (TF) amputees were tested at the residual limb hip and knee. Compared to controls, TF showed hip strength deficits in all motion directions while TT had knee and hip strength deficits in all directions but in hip adduction and extension.</i> | Heitzmann, Daniel (DE) Orthopädische Universitätsklinik Heidelberg |
| 3 / 7 | Increased Walking Habits and Decreased Energy Cost with Osseointegrated Transfemoral Prostheses – Prospective Results from the OPRA Study
<i>This prospective study on 20 patients treated with osseointegrated transfemoral prostheses show decreased energy cost and increased walking habits at 2-years follow-up as compared to the preoperative situation when using conventional socket prostheses.</i> | Hagberg, Kerstin (SE) Sahlgrenska University Hospital |
| 4 / 7 | Instrumented Motion Analysis and Trans-tibial Prosthetics: a Systematic Review
<i>A systematic review was conducted to critically evaluate methods used during three dimensional motion analysis of trans-tibial amputees. Presented is a critical review of the level of evidence, quality of research design, and summary of dependent and independent variables utilized by researchers.</i> | Rusaw, David (SE) Jönköping University - School of Health Sciences |
| 5 / 7 | Stability Parameters: Intact and Prosthetic Limbs
<i>Plantar pressure data were collected while unilateral transtibial prosthesis users performed six walking tasks. Six dynamic stability parameters were extracted for each limb. The intact limb compensated for instability, enhancing stability during stance-phase on the prosthetic side.</i> | Kendell, Cynthia (CA) The Ottawa Hospital Rehabilitation Center |
| 6 / 7 | Knee Kinematics Measurement on Above-knee Amputees during Gait in Real-life Environment using Inertial and Magnetic Measurement Units
<i>Evaluation of the accuracy of Inertial and Magnetic Measurement Units when measuring prosthetic knee kinematics was presented. Furthermore, a new kinematic coupling method to improve the accuracy and to correctly represent the kinematics of a C-Leg prosthetic knee was tested.</i> | Raggi, Michele (IT) INAIL Centro Protesi |

- 7 / 7 **CAA - Computer Aided Alignment: A Novel Method of Electronical Measuring for Improved Leg Prosthesis Alignment Based on Objective Criteria** Seyr, Martin (AT) | Otto Bock Healthcare Products GmbH

A method has been developed to give component dependent bench alignment recommendations on a PC screen. For this, sensors in a knee prosthesis compute components and position of the static ground reaction force relative to the prosthesis. This method allows objective alignment without a gait-lab.

84. Thursday 2010/05/13 | 17:00 - 18:30 | Hall 3 | Symposium | Subtopic/Track: Children

[3813]

Comprehensive Overview of Proximal Femoral Focal Deficiency (PFFD)

Session Chair: **Crandall, Robin**, MD (US) | Shriners Hospital for Children, Twin Cities

Abstract: *Proximal femoral focal deficiency is a rare disorder but commonly seen in pediatric limb deficiency centers. Decision making for this problem is complex and multifactorial. The purpose of this symposium is to present a comprehensive look at this malady. This seminar will cover diagnosis, classification, conservative treatment, operative treatment both complex and simple, long-term follow-up, bilateral cases, genetics and complication of treatment. An in-depth discussion of appropriate femoral length, rotationplasty, and prosthetic fitting will be emphasized. A panel discussion will follow with audience participation encouraged.*

- 1 / 4 **Femoral Deficiency Syndromes (PFFD): A Comprehensive Review of Classification Systems and Treatment Options** Crandall, Robin (US) | Shriners Hospital for Children, Twin Cities
Femoral deficiency syndromes are rare anomalies often referred to as proximal femoral focal deficiency (PFFD). They are frequently seen in busy pediatric centers and often create the most difficult decision making problems.
- 2 / 4 **PFFD - Surgical Treatment** Krajbich, Ivan (US) | Shriners Hospital for Children
- 3 / 4 **Fusing the Knee in Children with Severe Femoral Deficiency (PFFD): Getting the Appropriate Stump Length** Watts, Hugh (US) | Shriners Hospital for Children
- 4 / 4 **Rotation Plasty Prosthetics - A prosthetist's Perspective** Banziger, Eugene (CA)

85. Thursday 2010/05/13 | 17:00 - 18:30 | Hall 4 | Session | Subtopic/Track: Miscellaneous

[3683]

Open Topics 2

Session Chair: **Gibeault, Amanda** (CA) | Cetco Capital (OrtoPed)

- 1 / 7 **Stimulation System for the Influencing of the Posture – A Case Study** Roßdeutscher, Wolfram (DE) | TU Berlin
For a woman with hemiparesis a stimulation system for the influencing of posture and gait has been developed. The system stimulates in a way that the deviation to horizontal position of shoulders can be perceived and the disabled person is able to correct this independently.
- 2 / 7 **Device for Calibration of Sensors for Prosthetic Socket Interface Pressure Measurement** Bryant, Tim (CA) | Queens University
A new apparatus was designed for the calibration of thin film socket pressure sensors based on an inflatable bladder replicating the geometry of a representative transtibial residual limb. Average pressure measurement errors of 15-20% were demonstrated using two different calibration protocols.
- 3 / 7 **A Gap in Disability Studies Writing: Analyzing References to the Prosthetics and Orthotics Professions** Gibeault, Amanda (CA) | Cetco Capital (OrtoPed)
This study analyzes the limited references to the prosthetics and orthotics professions in disability studies literature, proposes reasons for this, and relates this to the prosthetics and orthotics professions.
- 4 / 7 **Incidents with Medical Devices for Massage and for Physical Exercises** Behmann, Ilka (DE) | Federal Institute for Drugs and Medical Devices (BfArM)
The Federal Institute for Drugs and Medical Devices (BfArM) is Germany's Competent Authority for assessing incidents with medical devices. BfArM presents a survey about incidents with products for massage and physical exercise: Treatment-tables, units for physical exercise and for mobilisation.
- 5 / 7 **Issues in Repairs of Powered Wheelchairs and PAPAws (Power-Activated-Power-Assisted Wheelchairs)** Behzadi, Ganjali (IR) | JMERC
A suitable wheelchair can be a vital means of mobility. A better understanding of the types of wheelchair repairs positively affect wheelchair use. This

study was undertaken to demonstrate the differences of failures between PAPAWS and powered wheelchairs.

6 / 7	Storage Systems as an Alternative Fixed Position - Away from the Plaster Cast <i>The standard of the postoperative procedure after oseotomy is a uncomfortable plaster cast. We were looking for a comfortable stabile system, what gives us the possibility to unit the advantage of the stability of a plaster cast and the flexibility of a specific physiotherapy.</i>	Raabe, Jens (DE) Behandlungszentrum Aschau
7 / 7	Issues in Repairs of Manual Wheelchairs <i>A better understand-ing of the types of wheelchair repairs positively affect wheelchair use. Many of the failures are performable by instructing user and taking of instructed bicycle menders. This study was undertaken to demonstrate the differences of failures in manual wheelchairs.</i>	Vahidian, Mohammad Reza (IR) JMERC

86. [3948] Thursday 2010/05/13 | 17:00 - 18:30 | Hall 5 | Symposium | Subtopic/Track: Rehabilitation

Wheelchair Provision in Less Resourced Settings

Session Chair: **Horvath, Rob (US) | USAID**

1 / 3	Wheelchair Guidelines and Developments	Khasnabis, Chapal (CH) World Health Organization
2 / 3	Impact of Wheelchair Guidelines	Constantine, David (GB) Motivation
3 / 3	Worldmade - A New Approach to Wheelchair Provision	Rushman, Chris (GB) Motivation Charitable Trust UK

87. [3609] Friday 2010/05/14 | 08:00 - 09:15 | Hall 1 | Basic Instructional Course | Subtopic/Track: Amputation/Prosthetics

Disarticulation Prosthetics

Session Chair: **Murray, Kevin , Dr. (UK) | University of Strathclyde**

1 / 3	Ankle Disarticulation	Murray, Kevin (UK) University of Strathclyde
2 / 3	Hip Disarticulation	Bellmann, Malte (DE) Otto Bock HealthCare GmbH
3 / 3	Knee Disarticulation	Jarasch, Rolf (DE) Otto Bock Competence Centre

88. [3604] Friday 2010/05/14 | 08:00 - 09:15 | Hall 2 | Basic Instructional Course | Subtopic/Track: Rehabilitation

Rehabilitation of Amputees II

Session Chair: **Greitemann, Bernhard , Prof. Dr. med. Dipl. Oec. (DE) | Klinik Münsterland der Deutschen Rentenversicherung Westfalen**

Abstract: *Rehabilitation of amputees is a real challenge. A multidisciplinary approach in an interdisciplinary working team is the base to overcome impairments and to reduce disabilities. The use of the ICF is of basic importance. The instructional courses gives an overview of the possibilities of rehabilitation in these patients.*

1 / 4	Physiotherapy in the Rehabilitation of Lower Limb Amputees <i>Physiotherapy following amputation surgery is one of the most important tasks in rehabilitation. It is an important part in the necessary inter- and multidisciplinary treatment. In the beginning treatment is focused on the reduction of the postoperative edema, strengthening of the upper extremities and the remaining limb.</i>	Kaiser, Helga (DE) Klinik Münsterland der Dt. Rentenversicherung Westfalen
2 / 4	The Role of Sports Therapy in Rehabilitation of Lower Limb Amputees <i>In the first period following an amputation the patient shows severe psychic problems in understanding and acceptance of the situation, there is a large number of patients who fear to be cripples and a load for relatives. As well there is skepsis how to solve the somatic challenges they need to recover and learn upright walking again.</i>	Kaiser, Wilhelm (DE) Klinik Münsterland der Dt. Rentenversicherung Westfalen
3 / 4	Gait Problems in Amputated Patients	Brückner, Lutz (DE) Moritz-Klinik GmbH & Co. KG

4 / 4 **Rehabilitation of Amputated Patients - Music as a Helping Factor**

Baumgartner, René (CH)

89. Friday 2010/05/14 | 08:00 - 09:15 | Hall 3 |  Basic Instructional Course | Subtopic/Track: Miscellaneous

[3733]

The Discussion of Pressure Distribution Measurements in Orthopaedics

Session Chair: **Peikenkamp, Klaus**, Prof. Dr. (DE) | Fachhochschule Münster

Session Chair: **Drerup, Burkhard**, Prof. Dr. (DE) | Klinik für Technische Orthopädie und Rehabilitation

1 / 3 **Applications of Pressure Distribution Measurement in Prosthetics and Orthotics**

Pressure distribution measurement is used to prevent diabetic foot ulceration, control of load transfer from socket to stump, avoiding impeded blood circulation in the stump and control of seating pressures. Here, focus is put on applications in the diabetic foot and in fitting prosthetic sockets.

Drerup, Burkhard (DE) | Klinik für Technische Orthopädie und Rehabilitation

2 / 3 **Analysis of Pressure Distribution Measurements**

A deep knowledge of the relationship between the physical variable and the attributes of the measured patient or user is important when analysing data of pressure distribution measurements. Some theoretical aspects for developing appropriate analysing procedures and parameters will be presented.

Peikenkamp, Klaus (DE) | Fachhochschule Münster

3 / 3 **Introduction in Pressure Distribution Measurements – Demands and Restrictions for the Data Collection**

Pressure measurement systems consist of a number of single sensors, which are distributed over the interesting contact area between a part of the human body and its surroundings. In orthopaedics there are three main measuring situations, which will be discussed in the present paper.

Natrup, Jörg (DE) | Gesellschaft für Biomechanik Münster mbH

90. Friday 2010/05/14 | 08:00 - 09:15 | Hall 4 |  Basic Instructional Course | Subtopic/Track: Foot and Shoe

[3826]

Friction Management for Neuropathic Foot Problems

Session Chair: **Michael, John (US)** | CPO Services, Inc.

1 / 3 **Repetitive Loading Skin Trauma Science and the Role of Friction**

The need for pressure management to reduce soft tissue trauma is intuitive and the materials and techniques well established. However, high peak pressure repetitions are damaging primarily because they enable/facilitate high peak friction/shear forces.


Carlson, Martin J. (US) | Tamarack Habilitation Technologies Inc.

2 / 3 **Clinical Considerations and Decisions for Protecting the Neuropathic Foot from Friction**

Kuffel, Charles (US) | Arise Orthotics & Prosthetics

3 / 3 **Technical Aspects of Friction Management**


Payette, Mark J. (US) | Tamarack Habilitation Technologies, Inc.

91. Friday 2010/05/14 | 08:00 - 09:15 | Hall 5 |  Basic Instructional Course

[3942]

planned: Osteoporosis

Session Chair: **Landauer, Franz**, Dr. (AT) | Universitätsklinik für Orthopädie Paracelsus Medizinische Privatuniversität

92. Friday 2010/05/14 | 09:30 - 10:00 | Hall 1 |  Keynote Speech

[3789]

Technology, Rehabilitation, Outcomes, Sports and Specialization; The Future of Prosthetics is Here

Keynote Speaker: **Gailey, Robert**, PhD, PT (US) | University of Miami Miller School of Medicine

Abstract: What was once considered to be the future of prosthetics is here and now. The combination of microprocessor controlled and bionic prosthetics is becoming more prevalent. With new prosthetic platforms, such as neural interface sockets, the field is moving ever closer to thought-controlled neuroprosthetics. Rehabilitation methods have also become more innovative in an effort to promote maximum performance of the advanced prosthetic devices. Likewise, the use of appropriate functional outcomes measures is demonstrating the clinical and functional value of these recent advances. As both prosthetic technology and training techniques come of age, so have the athletic performances of athletes with limb loss who continue to break performance barriers not previously thought


possible. The days where technology, advanced training and elite level sports performances were considered unique, or perceived as the exception, have passed. Today, the return to a full active life after limb loss, including sports participatio

93. Friday 2010/05/14 | 10:30 - 12:00 | Hall 1 | Session | Subtopic/Track: Orthotics
[3675]

Orthotics - Technical Topics

Session Chair: **Lemaire, Edward (CA)** | The Ottawa Hospital Rehabilitation Centre

1 / 7	Load Evaluation of a Hydraulic Stance-Control Knee Orthosis <i>This paper presents an evaluation of the loading capacity of the Ottawalk-Speed Stance-Control Knee Orthosis (SCKO), which employs an angular velocity control approach to switch between free motion and flexion resistance modes.</i>	Lemaire, Edward (CA) The Ottawa Hospital Rehabilitation Centre
2 / 7	Development of MRF (Magneto-Rheological-Fluid) Brake Installed Lower Limb Orthosis <i>An intelligently controlled compact MRF (Magneto-Rheological Fluid) brake was developed and installed in ankle-foot orthosis. The Effectiveness of the device was proved based on the gait analysis of hemiplegia patients.</i>	Morimoto, Shoji (JP) Osaka Electro-Communication University
3 / 7	Patella Kinematics are Controlled by a Novel Knee Brace: an In-vitro Evaluation of the PatellaTrack Orthosis <i>The PatellaTrack orthosis (Otto Bock HealthCare GmbH) was evaluated in an in-vitro study. Bone pins screwed into Tibia and Patella of six cadaver legs indicate the biomechanical efficacy of the brace in regard to re-positioning and medial transition of the Patella during knee extension and flexion.</i>	Brüggemann, Gert Peter (DE) Institut für Biomechanik und Orthopädie
4 / 7	Biomechanical Evaluation of One-way Clutch-type Stance-control Reciprocating Gait Orthosis with a Spinal Cord Injury <i>The puopose of this study was to determine gait differences in three subjects ambulating with a conventional RGO with a locked knee and a RGO with a stance control knee. The subjects ambulated in doubled walking speed and stride length with stance control orthosis because of knee flexion.</i>	Jang, Dae-Jin (KR) Korea Orthopedics and Rehabilitation Engineering Center
5 / 7	Laboratory Testing and Assessment of Knee Braces <i>Ensuring functionality, durability and usability of technical aids is crucial for both manufacturers and health insurance providers. This paper describes the properties and usage of novel testing devices for functional, fatigue strength and microclimatic testing of knee braces.</i>	Hochmann, David (DE) Technische Universität Berlin
6 / 7	Assessing Orthopaedical Aids Using an Open Bore Vertical MRI Scanner – Sequences, Measurement Techniques & Software – <i>This abstract presents a method which delivers an insight into the “patient - orthopaedic aid” system using three dimensional image acquisition methods in an open low-field MRI scanner under physical loading conditions controlled by self-built MRI compatible measurement techniques.</i>	Tettke, Martin (DE) Technische Universität Berlin
7 / 7	Carbon Fiber Spring AFOs for Active Push-off	Braatz, Frank (DE) Orthopädische Universitätsklinik Heidelberg

94. Friday 2010/05/14 | 10:30 - 12:00 | Hall 2 |  Symposium | Subtopic/Track: Miscellaneous
[3490]

Let's Talk Technology - Aluminium, Titanium, Magnesium – Light Weight Metals for Orthopaedic Applications

Session Chair: **Schneider, Urs, Dr. med. (DE)** | Fraunhofer-Institut für Produktionstechnik und Automatisierung IPA

Session Chair: **Johnson, Chris (US)** | College Parc Industries Inc.

1 / 6	Introduction: Tomorrows Solutions depend on Knowhow in Materials and Systems <i>An introduction to innovation chances for prosthetics and orthotics.</i>	Schneider, Urs (DE) Fraunhofer-Institut für Produktionstechnik und Automatisierung IPA
2 / 6	Elasticity, Surface Hardness and Durability – What Do I need to Know? <i>Relevant parameters for development and product decision making.</i>	Burling, Paul (UK) The Welding Institute
3 / 6	Computational Simulation of Wear – How can This be Done? <i>How wear of components can be simulated during development. Project example: knee implant.</i>	Browne, Martin (UK) University of Southampton

4 / 6	Machining, Molding, Rapid Manufacturing - When to Use What? <i>Investment castings and rapid manufacturing for medical systems</i>	Lätchen , Manfred (DE) Tital GmbH
5 / 6	Magnesium - only Burning and Brittle? <i>Experiences with magnesium in high end automotive components.</i>	Kussmaul , Bernd (DE) Bernd Kußmaul GmbH
6 / 6	Functional Metals – Will There be Interesting Solutions in the Near Future? <i>The lecture gives a summary of new plating technologies and how these technologies can lead to a functionalization of surfaces.</i>	Metzner , Martin (DE) Fraunhofer IPA

95.
[3540]

Friday 2010/05/14 | 10:30 - 12:00 | Hall 3 |  Symposium | Subtopic/Track: Orthotics

Dynamic Elastomeric Fabric Orthoses - A New Concept in Orthotic Treatment

Session Chair: **Preisler**, Benedikt (DE) | Pro Walk GmbH

Session Chair: **Matthews**, Martin , M.Phil (UK) | DM Orthotics Ltd.

1 / 5	The Treatment of Young Children with Low Trunkal Tone, as a Result of Various Diagnoses, with Dynamic GPS Soft Orthoses - Cases Studies <i>The aim of these case studies was to select specific patient group and look at the effect of wearing Dynamic GPS Lycra Orthosis on them. As seen by ourselves, the therapists involved and the family/carers.</i>	Preisler , Benedikt (DE) Pro Walk GmbH Eves , Karen (DE) Pro Walk GmbH
2 / 5	Effect of a "SNUG" Sensory Dynamic Orthosis on Gross Motor Function in Children with Cerebral Palsy	Fisher , Kathryn (UK) DM Orthotics Ltd.
3 / 5	Dynamic Lycra Orthoses Treatment for Shoulder Instability <i>There are numerous orthotic interventions specifically designed for the supporting shoulder instability, however, most are cumbersome, often hot to wear and not necessarily fit for purpose. This is often due to the diagonal lines of pull provided by the orthoses. In contrast, the condition requires vertical force to re-locate the shoulder joint and re-align the musculature. The use of a unique dynamic shoulder stability orthoses appears to have overcome some of the reported experiences shown by the use of repeated radiographical images.</i>	Matthews , Martin (UK) DM Orthotics Ltd.
4 / 5	Case Study: Developing a Dynamic Elastomeric Fabric Orthosis to Manage Pregnancy-Induced Pelvic Pain <i>Case study: Subject in her 30's; first contact was made in the fifth month of gravida 2. She had been suffering from anterior and posterior pelvic pain and bilateral hip pain since early pregnancy. A pelvic belt helped pain, but proved uncomfortable.</i>	Sawle , Leanne (GB) DM Orthotics Ltd.
5 / 5	A Pilot Study of the Effects of Dynamic Elasticated Fabric Foot Orthoses on Gait in Subjects with Chronic Hemiplegia <i>This paper describes a novel, proof of concept, combined intervention utilising functional foot orthotics, dynamic elastomeric fabric orthoses and functional electrical muscle stimulation on a child with hemiplegic cerebral palsy. Using five video films in both sagittal and coronal planes the natural evolution of change proceeds from bilateral toe barefoot walking to bilateral heel strike all recorded in one session. The combination presents an opportunity of a possible insight for the future of orthotics, particularly in the provision of early orthotic intervention in the children with cerebral palsy.</i>	Matthews , Martin (UK) DM Orthotics Ltd.

96.
[3534]

Friday 2010/05/14 | 10:30 - 12:00 | Hall 4 |  Symposium | Subtopic/Track: Sports

Latest Developments in the Treatment with Sport Shoes

Session Chair: **Milani**, Thomas , Univ.-Prof. Dr. (DE) | Technische Universität Chemnitz

1 / 5	Methodological Aspects of Sensory Measurements <i>This series of studies had the objective to evaluate intra- as well as inter-day reliability of plantar foot vibration thresholds. The very good repeatability found in the intra-day measurements suggests that treatment studies on foot sensitivity should be performed within same day.</i>	Schlee , Günther (DE) Chemnitz University of Technology
2 / 5	Overload Induced Tendon Injuries of the Lower Extremity	Lohrer , Heinz (DE)
3 / 5	Dynamic Foot Scanning. A new Approach for Measuring the Human Foot Shape during Walking	Schmeltzpfenning , Timo (DE) Uniklinik Tübingen, Biomechanik

Investigation of dynamic foot shape was performed using a synchronized multiple scanner ensemble (ViALUX, Germany) based on fringe projection technology. Significant and practical relevant changes during stance phase of gait were determined whereas differences between static and dynamic values were not significant.

- | | | |
|-------|---|---|
| 4 / 5 | <p>Influencing Factors to Perform Dynamic Material Tests
<i>The goal of the present work was to determine factors which are important to improve the quality of mechanical material testing. By using a holistic approach, with biomechanical and mechanical tests, it could be shown that it is possible to create a mechanical test design which is suitable to perform functional footwear tests.</i></p> | <p>Heidenfelder, Jens (DE)
Chemnitz University of Technology</p> |
| 5 / 5 | <p>Mechanical Properties of Medical Compression Textiles
<i>For the development of a system to determine effects of medical compression stockings to the human body out of mechanical properties in first step the direct pressure measuring with Medical Stocking Tester was researched. For different stockings the reliability and absolute accuracy of the MST were tested. In common the function of the MST could be proved.</i></p> | <p>Riesner, Isabel (DE) Chemnitz University of Technology</p> |


97. [3695] Friday 2010/05/14 | 10:30 - 12:00 | Hall 5 | Session | Subtopic/Track: Rehabilitation
Rehabilitation - Chronic Low Back Pain, Miscellaneous

Session Chair: **Jarl, Gustav**, Mr. (SE) | Habilitation, Örebro County Council

- | | | |
|-------|--|--|
| 1 / 6 | <p>Long-term Effects of a Multimodal Treatment Concept for Chronic Low Back Pain. Can the Effects of the Orthopaedic-psychosomatic Concept be Replicated?
<i>In the present study the effectivity of the integrated orthopaedic-psychosomatic Concept of the Munsterland Clinic for the treatment of chronic low back pain could be mostly replicated, after it was successfully implemented in three further rehabilitation clinics.</i></p> | <p>Fröhlich, Stephanie M. (DE) Institut für Rehabilitationsforschung Norderney e.V.</p> |
| 2 / 6 | <p>Lets Map the Path to Well-Being
<i>The aim of our study was to find out which activities people after amputation want to perform and consider important. We assessed fifty patients after lower limb amputations using FIM and COPM. We found that independency in DA is not sufficient, the patients want to perform other activities as well.</i></p> | <p>Pihlar, Zdenka (None) Institute for Rehabilitation, Republic of Slovenia</p> |
| 3 / 6 | <p>Parzivar: An Intervention Towards "Smart" Shared Goals in Rehabilitation for Patients with Chronic Low Back Pain
<i>Summary. In the Parzivar-Project, physicians and therapists were trained in a step-by-step-intervention to negotiate individual, quantified treatment goals which tie in with important patient's concerns. The effectiveness of the intervention with respect to numerous treatment outcomes is currently a</i></p> | <p>Dibbelt, Susanne (DE) Institut für Rehaforschung</p> |
| 4 / 6 | <p>The Value of the Isernhagen Work Systems (IWS) for the Social and Medical Judgement in Inpatient Orthopaedic Rehabilitation
<i>Based on an overview over IWS-literature this study shows that IWS can give useful information to physicians and patients if its boundaries are taken into account. However, many patients, especially those with a bad psychophysical background experience a significant increase of pain.</i></p> | <p>Niemeyer, Claudia (DE) Institut für Rehabilitationsforschung e.V., Norderney</p> |
| 5 / 6 | <p>Fossil - Efficacy of a Shoulder-joint Functional Orthosis in Shoulder-joint Subluxation after Stroke to Avoid Post-hemiplegics Shoulder-hand Syndrome
<i>Aim of this study is the judgment of the effectiveness with the use of a shoulder-joint-functionorthosis in shoulder-joint-subluxation after ischemic brain stroke in regard of avoidance of a posthemiplegic shoulder-hand-syndrome.</i></p> | <p>Hartwig, Maik (DE) Neurologische Klinik Bad Neustadt</p> |
| 6 / 6 | <p>Validity of the Swedish Version of Orthotics and Prosthetics Users' Survey (OPUS-Swe)
<i>The Orthotics and Prosthetics Users' Survey (OPUS) is an instrument evaluating different aspects of orthotic and prosthetic outcomes. OPUS-Swe was answered by 299 clients and validated by means of Rasch analysis. The results support the instrument's validity and provide suggestions for improvements.</i></p> | <p>Jarl, Gustav (SE) Habilitation, Örebro County Council</p> |

98. Friday 2010/05/14 | 12:00 - 14:00 | Foyer Halls | Poster Session | Subtopic/Track: Foot and Shoe
[3702] **Foot and Shoe**

99. Friday 2010/05/14 | 12:00 - 14:00 | Foyer Halls | Poster Session | Subtopic/Track: Rehabilitation
[3704] **Rehabilitation**

100. Friday 2010/05/14 | 14:00 - 14:30 | Hall 1 |  Keynote Speech
[3790] **Diabetic Foot Disease: Current Concepts and Clinical Practice Guidelines**
Keynote Speaker: **Idusuyi**, Osaretin , Prof. Dr. (US) | Southern Illinois University School of Medicine

101. Friday 2010/05/14 | 15:00 - 16:30 | MZF 1/2 | Session
[3845] **Open Forum 7**

Session Chair: **Yazicioglu**, Kamil , Professor, MD (TR) | Gülhane Military Medical Academy

Session Chair: **Franke**, Jens (DE) | Bundesinnungsverband für Orthopädie-Technik

- | | | |
|-------|--|---|
| 1 / 6 | Prosthetics and Orthotics in Turkiye: Past, Present and Future | Alsancak , Serap (TR) Ankara University |
| 2 / 6 | Managements, Patient Care, Publications from Past till Today in P&O | Goktepe , Salim (TR) |
| 3 / 6 | My Prosthetic/Orthotic-Related Experiences in Cambodia
<i>My first visit to Cambodia in 2005 truly opened my eyes and ignited my interest in the field of prosthetics and orthotics. Three years later, I took the opportunity return to the country prosthetic/orthotic student volunteer. These experiences have helped me to grow as an individual and student, and will contribute to the Prosthetics/Orthotics professional I become.</i> | Bowerman , Kim (CA) Glenrose Rehabilitation Hospital |
| 4 / 6 | Prosthetic Experiences in Thailand | Lung , Stephanie (CA) Nova Scotia Rehabilitation Centre |
| 5 / 6 | Disability Situation in Ethiopia | Gelan , Tekle Selase (ET) |
| 6 / 6 | Possibilities of Operation and Rehabilitation for Iraqi Children by Freibettenfonds Franziskushospital Harderberg | Ehrenbrink , H. (DE) Orthopädie und Unfallchirurgie Franziskus-Hospital Harderberg
Siemann , Katrin (DE) Orthopädie und Unfallchirurgie Franziskus-Hospital Harderberg |

102. Friday 2010/05/14 | 15:00 - 16:30 | Hall 1 |  Symposium | Subtopic/Track: Amputation/Prosthetics
[3547] **Possibilities and Limitations in the Application of Linersystems for Transtibial Amputees**

Session Chair: **Thiede**, Klaus Frederik (DE) | Otto Bock HealthCare GmbH


Session Chair: **Brückner**, Lutz , Priv.-Doz. Dr. med. habil. (DE) | Moritz-Klinik GmbH & Co. KG

Abstract: *Der Themenblock soll ein möglichst breites Spektrum für die Linerversorgung bei Transtibial-Amputierten geben. Über die verschiedenen Linersysteme mit ihren Anwendungsbereichen, den Materialeigenschaften, Grenzen und zum Schluss mit der Vorstellung von individuellen Lösungen soll der Zuhörer interessiert werden.*

- | | | |
|-------|--|---|
| 1 / 5 | Liner - The Aspect of Adhesion and Friction
<i>Liners exhibit in general a high adhesion and friction in contact with the skin. Therefore, to transfer tangential forces between stump and socket normal pressures may be lower when using liners than without. This is illustrated by pressure measurements under different conditions.</i> | Drerup , Burkhard (DE) Klinik für Technische Orthopädie und Rehabilitation |
| 2 / 5 | Limitations in the Application of Linersystems | Brückner , Lutz (DE) Moritz-Klinik GmbH & Co. KG |
| 3 / 5 | Special Liner Fittings for Transtibially Amputated Patients | Gawron , Olaf (DE) Pohlig Orthopädie-Technik, Niederlassung Heidelberg |

- | | | |
|-------|--|--|
| 4 / 5 | Overview and Range of Application for Common Linersystems
<i>Many different liner systems are available on the market. The lecture will give an overview of the various liner and connection systems, and a recommendation for the patient specific selection.</i> | Thiede, Klaus Frederik (DE) Otto Bock HealthCare GmbH |
| 5 / 5 | Advantages and Disadvantages of Liner Use in Trans-Tibial Prostheses on the Base of a Literature Review and Practical Experience
<i>Topics reviewed are among others: patient comfort, skin reaction to the liner, functional benefits and donning and doffing of the liner prosthesis. I have studied the last topic in relation to hand function of the amputee.</i> | Baars, Erwin C.T. (NL) |

103.
[3875]

Friday 2010/05/14 | 15:00 - 16:30 | Hall 2 |  Symposium | Subtopic/Track: Amputation/Prosthetics

Amputation of the Upper Extremity and Healing of the Residual Limb

Session Chair: **Baumgartner, René**, Prof. Dr. med. (CH)

- | | | |
|-------|---|--|
| 1 / 4 | Amputation and Reimplantation of the Hand | N.N. |
| 2 / 4 | Conventional and Current Amputation Techniques | Baumgartner, René (CH) |
| 3 / 4 | Amputations in Cases of Tumor | Streitbürger, Arne (DE) Klinik und Poliklinik für Allgemeine Orthopädie |
| 4 / 4 | Measures to Improve Healing of the Residuum | Wetz, Hans-Henning (DE) Klinik und Poliklinik für TO und Rehabilitation |

104.
[3677]

Friday 2010/05/14 | 15:00 - 16:30 | Hall 3 | Session | Subtopic/Track: Foot and Shoe

Foot & Shoe - Biomechanics, Age and Woman

Session Chair: **Soares, Denise**, Ms (PT) | University of Oporto

Session Chair: **Ramstrand, Nerrolyn**, Dr (SE) | Jönköping University

- | | | |
|-------|---|---|
| 1 / 6 | An Experimental Study of Influence of Wedged Insoles on Forefoot Plantar Pressures
<i>The objective of this study was to investigate the influence of various wedged insoles on forefoot plantar pressure values. Forefoot plantar pressure values were measured under using 3 different types wedged insoles during static standing / dynamic walking compared with a barefoot value as control.</i> | Ban, Masuhara (JP) Sakamoto co., ltd. |
| 2 / 6 | Reproducibility of Measurement Results from the Plantar Pressure Distribution
<i>The reproducibility of measurement results from the plantar pressure distribution was analysed for 2 test subjects. The results showed a high variability for the individual sensors of a measuring sole. Reproducibility is improved when major surface areas with a larger number of sensors are analysed.</i> | Bayyurt, Jan (DE) university of applied sciences münster
Körper, Martin (DE) |
| 3 / 6 | Womens Experiences of Wearing Therapeutic Footwear - a Qualitative Investigation
<i>Specialist therapeutic footwear is provided for people with rheumatoid arthritis. Despite the known clinical benefits there remains a problem of low usage. This study used a qualitative approach to gain deeper insight into this problem than previous work.</i> | Williams, Anita E. (GB) University of Salford |
| 4 / 6 | The Association between Patients Expectations and the Use of Custom-Made Orthopaedic Shoes
<i>Expectations that were not met by the outcomes were associated with non use of custom-made orthopaedic shoes (OS), whereas expectations per se were not associated. This indicates that it is essential to keep patients expectations realistic, in order for OS to be used.</i> | van Netten, Jaap (NL) Center for Rehabilitation, University Medical Center Groningen |
| 5 / 6 | Effects of an Unstable Shoe Construction on Balance in Women Aged over 55 Years
<i>This study evaluated the relative effects of MBT shoes on standing balance, reactive balance and functional stability in a group of non-active females over the age of 55. After 8 weeks of wear the MBT shoe appeared to have positive effects as a training tool for select aspects of balance.</i> | Ramstrand, Nerrolyn (SE) Jönköping University |

- 6 / 6 **The Influence of Different Wedges in Elderly Gait Kinetic Parameters** Soares, Denise (PT) | University of Oporto
The purpose of this study was to investigate the influence of different wedges in elderly gait kinetics. Six kinds of wedges were used, in a sample of 17 subjects. Each subject walked over the force plate wearing each one of the wedges. The results showed that the influence is individual.

105. Friday 2010/05/14 | 15:00 - 16:30 | Hall 4 | Session | Subtopic/Track: Amputation/Prosthetics

[3666]

Lower Limb Prosthetics - Functional Knee Components 2

Session Chair: **Mathur**, Mahendra Kishor , Dr. (IN) | Bhagwan Mahaveer Viklang Sahayata Samiti(BMVSS)

- 1 / 4 **Progressive Brake Activation and Release in a Weight Activated Mechanical Knee Prosthesis** Ochoa, Juan (UK) | Chas A. Blatchford & Sons Ltd.
Conventional weight activated knee prostheses rely on a self-locking mechanism to create the required stability during stance. A new joint has been developed, in which the brake moment depends only on the load magnitude and position, thus producing a natural and symmetric gait.
- 2 / 4 **Functional Comparison of the Legs M1 Knee to Commonly Available Developing World Alternatives** Rispin, Karen (US) | LeTourneau University
Gait and functional characteristics were collected to compare the LEGS M1 knee a locked knee condition and a first-world polycentric knee. The LEGS M1 knee showed few gait penalties from a lower stability and amputees self reported a more satisfactory gait.
- 3 / 4 **Stanford-Jaipur Knee Joint for Trans Femoral Amputees** Mathur, Mahendra Kishor (IN) | Bhagwan Mahaveer Viklang Sahayata Samiti(BMVSS)
The development of Stanford - Jaipur polycentric knee have demonstrated the extreme affordability of the most advanced polycentric concept in the world. This is a major break through that would revolutionize prosthetic fitting of trans-femoral amputees.
- 4 / 4 **A New Stance-phase Controlled Prosthetic Knee Joint for Low-income Countries** Andrysek, Jan (CA) | Bloorview Kids Rehab
The development of a novel stance-phase controlled polymer injection moldable prosthetic knee joint for low-income countries is being presented. Prototypes of the knee joint were clinically tested indicating reliable stance-phase control and improved gait performance for the users.

106. Friday 2010/05/14 | 15:00 - 16:30 | Hall 5 | SY Symposium | Subtopic/Track: Children

[3821]

Paediatric Prosthetics and Rehabilitation

Session Chair: **Murray**, Kevin , Dr. (UK) | University of Strathclyde

- 1 / 4 **Prosthetic Management of the Lower Limb Deficient Child** Murray, Kevin (UK) | University of Strathclyde
The symposium will discuss the management of upper and lower limb deficient children as a result of both congenital absence and acquired amputation. The development of a paediatric service along with the additional demands on the MDT will also be presented.
- 2 / 4 **Congenital Deficiency and Childhood Amputations - A Formidable Challenge** Smith, Martin (UK) | Southern General Hospital, Glasgow
- 3 / 4 **Prosthetic Management of the Upper Limb Deficient Child** MacEachen, Vincent B. (UK) | Southern General Hospital, Glasgow
It is important to have clear understanding of the aims the child's treatment. However with developing children experiencing changes in life, the prosthetist may therefore modify that treatment to achieve a goal.
- 4 / 4 **The Role of the Occupational Therapist in Paediatric Prosthetics** Thomson, Lynsey (UK) | WestMarc Southern General Hospital
The role of the Prosthetic Occupational therapist with children with congenital or acquired limb absence involves team working, a developmental approach and providing a link between the child/family and the prosthetic service.

107. Friday 2010/05/14 | 17:00 - 18:30 | Hall 1 | SY Symposium | Subtopic/Track: Sports

[3645]

The Knee Joint in Sports

Session Chair: **Schmitt**, Holger , Prof. Dr. med. (DE) | Orthopädische Universitätsklinik Heidelberg

1 / 3	Diagnostic Investigation and Therapy of Cartilage Injuries in Sport	Engelhardt , Martin (DE) Klinik für Orthopädie, Unfall- und Handchirurgie Grim , Casper (DE) Klinik für Orthopädie, Unfall- und Handchirurgie
2 / 3	Diagnostic Investigation and Therapy of Ligament Injuries of the Knee Joint	Zantop , Thore (DE) Universitätsklinikum Münster
3 / 3	Prevention of Knee Joint Injuries <i>Knee injuries rank among the most frequent sport injuries. So prevention has high importance in particular in contact sports and sports with high rotative loads. Prevention programs should be based on enlightenment as well as on a common and sport specific strength, balance and jump training.</i>	Jöllenneck , Thomas (DE) Klinik Lindenplatz GmbH

108.
[3805]

Friday 2010/05/14 | 17:00 - 18:30 | Hall 2 |  Symposium | Subtopic/Track: Compression Therapy

Treatment of Lymphedema

Session Chair: **Reißhauer**, Anett , Dr. med. (DE) | Charité Campus Mitte Universitätsmedizin Berlin

1 / 4	Lymphedema - a Clinical Overview	Reißhauer , Anett (DE) Charité Campus Mitte Universitätsmedizin Berlin
2 / 4	To Objectify Edema of the Legs Using 12 MHz Sonography	Tanneberger , Amelie (DE)
3 / 4	Deep Oscillation Unique Electromechanical Therapeutic Procedure <i>Deep oscillation (DO) creates resonant vibration through an electromechanical therapeutic procedure based on electrostatic attraction, and friction. It's gentle non-invasive mode of action allows it to be used in various fields of therapy, including wounds, fresh injuries and acute pain.</i>	Sporbeck , Birte (DE) Reinhold , Jens (DE) PHYSIOMED ELEKTROMEDIZIN AG
4 / 4	An Evidence about Quality of Life in Case of Lymphedema Deficiencies	Taufmann , Ines (DE) Charité

109.
[3667]

Friday 2010/05/14 | 17:00 - 18:30 | Hall 3 | Session | Subtopic/Track: Amputation/Prosthetics

Lower Limb Prosthetics - Biomechanics 2

Session Chair: **Johannesson**, Anton , PhD (SE) | Ortopedteknik AB

Session Chair: **Lineham**, Marion , MPP (NZ) | New Zealand Artificial Limb Board

1 / 5	Design of Transtibial Prosthesis for Humid Environment in Low Income Countries <i>Prostheses than usually are delivered to TT amputees in Central America, aren't designed for to be used in humid environments for a long time. The existing for this purpose aren't of easy acquisition. We elaborate one design with appropriate technology that can supplement the needs in the region.</i>	Quintanilla , Andrea (SV) Don Bosco University Arevalo , Melvin (SV) Don Bosco University Castaneda , Monica (SV)
2 / 5	Outcomes of a Standardized Surgical and Rehabilitation Program in TT Amputation for Peripheral Vascular Disease: a 10-Year Prospective Cohort Study <i>217 consecutive patients (mean age 77 yr), underwent TT amputation for PVD (51% with diabetes). More than half of all amputees and more than 80% of those who had walking ability prior to amputation and survive at least 3 months can be fitted with prosthesis.</i>	Johannesson , Anton (SE) Ortopedteknik AB
3 / 5	Elaboration of a New Composite Material with Natural Reinforcement (Alfa) for Manufacturing of Lower Limb Prosthesis <i>The elaboration of a nonwoven material from a natural fiber, available in Tunisia (alfa fiber), allows the fabrication of lower limb prostheses which was tested on laboratories and by some patient through a clinical testing delivered by an ethical committee. After one year the result was conclusive.</i>	Chaker , Adel (TN) LRBBO
4 / 5	Mechanical Failure Risks and Bone Remodeling after Implantation of Osseointegrated Trans-femoral Prostheses <i>In this study we used the finite element method to assess failure risk and long-term bone turnover around two existing osseointegrated trans-femoral implants. The performed analyses can be used to improve direct bone fixation devices and allow more patients to benefit from their advantages.</i>	Tomaszewski , Pawel (NL) University Medical Center Groningen, University of Groningen

- 5 / 5 **NZ Artificial Limb Board Outcomes Measures for Prosthetics Results and Organisational Gains** **Lineham, Marion (NZ) | New Zealand Artificial Limb Board**
The NZALB introduced a package of outcomes measures on 1 July 2006. Results reported in this paper will contribute to benchmarks in the future and provide data for research. The outcomes measures project has provided many benefits to amputees and to the organisation.

110. Friday 2010/05/14 | 17:00 - 18:30 | Hall 4 | Session | Subtopic/Track: Orthotics
[3676]

Lower Limb Orthotics

Session Chair: **Solomonidis, Stephan (GB) | University of Strathclyde**

- 1 / 4 **Functional Evaluation and Indicator Analysis of UC-BL Foot Orthosis in Paediatric Patients with Symptomatic Flexible Flat Feet** **Wu, Kit (HK) | Hospital Authority**
UC-BL foot orthosis is commonly prescribed to correct the alignment and relieve the symptom of flexible flat foot, but its ability of functional improvement is still unclear. In this research, the effect of UC-BL foot orthosis in physical and functional modulation was determined.
- 2 / 4 **The Orthoses Applying into the Scissors Gait** **Yin, TianQiao (CN) | Beijing Huici Artificial Limb medical Appliances Co., Ltd.**
Objective To investigate the cause of spastic disorders of scissors step (adductor muscle increased muscle tension) in syndrome, by wearing braces to overcome the scissors-step to achieve the symptom improvement.
- 3 / 4 **What would be the Best Performance of Paraplegic Subjects During Walking with a RGO Orthosis?** **Solomonidis, Stephan (GB) | University of Strathclyde**
Different types of orthoses have been designed for SCI subjects, however all of them have problems. A new type of orthosis was designed and tested during walking of normal subjects. The result showed there is a huge gap between the function of the normal subjects in walking with and without orthosis
- 4 / 4 **Dynamics of Reciprocating Gait Orthosis (RGO) Assisted Gait** **Johnson, William (US) | Northwestern University**
The gaits of 5 RGO users were analyzed to identify ways to improve gait efficiency. Heavy load bearing through the arms, limited action of the reciprocal link, and poor conservation of mechanical energy were observed. The causes of these phenomena and their effects on gait efficiency are discussed.

111. Friday 2010/05/14 | 17:00 - 18:30 | Hall 5 |  Symposium | Subtopic/Track: Neuroorthopaedics
[3719]

Paraplegiology

Session Chair: **Meiners, Thomas, PD Dr. med. (DE) | WERNER-WICKER-KLINIK Zentrum für Rückenmarkverletzte**

- 1 / 5 **Advances in the Neuroregeneration and Rehabilitation After Spinal Injuries** **Curt, Armin (CH) | Uniklinik Balgrist**
Clinical recovery after spinal cord injury (SCI) can be attributed to mechanisms of functional compensation, neural plasticity and/or repair as has been established for other disorders of the central nervous system (CNS), i.e. stroke.
- 2 / 5 **MotionTherapy@Home – First Results of a Study with a Novel Robotic Device for Home-based Locomotion Therapy in Incomplete Spinal Cord Injured Subjects** **Rupp, Rüdiger (DE) | Stiftung Orthopädische Universitätsklinik Heidelberg**
A pneumatically driven orthosis "MoreGait" has been developed for an automated locomotion training at home. It generates the key afferent stimuli for the central pattern generator. First applications in chronic spinal cord injured subjects show significant improvements of gait speed and endurance.
- 3 / 5 **The Role of the Diaphragm Pacing in Replacing, Delaying and Decreasing Mechanical Ventilators: From Spinal Cord Injured Patients to the Future Role in a Pandemic** **Onders, Ray (US) | University Hospitals Case Medical Center, Case Western Reserve University School of Medicine**
Diaphragm Pacing (DP) can replace ventilators in tetraplegics greatly increasing their quality of life. For any patient on a ventilator, DP would decrease the time on ventilators by maintaining Type 1 muscle fibers and improving posterior lobe lung ventilation.

4 / 5	Robot Assisted Rehabilitation in Quadriplegics <i>Robotic devices have been developed to train upper extremity function, especially for patients with stroke, and are currently being applied to patients with quadriplegia. First experiences will be presented on the applicability of the upper extremity robotic devices in quadriplegic patients.</i>	van Hedel , Hubertus (CH) Balgrist University Hospital
5 / 5	Biomechanic of Decubitus Ulcer	Meiners , Thomas (DE) WERNER-WICKER-KLINIK Zentrum für Rückenmarkverletzte

112.
[3750]

Saturday 2010/05/15 | 08:00 - 09:15 | Hall 2 | Advanced Instructional Course | Subtopic/Track: Foot and Shoe
Clubfoot

Session Chair: **Böni**, Thomas , Dr. med. (CH) | Uniklinik Balgrist

1 / 5	Changing Concepts in Clubfoot Treatment - The Historical Perspective <i>Since Hippocrates treatment concepts in clubfoot underwent significant changes. Based on a concise historical overview of the main therapeutical approaches the lecture will focus on the detection of an underlying pattern.</i>	Böni , Thomas (CH) Uniklinik Balgrist
2 / 5	Pathoanatomy Based Treatment of the Clubfoot in Children - the Ponseti Method <i>The pathoanatomy of the clubfoot can be understood as a maximum supination of the hind foot with disrupted fore-hind foot alignment. Under this assumption the Ponseti method corrects the fore-hind foot-alignment and reduces the hind foot with manipulation of the calcaneo-pedis-block. Serial casting and consequent splinting maintains the results of the manipulations.</i>	Rödl , Robert (DE) Universitätsklinikum Münster
3 / 5	Attitudes of Orthopedist and Orthopedic Technician to the Treatment of Pes Equinovarus Congenitus <i>The Authors present surgical and nonoperative treatment of pes equinovarus congenitus with a special attention being paid to Ponseti's method combined with a substantial share of orthotic treatment on the therapeutic results.</i>	Huraj , Emil (SK) Children University Hospital, Bratislava
4 / 5	Outcome of the Ponseti Method in Treatment of Clubfoot in Tanzania	Tuni , Walter A. (TZ) Comprehensive Community Based Rehabilitation in Tanzania (CCBRT) - Disability Hospital
5 / 5	The Balgrist Clubfoot Orthosis in the Post-Treatment of the Infant Clubfoot	Lentz , Sharon (CH) Balgrist Tec AG

113.
[3792]

Saturday 2010/05/15 | 08:00 - 09:15 | Hall 3 | Advanced Instructional Course | Subtopic/Track: Orthotics
Optimizing the Use of CAD/CAM in Orthotics

Session Chair: **Saunders**, Carl (CA) | Vorum Research Corporation

1 / 5	Overview of Canfit CAD/CAM for Orthotic Devices	Saunders , Carl (CA) Vorum Research Corporation
2 / 5	Clinical Case Studies of Complex Seating Solutions Using CAD/CAM	Flageul , Jean-Yves (FR) Orthopedie Regnier SAS
3 / 5	CAD/CAM Design Manufacture of Standing Shells	Ceder , Michael (SE) Team Ortopedteknik AB
4 / 5	CAD/CAM for AFOs - the Central Fabrication Process	Dowell , Jennifer (CA) Orthomerica Productions Inc
5 / 5	CAD/CAM Technology for Custom Orthopedic Insoles	Handford , Chris (CA) Vorum Research Corporation

114.
[3855]

Saturday 2010/05/15 | 08:00 - 09:15 | Hall 4 | Advanced Instructional Course | Subtopic/Track: Foot and Shoe
Artisan Prescription Footwear - Blending Tradition and Mass Customisation Technology


Session Chair: **Jones**, Derek , PhD, M.B.A. (UK) | University of Strathclyde

1 / 4	Introduction <i>This instructional course examines the challenges and opportunities of providing fashionable prescription footwear across the full spectrum of stock, modular and bespoke designs.</i>	Jones, Derek (UK) University of Strathclyde
2 / 4	The Clinical Requirement for Prescription Footwear <i>It is important when assessing patients for the prescription of footwear that a systematic approach is taken. The aim of this presentation to describe such an approach, which ensures that clinical requirements are specified and captured in a way that appropriate footwear can be designed and manufactured.</i>	Munro, William (UK) Anatomical Concepts (UK) Ltd
3 / 4	Bespoke Prescription Footwear - The Challenge and the Opportunity <i>Bolton Bros Ltd have specialised in made-to-measure and bespoke shoes since 1952 and have refined their design and production technology over the years. With bespoke footwear, technology helps - but doesn't yet guarantee success. We look at critical success factors.</i>	Bolton, Jonathan (UK) Bolton Brothers Ltd
4 / 4	Technology to Produce Fashionable and Functional Prescription Shoes <i>Technology for the design and manufacture of prescription footwear must address the issues of "Function", "Form" and "Fashion" to be of value. The clinical and manufacturing demands must be met. In addition, individuals who require prescription shoes want to be delighted by what they receive. This session will examine some of the technologies that aim to make this possible.</i>	Klaveness, Björn (NO) Klaveness Skofabrikk AS

115. [3618] Saturday 2010/05/15 | 08:00 - 09:15 | Hall 5 |  Basic Instructional Course | Subtopic/Track: Miscellaneous
ICF and ISO Terminology to Specify Intended Use and Functionality of P&O

Session Chair: **Bougie, Theo (NL) | BRT-ADVIES**

1 / 1 **Terminology on Protheses and Orthoses from ICF and ISO 9999** **Heerken, Yvonne (NL) | NPi**

116. [3791] Saturday 2010/05/15 | 09:30 - 10:00 | Hall 1 |  Keynote Speech

40 Years Sports Shoe Research – an Interim Result

Keynote Speaker: **Milani, Thomas, Univ.-Prof. Dr. (DE) | Technische Universität Chemnitz**

Abstract: *About 40 years ago sports shoes moved to the center of biomechanical research. Since then, intensive research has focused on the injuries caused by sports and sports shoes. Numerous studies conducted with a view to increasing knowledge about the interaction between the athlete and their sports shoes have even covered scientific areas such as neurophysiology or psychology – fields, which, at a first glance, would not be associated with sports shoes. This presentation will look at the findings from several studies and their influence in sports shoe development over the past 40 years.*

117. [3668] Saturday 2010/05/15 | 10:30 - 12:00 | Hall 1 | Session | Subtopic/Track: Amputation/Prosthetics

Lower Limb Prosthetics - Functional Foot Components

Session Chair: **Alimusaj, Merkur, Dipl.-Ing. (DE) | Orthopädische Universitätsklinik Heidelberg**


Session Chair: **Gauthier, Pierre (CH) | International Committee of the Red Cross**

1 / 7	User Oriented Selection of Prosthetic Feet Based upon their Mechanical Properties <i>The presentation will focus on mechanical testing of prosthetic feet and how testing can be related to clinical practice. Mechanical testing methods, correlations to clinical and biomechanical properties and methodologies for prosthetic foot selection based on verifiable properties will be discussed</i>	Schneider, Gregory (US) Otto Bock HealthCare LP
2 / 7	Joint Kinematics and Kinetics in Unilateral Transtibial Amputees when Walking with an Adaptive Prosthetic Ankle Foot System on Stairs and Ramps <i>The effects of a new adaptive prosthetic ankle were investigated in transtibial amputees (TTA) during ambulation on stairs and ramps using instrumented 3D-gait analysis. Significant improvements in kinematics and</i>	Alimusaj, Merkur (DE) Orthopädische Universitätsklinik Heidelberg

kinetics were found when walking with the adapted compared to the non-adapted ankle.

3 / 7	Do Prosthetic Ankle Units Benefit Persons with Bilateral Transfemoral Amputations? <i>Quantitative analyses were conducted on 4 male subjects with bilateral transfemoral amputations that walked with and without prosthetic ankle units. Increased ankle motion in the sagittal plane may improve the gait of persons with lower limb amputations while providing a more versatile prosthesis.</i>	McNealy Jackson , Lexyne (US) Northwestern University
4 / 7	Sagittal Plane Kinematics of Prosthetic Foot/Ankle Mechanisms: Calculated Joint Centre and ROM <i>This study aimed to evaluate various prosthetic feet in ROM & centre of rotation in the sagittal plane. The results suggest that not only are prosthetic foot kinematics different from intact feet, the marker setup has an effect & results may not be generalizable between different prosthetic feet.</i>	Rusaw , David (SE) Jönköping University - School of Health Sciences
5 / 7	Investigation of the Effect of Prosthetic Foot/Ankle Properties on Balance Efficiency while Standing on Inclined, Declined, and Level Surfaces <i>Persons with transfemoral amputation increased energy consumption while standing on non-level surfaces with current prosthetic foot/ankle devices using a single stiffness value and alignment. Adapting foot/ankle alignment to sagittal plane surface slope significantly reduced oxygen consumption.</i>	Ruhe , Brian (US) California State University
6 / 7	Field Test and Follow Up on Foot Lifespan used in Low-income Nations <i>Thousands of prosthetic feet are used each year in many low-income countries. Following 2006*ISPO recommendations, manufacturing process improve over the years and continued monitoring on foot life span remains crucial. A part of laboratory test,field test play an important role in that prospect.</i>	Gauthier , Pierre (CH) International Committee of the Red Cross
7 / 7	The Effect of Prosthetic Ankle Units on the Gait of Persons with Bilateral Transtibial Amputations <i>The purpose of this investigation was to determine if increased prosthetic ankle motion improves walking performance of persons with bilateral transtibial amputations. Results indicate that prosthetic ankle components that permit greater motion provide substantial benefit during walking.</i>	Gard , Steven A. (US) Northwestern University Prosthetics Research Laboratory & Rehabilitation Engineering Research Program

118.
[3940]

Saturday 2010/05/15 | 10:30 - 12:00 | Hall 2 |  Symposium | Subtopic/Track: Sports

Paralympic Sports

Session Chair: **van de Vliet**, Peter , Dr. (DE) | International Paralympic Committee (IPC)

1 / 4	Technology and Sports: The Future of Paralympic Sports	van de Vliet , Peter (DE) International Paralympic Committee (IPC)
2 / 4	Biomechanical Analysis in Amputee Running	Potthast , Wolfgang (DE) Deutsche Sporthochschule Köln
3 / 4	Biomechanical Aspects of Sprinting with Lower Limb Prostheses <i>The presentation starts with describing general essential biomechanical parameters of sprinting. This biomechanical view allows to define the specific handicap of sprinters provided with transfemoral and transtibial prostheses.</i>	Schmalz , Thomas (DE) Otto Bock HealthCare GmbH
4 / 4	An Argument for Assessing Lower-Limb Sprinting Prostheses Technology	Dyer , Bryce (GB) Bournemouth University

119.
[3754]

Saturday 2010/05/15 | 10:30 - 12:00 | Hall 4 |  Symposium | Subtopic/Track: Foot and Shoe

Orthopaedic Footwear Manufacturing

Session Chair: **Böni**, Thomas , Dr. med. (CH) | Uniklinik Balgrist

Session Chair: **Feldmann**, Urs (CH) | Fuss-Orthopädie Feldmann AG

1 / 4	Orthopaedic Shoe Fabrication - an Overview of Classical Measuring and Fabrication Techniques	Schievink , Frank (DE) ISPO Deutschland
-------	---	--

2 / 4 **Hybrid Process During Fabrication**

Möller, Michael (DE) | Möller
Orthopädie Schuh Technik
Münster

3 / 4 **Time-saving and Increased Quality for Orthopaedic Last Design with CAD-CAM Technology for Individual Shape Designed Lasts and Mass Customized Footwear**

Winkler, Patrick (CH) | Winkler
ORTHO SCHUH TECHNIK

To an orthopaedic shoemaker the main advantage of CAD-CAM technology is its time-saving, coupled with high quality results. An objective criterion for patients' satisfaction with the said technology is when the patient orders a second pair of shoes using the same last.


4 / 4 **Clinical Comparison of Scanner-made and Handcraftet Orthopaedic Shoes (First Results)**

Illgner, Ulrich (DE) | Uniklinikum
Münster

120. Saturday 2010/05/15 | 12:00 - 13:30 | Foyer Halls | Poster Session | Subtopic/Track: Miscellaneous

[3703]

Open Topics

121. Saturday 2010/05/15 | 13:00 - 13:45 |  Congress Lecture

[4088]

Easyline and Other CYS-Concepts: How to Save Money and Time Through a Patient-Oriented Approach in Orthopaedic Footwear Manufacturing

Speaker: **Franssen**, Ivo M.C. (DE)

122. |  Congress Lecture

[4089]

Dynamisch, flexible Sitzschalenverordnung

Speaker: **Giese**, Michael , Meister (DE) | Rehatechnik Möller GmbH
