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There are 12 sessions included in this online resource package. Each presentation has the slides included in the video however you may also access the slides separately.

Session 1 (25 minutes)**FES / exoskeletons / latest tech for those with SCI / neurological conditions**

Overview of technology to assist in the rehabilitation of those with SCI and other neurological conditions in the clinical and in the community environment including FES, exoskeletons and virtual reality systems.

Jon Graham, Clinical Director, Physiofunction Ltd

Session 2 (29 minutes)**Robotics in Rehabilitation**

The presentation will focus on the successful application and integration of advanced technologies into the daily clinical routine as a key element to overcome challenges within the healthcare system - offering intensive therapy for an increasing number of patients in an efficient manner.

Dr. Clemens Müller, Head of Education IISART, Global Head of Clinical Applications & Research Hocoma AG

Session 3 (17 minutes)**Immersive Virtual Reality (VR) to transform the lives of patients with mental health disorders**

Mental health disorders are very common, often with great personal and societal costs, but far too few people receive the best treatments. The case will be made that much greater access to the best psychological treatments can be achieved using automated delivery in virtual reality (VR). With virtual reality simulations, individuals can repeatedly experience their problematic situations and be taught, via evidence-based psychological treatments delivered by a virtual coach, how to overcome difficulties. A key advantage of VR is that individuals know that a computer environment is not real but their minds and bodies behave as if it is real; hence, people will much more easily face difficult situations in VR than in real life and be able to try out new therapeutic strategies. VR treatments can also be made much more engaging and appealing for patients than traditional therapies. A systematic programme of work developing and testing automated VR psychological treatments for conditions such as fear of heights, social anxiety, and schizophrenia will be described.

Daniel Freeman, Professor of Clinical Psychology, University of Oxford, Consultant Clinical Psychologist, Oxford Health NHS Foundation Trust, and co-founder and Chief Clinical Officer, Oxford VR

Session 4 (22 minutes)**Turning people with limb differences into bionic superheroes**

Open Bionics will present how they're using 3D printing to radically reduce the cost of advanced bionic hands and improve the clinical experience for the user.

Joel Gibbard, COO, Open Bionics

Session 5 (25 minutes)**Microprocessor controlled prosthetic foot and ankle systems**

Technological advances in microprocessor controlled prosthetic devices has led to a range of foot and ankle systems being routinely used by clinical teams within the UK. With applications for below, through and above knee levels of amputation, this presentation will discuss how the range of designs are offering the potential for more natural movement patterns and reduced undesired compensatory movement patterns. An insight into further designs expected will also be provided.

Jamie Gillespie, Director & Prosthetist, Pace Rehabilitation Limited



Session 6 (16 minutes)**How to maximise your chances of recovering the latest limbs**

This presentation will highlight the challenges to claiming the most sophisticated and expensive prosthetics. It will also discuss the practical steps for highlighting the benefits and maximising chances of recovery.

William Latimer-Sayer QC, Cloisters

Session 7 (19 minutes)**Accessing the wider environment - what's new in all terrain wheelchairs and vehicles**

The changes in wheelchair provision and wheelchair vehicles is changing rapidly, this short session will give you an insight into the what is new and how it can impact your clients.

Kate Sheehan, Director and Occupational Therapist, The OT Service

Session 8 (21 minutes)**Research and Development for Smart Wheelchairs**

Novel assistive robotic technologies are emerging that aim to help people with mobility impairments achieve a greater degree of independence. We explore the progress made in shared control systems, whereby "smart" wheelchairs are able to perceive their surrounding environment and understand the context in which users are operating, so that they can help them achieve their goals safely and effectively. The control strategy is also inherently dependent upon the type of user interface employed, so we also characterise the implications of various interfaces, from joysticks to head arrays, sip-and-puff switches and even brain-computer interfaces. In particular we will discuss the latest developments in two large European research projects: "ADAPT: Assistive devices for empowering disabled people through robotic technologies" and "CrowdBot: Safe robot navigation in dense crowds".

Dr Tom Carlson, Associate Professor, University College London

Session 9 (25 minutes)**The latest developments in Assistive Technology**

This session will explore the influence of artificial intelligence, home automation products, emerging technology start-ups and current research on the latest developments in Assistive Technology.

Richard Caley, Clinical Scientist (Rehabilitation), Consultant and Expert Witness (Electronic Assistive Technology), Managing Director of Assistive Technology Solutions, Wakefield

Session 10 (28 minutes)**Latest developments in neuroradiology**

There have been significant advances in the understanding of structural brain injury over the past few years. This presentation will review how the development of increasingly sophisticated neuro-imaging techniques, including new biomarkers for interpreting and objectively measuring brain injury, have advanced our understanding, particularly in the context of mTBI (mild traumatic brain injury).

Dr Emer MacSweeney, CEO and Medical Director, Re:Cognition Health

Session 11 (28 minutes)**Lasers and other advancements in technology to treat pain**

In this presentation Dr St Clair Logan will introduce the use of therapeutic laser in painful conditions both acute and chronic and how it may be used to improve rehabilitation of function and healing following injury or chronic pain. He will also discuss the various treatment packages available to catastrophic injury patients suffering from acute and chronic pain.

Dr Andrew St Clair Logan, Consultant in Pain Management and Anaesthetics, Countess of Chester NHS Trust, Nuffieldhealth and Spire Hospital

Session 12 (30 minutes)**Problem Scars: How we avoid them, how we treat them and what's on the Horizon or Time may heal all wounds but the scars might need more help**

This presentation will cover the basic processes of wound healing and scar formation and discuss the techniques that can be used to optimise scarring and the risk factors for poor scarring. It will also look at how poor scars can be managed and the limitations of these treatments and explore the impact that scars can have on an individuals and who may benefit from expert scar assessment and scar management.

Paolo Matteucci, Consultant Plastic and Reconstructive Surgeon, Hull & East Yorkshire Hospitals NHS Trust & Spire and East Riding Hospital

This conference took place on 26th September 2019



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5.75 POINTS



Biographies



William Latimer-Sayer QC
Cloisters

William specialises in catastrophic personal injury and clinical negligence. He has a special interest in quantum and the majority of his work is related to contested assessment of damages hearings. He is consistently highly-rated by the independent legal directories, being ranked by Chambers and Partners in band 1 for both personal injury and clinical negligence.

William is the General Editor of Schedules of Loss: Calculating Damages (Bloomsbury Professional, 4th edition 2018), the leading practitioner textbook on schedules of loss, a co-editor of Facts & Figures (Sweet & Maxwell) and the current Chairman of the Ogden Working party, which is responsible for drafting the Ogden Tables, used by all practitioners and judges to assess damages in personal injury and clinical negligence cases.

William won Chambers and Partners' Personal Injury Silk of the Year in 2018 having previously won Personal Injury Junior of the Year in 2008 and 2010.



Jon Graham BA BSc MSc
Clinical Director, Physiofunction

Jon qualified in Physiotherapy from the University of Teesside, and also holds a Masters Degree in Cognitive Psychology. He is the Clinical Director of PhysioFunction, one of the UK's leading providers of Neurological Physiotherapy.

He is recognised as an expert in Neurological Physiotherapy and Rehabilitation Technology including Exoskeletons and FES.

He acts as an Expert Witness producing medico-legal reports for solicitors and Rehabilitation Needs Reports for Case Managers and other health professionals.

He has published articles in physiotherapy and neurological nursing journals.

He is a frequently requested Professional Speaker and clinical educator both here and abroad.



Dr. Clemens Müller
Head of Education IISART, Global Head of Clinical Applications & Research Hocoma AG

Clemens Müller, PhD, is the Head of Clinical Applications and Research at Hocoma AG (Switzerland) and the Global Head of Clinical & Scientific Affairs at DIH Technologies. Clemens received a BA in Biomechanics in 2005 and a master's in Rehabilitation Science from the University of Konstanz (Germany) in 2007. He then completed a PhD of Human Movement Science from the Chemnitz University of Technology in 2010. In addition, he is heading the IISART education working group focusing on the awareness and acceptance of advanced technologies in rehabilitation. He has been involved in numerous research, education and development projects and has focused much of his career on the linkages between motor learning principles and advanced technologies. Clemens has been working as a lecturer in the academic field of clinical and medical education since 2004.

Biographies

**Daniel Freeman**

Professor of Clinical Psychology, University of Oxford, Consultant Clinical Psychologist, Oxford Health NHS Foundation Trust, and co-founder and Chief Clinical Officer, Oxford VR.

Daniel Freeman is an NIHR Research Professor and Professor of Clinical Psychology in the Department of Psychiatry, University of Oxford, a consultant clinical psychologist in Oxford Health NHS Foundation Trust, a fellow of University College Oxford, and leads the Oxford Cognitive Approaches to Psychosis (O-CAP) research group at the University of Oxford. Daniel has been working with virtual reality (VR) since 2001 and is a co-founder and Chief Clinical Officer of Oxford VR, a University of Oxford spinout company. Oxford VR's focus is on developing clinically validated, user-centred automated cognitive treatments for mental health disorders.

**Jamie Gillespie**

Director & Prosthetist at Pace Rehabilitation

Following a motorcycle accident during 1994, Jamie became a below knee amputee and moved into the Prosthetics industry. During his 20 years as a certified Prosthetist, he has worked within an NHS centre in London, travelled the world providing technical support in over 22 countries for a leading prosthetic manufacturer and since 2006 has worked within private practice for Pace Rehabilitation. Jamie is kept busy as a treating clinician and Expert Witness at Pace's facility in Amersham, Buckinghamshire. He has extensive knowledge with trauma cases and routinely works with advanced prosthetic devices offering good levels of clinical outcome. Outside of work, where time permits, Jamie enjoys running half marathons and taking part in challenging swims as a part of his ongoing denial that age is catching up with him.

**Pretty Jetwani**

Highly Specialist Orthoptist, Sight Plus

Pretty Jetwani is a highly specialist Orthoptist with 30 year's experience of services in vision rehabilitation and a Liveryman with the Worshipful Company of Spectacle Makers. Her experience includes working with children, young people and adults with visual impairment and additional disabilities both in the UK and abroad including expert witness work for educational tribunal and clinical negligence cases. Pretty is passionate about improving services for people with sight loss by sharing her knowledge. She believes that we can all meet the needs of people with visual impairment and additional disabilities by working together.

Biographies



Kate Sheehan

Director and Occupational Therapist, The OT Service

The OT Service is managed by Kate Sheehan a well-respected Occupational Therapist with over 30 years of clinical experience she believes passionately that if you 'design a clients built environment to meet their individual needs then it can give them choose and control over their life'. The OT Service provides, expert Occupational Therapists with in depth knowledge of housing, equipment and design through their hand picked network. We only provide experts in Housing and we pride ourselves on being one of the leading OT companies that only specialises in our field of practice.



Dr Tom Carlson

Associate Professor, University College London

Dr Tom Carlson is an Associate Professor and MSc Programme Director at the Aspire CREATE (Centre for Rehabilitation Engineering and Assistive Technology), University College London (UCL), UK. He obtained his MEng in Electrical & Electronic Engineering (2006) and PhD in Intelligent Robotics (2010), both from Imperial College London. Before joining UCL as a lecturer in 2013, he undertook 3.5 years of postdoctoral research in shared control for brain-machine interfaces at EPFL, Switzerland. From 2016-2018, he was also a visiting professor at LAMIH UMR CNRS 8201, Université de Valenciennes et du Hainaut-Cambrésis, France. Together with Dr Marie Babel (IRISA, Rennes, France), Dr Carlson co-directs the INRIA associated team ISI4NAVE (2016-2021), which is developing innovative sensors and adapted interfaces for assistive navigation and pathology evaluation. Dr Carlson's research focus is on the user-centred design of assistive robotic technologies for people with spinal cord injuries and other debilitating pathologies. He is particularly interested human-robot interaction and is developing shared control techniques for wheelchairs, robotic exoskeletons and brain-machine interfaces. Currently, he has several funded research projects around these themes including CROWDBOT (EU Horizon 2020) and ADAPT (EU Interreg VA FCE), which both focus on shared control for smart wheelchair applications and RESPONSS (Leslie Trust), where he is focussing on the role of a brain-computer interface in spasticity management.

Biographies



***Richard W Caley, BSc MSc CSci MIPEM, CIIr
Clinical Scientist (Rehabilitation), Consultant and Expert Witness (Electronic Assistive Technology), Managing Director of Assistive Technology Solutions, Wakefield, Clinical Scientist (Rehabilitation)***

As a professional Clinical Scientist Richard Caley has specialist knowledge in rehabilitation engineering, electronic assistive technology and physiological measurement. This knowledge provides the skills with which he assesses patients for specialist wheelchair controls, telecare and telemedicine technology. His expertise in electronic assistive technology enables him to professionally recommend, manage and support environmental control systems, communication aids, computer access and rehabilitation engineering solutions to patients with severe movement and cognitive impairment. As a medico-legal expert he is privileged to play a team role in restoring quality of life for clients with physical, neurological and cognitive injury.

In his NHS career he has worked alongside Consultants in Rehabilitation and Spinal Injuries, providing technological solutions to meet the needs of patients with severe neurological disorders. He is a recognised authority in Rehabilitation and Assistive Technology and has chaired IPEM's Special Interest Group in Rehabilitation and Biomechanical Engineering.

Richard is a Chartered Clinical Scientist registered with the Health Professionals Council and a Corporate Member of the Institute of Physics and Engineering in Medicine (IPEM). He has over 40 years' professional experience working in acute hospitals in Yorkshire with regional specialities in Spinal Injury, Burns and the Neurosciences. Richard is a Trustee Director on the charitable boards of Pinderfields' Spinal Centre and Second Chance Headway Centre, and is the Managing Director of Assistive Technology Solutions, Wakefield.



***Dr Emer MacSweeney
CEO & Consultant Neuroradiologist, Re:Cognition Health***

Dr Emer MacSweeney is a leading London neuroradiologist with experience in both the NHS and the independent sector. Currently, she is the CEO and Medical Director of Re:Cognition Health, where she was awarded the KPMG Entrepreneur of the year award in 2016. Her previous posts include Director of Neuroradiology at Atkinson Morley's Hospital, St George's Healthcare Trust and Managing Director at MedTel UK. She trained in neuroradiology at The Hospital of Neurology and Neurosurgery, Queen's Square, specialising in interventional vascular neuroradiology, and spent time on a scholarship at Harvard University. Dr MacSweeney has a special interest in neuroradiology of cognitive impairment disorders with considerable experience in imaging of neurovascular diseases and traumatic brain injury. She has extensive experience of providing medicolegal neuroradiology reports, instructed by both claimants, defendants and in response to joint instructions.

Biographies



Dr Andrew St Clair Logan FFPMRCA
Consultant in Pain Management

Dr Andrew St Clair Logan has been a Consultant in Pain Management in the NHS and private sector for 24 years. He is now an independent Consultant in Pain Management specialising in the interventional treatment of long-term chronic pain and the treatment of acute and long term painful conditions with therapeutic laser therapy. He also specialise in expert witness work related to chronic pain in personal injury and clinical negligence cases. Since 2013 he has been using therapeutic laser (in the form of class 4 laser therapy) to help relieve pain and rehabilitate patients from injury or long-term pain. This has been in his pioneering centre in Chester. Dr St Clair Logan is first Pain Management Specialist to develop this therapy in the UK.

www.laser4pain.co.uk

www.managedhealthcareservices.co.uk

The highest recognised qualification for the sub speciality of pain management (officially is part of anaesthesia) is FFPMRCA or Fellow of the Faculty of Pain Management of the Royal College of Anaesthetists. Holders of this qualification are experts at assessing and treating the patient with long term, so called "chronic pain" and essentially this is a complex multidisciplinary area in which there are also elements of psychology and physiotherapy. His main aim is to provide some relief and systematic diagnosis through interventional techniques and the innovative use of therapeutic laser.



Mr Paolo Matteucci
Consultant Plastic, Reconstructive, Head and Neck and Aesthetic Surgeon,
Hull University Hospitals Trust

Mr Matteucci is an experienced Plastic and Reconstructive Surgeon with Special Interests in Head and Neck Reconstruction, Complex skin cancer surgery, Facial Palsy and Trauma. His practice is centred around optimising patients functional and aesthetic outcomes. He has broad research interests covering wound healing, Skin Cancer and Facial Palsy. He has published widely in these areas and has written 2 book chapters on various aspects of Head and Neck Surgery. He is passionate about training the next generation of Plastic Surgeons and is a Senior Clinical Tutor at Hull and York Medical School and sits on various national committees involved with supervising and developing advanced training schemes for plastic surgery. He has presented research a numerous national and international meetings and has been an invited speaker at a number of conferences.



Summit Medical and Scientific

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Our partners Hocoma and Motek have developed high tech solutions which set the standard for neurological and orthopaedic rehabilitation, physical therapy, human movement therapy, and research. These innovative devices help balance therapy demand and therapy effort, and are based on clinical research and motor learning principles:

- Start as early as possible
- Train functionally
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- Train beyond present capabilities
- Ensure active participation and motivation

The entire continuum of care is covered, from the hyper acute phase to the home. The devices are suitable for the upper and lower extremities, from severe to moderate impairment and preparing for daily life. The latest HocoNet software platform connects all devices for revolutionary streamlined patient data collection and treatment plans. HocoNet is accessible by doctors, therapists and patients to track progress, see reports and improve device efficiency.



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