

SCHOOL OF ENGINEERING AND DESIGN
BRUNEL UNIVERSITY, WEST LONDON

Orthopaedic Research and Learning Centre

International Conference and Course on Orthopaedic Surgery, Biomechanics and Clinical Applications

6 – 9th June 2010

KEYNOTE

**The Past Contributions and
Future Fate of Clinical Engineers**

Prof. Edmund Chao Johns Hopkins University, USA

TRACK CHAIRMEN

Mr. Richard Field South West London Elective Orthopaedic Centre, UK

Prof. Antonio Moroni Rizzoli Orthopaedic Institute Bologna, Italy

Prof. Edmund Chao Johns Hopkins University, USA

Prof. Jian S. Dai King's College London, UK

Prof. Noam Eliaz Tel Aviv University, Israel

Prof. Sean P. Hughes Imperial College London, UK

Prof. Ofer Levy Brunel University & Reading Shoulder Unit, UK

PROGRAM CHAIRS

Dr. Neriman Ozada Brunel University, UK

Prof. Ibrahim I. Esat Brunel University, UK

Prof. Ofer Levy Brunel University & Reading Shoulder Unit, UK

+150 scientific paper presentations



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For submissions and registration please visit:
<http://www.brunel.ac.uk/about/acad/sed/conf/obcas>

**Abstract proceedings will be published
in the Journal of Biomechanics**

JOINT AND MUSCULOSKELETAL SYSTEM BIOMECHANICS, SURGERY AND SIMULATION

Organised by Prof. Edmund Chao, Johns Hopkins University, USA

Connective tissue healing and remodelling – the biomechanical foundation

Dr Chunfeng Zhao, Mayo Clinic, USA

Simulation technology in musculoskeletal biomechanics

Prof. Edmund Chao, Johns Hopkins University, USA

Current status of joint replacement technology Prof. Peter Walker, New York University, USA

BIOMATERIALS AND COATING OF IMPLANTS

Organised by Prof. Noam Eliaz, Tel Aviv University, Israel

Biomaterials & Biological materials Dr. Sylwia Sobieszczyk, Gdansk University of Technology, Poland

Biologically active coatings for orthopaedic applications Prof. Aldo Boccacini, Imperial College London, UK

Bioceramics for orthopaedic surgery Prof. Ramón Torrecillas, Fundación ITMA Parque Tecnológico de Asturias, Spain

LOWER LIMB SURGERY AND CLINICS

Organised by Prof. Antonio Moroni Rizzoli Orthopaedic Institute, Italy

Hip surgical approaches Prof. Burkhard Wippermann, Chefarzt der Klinik für Unfall- und orthopädische, Germany

Hip bearings Prof. Antonio Moroni, Rizzoli Orthopaedic Institute, Italy

Hip arthroplasty outcomes Dr. Oliver Marin-Pena, Hospital Infanta Leonor, Spain

SPINE AND INTERVERTEBRAL DISC

Organised by Prof. Sean P. Hughes, Imperial College London, UK

Intervertebral cell death Dr Sally Roberts Keel University, UK

Stem cell research in the intervertebral disc Prof. Judith Hoyland, Manchester University, UK

Clinical application of stem cell research Prof. Sean P. Hughes, Imperial College London, UK

ROBOTICS, HAPTICS AND COMPUTER ASSISTED SURGERY

Organised by Prof. Jian S. Dai, King's College London, UK

UPPER LIMB SURGERY AND CLINICS

Organised by Prof. Ofer Levy, Brunel University & Reading Shoulder Unit, UK

Clavicle and AC joint Prof. Ofer Levy, Brunel University & Reading Shoulder Unit, UK

Fractures of the shoulder & elbow Mr. Jai Relwani Kent, UK

Shoulder Arthroplasty and Arthroscopy Prof. Ofer Levy, Brunel University & Reading Shoulder Unit, UK

CONFERENCE SESSIONS AND SESSION ORGANISERS

ORTHOPAEDIC BIOMECHANICS, SURGERY, IMPLANTS AND CLINICAL APPLICATIONS

Metal-on-metal hip resurfacing
Dr. Tom Joyce, Newcastle University, UK

Muscular force transmission and remedial surgery Dr. Can A. Yucesoy, Bogazici University, Turkey

ACL reconstruction: Biomechanics and fixation Mr. Martyn Snow, Royal Orthopaedic Hospital, UK

COMPUTER AIDED TECHNIQUES AND MODELLING IN ORTHOPAEDIC SURGERY AND ROBOTICS

Computer-assisted surgery of the Knee Dr. Nanne P. Kort, Orbis Medical Center, Netherlands

Clinical orthopaedic surgery supported by computer aided techniques: Future perspectives
Prof. K. Fredrik Almqvist, Ghent University Hospital, Belgium

Numerical Methods in Biomechanics of Bone and Lower Limb Dr. Daniel Kluess, University of Rostock, Germany

JOINT AND MUSCULOSKELETAL SYSTEM BIOMECHANICS, SPORT AND INJURY BIOMECHANICS

Shoulder joint biomechanics
Prof. Garth Johnson, Newcastle University, UK

Control, simulation and analysis of human neuromusculoskeletal system
Dr. Emel Demircan, Prof. Oussama Khatib, Stanford University, USA

Hip and knee kinematics and kinetics
Prof. John Leicester Williams, University of Memphis, USA

Biomechanics and diagnostic techniques of lower limb joints
Prof. Bin Wang, University of Aberdeen, UK

The muscular link between movement and pathology in sports injury Dr Dylan Morrissey, Queen Mary University of London, UK

Biomechanics of lower limb joints
Dr. Cathy Holt, Cardiff University, UK

Lower limb joint biomechanics and simulation Prof. John Rasmussen, Aalborg University, Denmark

BIOMATERIALS AND BIOLOGICAL MATERIALS-TISSUE BIOMECHANICS AND MODELLING

Bone Mechanics Dr. Can A. Yucesoy, Bogazici University, Turkey

Cements in orthopaedic surgery
Dr. Sanjukta Deb, Kings College, London UK

Biomaterials & Tribology
Prof. Andrzej Zielinski, Gdansk University of Technology, Poland

DESIGN, DEVICES, INSTRUMENTATION AND IMPLANTS

Biosurgical devices, methods and modelling Dr. Mahmoud Chizari, Brunel University, UK

Design and simulation Dr. Emrah Gumus, Texas Tech University, USA

COMPANY DEMONSTRATIONS, WORKSHOPS AND CONFERENCE SESSIONS

Glenoid fixation of lateralised reverse shoulder prosthesis – DJO

3D Knee – An ACL substituting Design – DJO

Gait Course: Codamotion GaitLab Session – Charnwood Dynamics Ltd.

The Codamotion System – Charnwood Dynamics Ltd.

- System Configuration
- Marker Placement and Static Anatomical Measurements
- Data Capture Procedure, Reporting and

Model Generation from 3D Image Data for Biomechanics Applications – Simpleware Ltd.

Imaging, Biomechanics and Simulation – Simpleware Ltd.

Model Generation Software Demonstration – Simpleware Ltd.

The Equinox Integrated Shoulder System – Sawbone Workshop – Exactech

Platelet Rich Plasma in Sports Medicine – Exactech

CR Slope with the Optetrak Knee System – Exactech

PLENARY TALKS AND SPEAKERS

Hip resurfacing: The past, the present and the future

Prof. Antonio Moroni, Rizzoli Orthopaedic Institute, Italy

Orthopaedic implant development – 25 years of trials and tribulations

Mr. Richard Field, South West London Elective Orthopaedic Centre, UK

Electrocrystallization of calcium phosphates for orthopaedic implants

Prof. Noam Eliaz, Tel Aviv University, Israel

Paradigms and Progress in Trauma and Orthopaedics

Mr. Mike Kimmons, CEO British Orthopaedic Association, UK

Using multibody dynamics to design total knee implants

Prof. John Leicester Williams, University of Memphis, USA

Robots and the human

Prof. Oussama Khatib, Stanford University, USA

Harnessing mechanobiology to deliver skeletal regeneration

Prof. Allen Goodship, UCL, UK

Signature procedure with the TKA

Dr. Nanne P. Kort, Orbis Medical Center, Netherlands

Myofascial force transmission has major implications for remedial surgery

Dr. Can A. Yucesoy, Bogazici University, Turkey

Bioactive load-bearing implants

Prof. Andrzej Zielinski, Gdansk University of Technology, Poland

Radiographic assessment of kinematics in healthy and replaced joints

Prof. Scott Banks, University of Florida, USA

Bone graft substitutes

Mr. Lester Wilson, Royal National Orthopaedic Hospital Trust, UK

Correctional techniques for adolescent idiopathic scoliosis

Mr. Stewart Tucker, The Wellington Hospital, UK

A technological chip on my shoulder

Prof. Lennard Funk, Salford University, UK

The role of computer navigation in assessing knee kinematics during total knee replacement

Mr. Ajeya Adhikari, The South West London Elective Orthopaedic Centre, UK

Objective classification of healthy and pathological joint function and its application to the assessment of joint replacements

Dr. Cathy Holt, Cardiff University, UK

From theory to practice: transfer of FEA results into clinical application

Dr. Daniel Kluees, University of Rostock, Germany

Clinical implications of stem cells in back pain

Prof. Sean P. Hughes, Imperial College London, UK

Carbon nano-tube containing macroporous alumina ceramics for enhanced biological filtration against viruses and bacteria

Dr. Cengiz Kaya, Yildiz Technical University, Turkey

Tendons: Mirrors of inner health

Prof. Nicola Maffulli, Queen Mary University of London, UK

Non fusion techniques for lumbar disc degeneration

Mr. Sashin Ahuja, University Hospital of Wales & University Hospital Llandough, UK

Hip Arthroscopy – an emerging technique and indications

Mr. Udi Rath, Ben Gurion University, Beer Sheva, Israel

Shoulder Arthroplasty past present and future

Prof. Ofer Levy, Brunel University, UK

Shoulder Surgery – a perspective of 40 years

Mr. Stephen Copeland, Reading Shoulder Unit, UK

COURSE-INSTRUCTIONAL ORTHOPAEDIC COURSE LECTURES

UPPER LIMB SURGERY AND BIOMECHANICS

Organised and Chaired by
Prof. Ofer Levy

Brunel University, UK

Chaired by Mr. Mark I.

Loebenberg Tel Aviv University

School of Medicine, Israel

Advances in elbow arthroplasty

Mr. Mark I. Loebenberg Tel Aviv

University School of Medicine, Israel

Current Management of Clavicle

Injuries Mr. Mark I. Loebenberg Tel

Aviv University School of Medicine,

Israel

Total wrist arthroplasty Dr. Zulfi

Rahimtoola Reading Orthopaedic

Centre, UK

Limited fusion of the wrist Dr.

Zulfi Rahimtoola Reading Orthopaedic

Centre, UK

Treatment of the arthritic wrist Dr.

Zulfi Rahimtoola Reading Orthopaedic

Centre, UK

Anatomy and pathology of the

Acromio-clavicular joint

Mr. Joydeep Sinha London Bridge

Hospital, UK

Clinical applications of

biomechanics principles in

shoulder arthroplasty Mr. Giuseppe

Sforza Worcester & Reading Shoulder

Unit, UK

Management of massive RCT and

cuff arthropathy (Verso)

Prof. Ofer Levy Brunel University &

Reading Shoulder Unit, UK

Role of navigation in shoulder

arthroplasty Mr. Jai Relwani Kent, UK

Clinical applications of shoulder

Biomechanics in day to day

practice Prof. Ofer Levy Brunel

University & Reading Shoulder Unit, UK

SPINE SURGERY AND INTERVERTEBRAL DISC

Organised and chaired by

Prof. Sean P. Hughes Imperial

College London, UK

Mr John E. Nixon The London

Clinic, UK

Imaging of the spine

What's the best way of finding
the problem in the spine? Can we
afford it?

Professor Philip Gishen

Surgical navigation of the spine

How accurate is it? Isn't it like losing
control of surgery to a computer or
robot? Mr Kevin O'Neill

Minimal intervention surgery

Can it all be done down a tube?

Can any spinal surgeon achieve this
given appropriate training?

Mr Khai Lam, London Spine Centre, UK

The intervertebral disc

When the disc has failed is it
better to:

a) Remove it and Fuse it?

Mr David Harrison, The Royal National
Orthopaedic Hospital, UK

b) Replace it with a New Prosthetic
Disc? Mr Ian Shackelford

c) Discussion

Aspects of spinal fusion surgery

Mr. Lester Wilson, Royal National
Orthopaedic Hospital, UK

Surgical Management of cervical

spine fractures Mr. Sashin Ahuja,

University Hospital of Wales &

University Hospital Llandough, UK

Surgery for thoracolumbar spinal

trauma Mr. Stewart Tucker The

Wellington Hospital, UK

COURSE-INSTRUCTIONAL ORTHOPAEDIC COURSE LECTURES

JOINT PRESERVING HIP SURGERY

HALF A DAY COURSE

**Organised and chaired by
Mr. Richard Field,
South West London Elective
Orthopaedic Centre, UK**

**History, symptom patterns and
physical signs of early stage hip
disease** Mr. Richard Field,
South West London Elective
Orthopaedic Centre, UK

**Radiological investigations of hip
pain** Dr. Rene Tayar,
Epsom & St Helier NHS Trust, UK

**Treatment options for early
stage hip disease – The role of
physiotherapy** Mr. Alex Manos,
Pure Sports Medicine, London

**Treatment options for early
stage hip disease – The role of
injections**

Dr. Francesco Strambi, Sienna, Italy
& South West London Elective
Orthopaedic Centre, UK

**Treatment options for early stage
hip disease – The role of hip
arthroscopy** Mr. Vikas Khanduja,
Addenbrooke's Hospital, Cambridge UK

**Treatment options for early stage
hip disease – The role of open
surgery** Mr. Johan Witt,
University College, London UK

**Computer Simulation for early
intervention surgical training**
Dr Richie Gill, Oxford University, UK

**Prehab/Rehab – The role of
physiotherapy for surgical
patients** Mr. Alex Manos,
Pure Sports Medicine, London UK

**The economics of surgical
treatments for early stage hip
disease**

**Case histories presented by
Richard Field, Johan Witt & Vikas
Khanduja**

PATHOGENESIS OF DEGENERATIVE HIP DISEASE

HALF A DAY COURSE

**Organised and chaired by
Mr. Richard Field,
South West London Elective
Orthopaedic Centre, UK**

**Is osteoarthritis of the hip ever
Idiopathic?** Mr. Ib Roushdi,
The South West Thames Orthopaedic
Training Programme

**Imaging the hip joint – How to do
it properly** Dr. Rene Tayar,
Epsom & St Helier NHS Trust, UK

**Developmental Hip Conditions
– Natural History** Mr. Richard
Field, South West London Elective
Orthopaedic Centre, UK

Femoro-Acetabular impingement
Mr. Vikas Khanduja, Addenbrooke's
Hospital, Cambridge UK

**New findings on mechanical
impingement** Mr. Tom Pollard,
Nuffield Orthopaedic Centre, Oxford UK

**Computer Simulation of
Femoro-Acetabular Impingement**
Dr. Neriman Ozada,
Brunel University, UK

The influence of lifestyle
Mr. Karthig Rajakulendran, South
West London Elective Orthopaedic
Centre, UK

**Immunological & Biochemical
Considerations** Prof. Fionula
Brennan, The Kennedy Institute,
Imperial College, London UK

**Economic burden of degenerative
hip disease-Is there a case for
early treatment?**

KNEE AND HIP SURGERY

**Use of Software driven tools in
knee arthroplasty** Mr. Ajeya Adhikari,
The South West London Elective
Orthopaedic Centre, UK

**The history and evolution
of total knee replacements**
Mr. Vikas Khanduja,
Cambridge University Hospitals, UK

**Hip resurfacing in patients
under 50** Mr. Ronan Treacy,
Royal Orthopedic Hospital, UK

**How to get really bad results
with Metal/Metal bearings!**
Mr. Ronan Treacy,
Royal Orthopedic Hospital, UK

**Minimum 10 year follow up of
Birmingham Hip resurfacing**
Mr. Ronan Treacy,
Royal Orthopedic Hospital, UK