

**15<sup>th</sup> Bath Biomechanics Symposium – 16<sup>th</sup> September 2019**  
**Emerging technologies in musculoskeletal biomechanics**

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**DRAFT PROGRAMME**

**09:00**      **Registration**

**09:30**      **Welcome**

**Session 1**      **Keynote lecture, Free papers and Discussion**

*Chair: Dr Elena Seminati (University of Bath)*

09:30      Keynote lecture 1: **DRIVING INNOVATION IN A CLINICAL SETTING**

*Mr Vipul Mandalia, Royal Devon and Exeter Hospital*

10:00      **IN-VIVO PERFORMANCE OF HRP-SILK FIBROIN/ZnSr DOPED  $\beta$ -TCP SCAFFOLDS FOR OSTEOCHONDRAL TISSUE REGENERATION**

*Ribeiro, V.P., Pina, S., Canadas, R.F., Araújo, A., da Silva Morais, A., Vilela, C., Vieira, S., Cengiz, I.F., Reis, R.L., Oliveira, J.M.*

10:10      **CERAMIC RESURFACING: THE FUTURE AND CHALLENGES**

*de Villiers, D., Richards, L., Taylor, A., Collins, S.N.*

10:20      **NOVEL CrNAg COATINGS**

*Richards, L., Shelton, J., Hart, A., Hothi, H., Espitalier, L., Collins, S.N.*

10:30      **A NOVEL RADIOPAQUE UHMWPE: A FEASIBILITY STUDY FOR RSA-BASED MEASUREMENT**

*Zaribaf, F.P., Koster, L.A, Kaptein, B.L, Gill, H.S, Pegg, E.C.*

10:40      **ANISOTROPIC STIFFNESS PREDICTION OF ADDITIVELY MANUFACTURED TITANIUM LATTICE STRUCTURES**

*Munford, M. J., Hossain, U., Jeffers, J.*

10:50      **IMPROVING THE X-RAY VISIBILITY OF LIGAMENT REPAIR SUTURES**

*Pegg, E.C.*

**11:00**      **Refreshments, trade exhibits and poster presentations**

**Session 2**      **Keynote lecture, Free papers and Discussion**

*Chair: Prof Peter Ogradnik (Keele University)*

11:30      Keynote lecture 2: **THE WEARABLE GAIT LAB: ARE WE THERE YET?**

*Prof Claudia Mazza', University of Sheffield*

12:00      **A NOVEL IMU-BASED CLINICAL ASSESSMENT PROTOCOL FOR AXIAL SPONDYLOARTHRITIS: A VALIDATION STUDY**

*Franco, L., Sengupta, R., Wade, L., Cazzola, D.*

- 12:10 **ULTRASONIC MARKER FOR NON-INVASIVE MUSCULOSKELETAL TRACKING WITH POTNTIAL APPLICATION TO CORRECTIVE ORTHOPAEDIC PROCEDURES**  
*Zaifoglu, D., Hunter, A. J., Iravani, P.*
- 12:20 **SUPERIOR FUNCTION WITH UNICOMPARTMENTAL KNEE IMPLANTS IN REAL-LIFE**  
*Moonen, M., Lipperts, M., Heyligers, I.C., Grimm, B.*
- 12:30 **A NEW PERSONALISED LINER WITH EMBEDDED TEMPERATURE AND HUMIDITY SENSORS FOR LOWER LIMB AMPUTEES**  
*Paternò, L., Dhokia, V., Seminati, E.*
- 12:40 **GENERATING PRE-CLINICAL EVIDENCE FOR MHRA – AN IN-SILICO CLINICAL TRIAL EXAMINING THE SAFETY OF A NOVEL DEVICE FOR KNEE ARTHRITIS TREATMENT**  
*MacLeod, A.R., Gill, H.S.*
- 12:50 **FEASIBILITY OF A THREE-CAMERA, TREADMILL-BASED GAIT SYSTEM TO SUPPORT TOTAL KNEE REPLACEMENT MONITORING WITHIN A HOSPITAL CLINIC**  
*Bruce, D.J., Murray, J.R., Whitehouse, M.R., Seminati, E., Preatoni, E*
- 13:00 Lunch, trade exhibits and poster presentations**

**Session 3** **Keynote lecture, Free papers and Discussion**  
*Chair: Dr Elise Pegg (University of Bath)*

- 14:00 Keynote lecture 3: **ROBOTIC ASSISTED ORTHOPAEDIC SURGERY – ITS ROLE IN JOINT ARTHROPLASTY**  
*Prof Ferdinando Rodriguez y Baena (Imperial College)*
- 14:30 **THE INFLUENCE OF SUBCHONDRAL BONE CYSTS IN PATIENT SPECIFIC FINITE ELEMENT MODELLING OF THE TIBIOTALAR JOINT**  
*Talbott, H.G., Brockett, C.L., Redmond, A.C. and Mengoni, M.*
- 14:40 **ESTIMATION OF NECK MUSCLE FORCES AND FUNCTION IN THE PREPERATORY PHASE OF RUGBY CONTACT EVENTS**  
*Silvestros P., Pizzolato C., Lloyd D.G., Preatoni E., Gill H.S. and Cazzola D.*
- 14:50 **DEVELOPMENT OF A FINITE ELEMENT MODELLING METHODOLOGY FOR THE ANALYSIS OF VERTEBRAL BODIES UNDER STATIC AND DYNAMIC LOADING**  
*Hernandez, B.A., Gill, H.S., Gheduzzi, S.*
- 15:00 **OPTIMAL TIBIAL FIXATION FOR SOFT TISSUE KNEE REPAIR**  
*Robinson, J.R., Agostinho Hernandez, B., Taylor, C., Gill H.S.*
- 15:10 Refreshments, trade exhibits and poster presentations**

**Session 4**

**Keynote lecture and panel discussion**

*Chair: Dr Bernd Grimm (Centre Hospitalier de Luxembourg)*

- 15:45      **Keynote lecture 4: BODY INTERFACE BIOMECHANICS FOR ADVANCED REHABILITATION**  
*Prof Liudi Jiang (University of Southampton)*
- 16:15      **Panel discussion**  
Panel members: Dr Simon Collins, Prof Richie Gill, Prof Liudi Jiang, Prof Claudia Mazza', Prof Ferdinando Rodriguez y Baena
- 17:30      **Symposium closure**

**POSTER PRESENTATIONS**

**RECYCLING OF ORGANIC AND OTHER WASTE MATERIALS FOR THE PRODUCTION OF MEDICAL DEVICES IN DEVELOPMENT COUNTRIES**

*de-Guzman, J., Ogrodnik, P.J.*

**CREATING AND VALIDATING AN OPEN-SOURCE FLUID-STRUCTURE INTERACTION MODEL FOR INTRA-TRABECULAR BONE MARROW UNDER LOADING**

*Frank, E.F., Cookson, A.N., Gill, H.S.*

**THE FREE SWELLING OF ARTICULAR CARTILAGE - AN EXPERIMENTAL AND COMPUTATIONAL INVESTIGATION**

*Czerbak, K.B., Clift, S., Gheduzzi, S.*

**DESIGN OF A TOOL TO AID CUTLERY USE FOR SUFFERERS OF ARTHRITIS**

*Coe, R., Gheduzzi, S.*

**THE DEVELOPMENT OF AN IN-VITRO MODEL OF THE LOWER LIMB FOR THE EVALUATION OF COMPARTMENT SYNDROME DETECTORS**

*Knapp, J., Ogrodnik, P.J., Verborg, S.A.*

**IN-SILICO EVALUATION OF TURBULENT FLOW IN STENTS**

*Hunt, A., Ogrodnik, P.J.*

**IN-SILICO EVALUATION OF STENT FAILURE MODES**

*Allen, D., Ogrodnik, P.J.*

**DEVELOPMENT OF A NEW DEVICE TO ENABLE HOSPITALS TO BETTER MANAGE LEGIONNAIRE'S DISEASE PROTOCOLS**

*Gibbons, N., Ogrodnik, P.J.*

**AN AUTOMATED INSOLE PRESCRIPTION SYSTEM FOR ARTHRITIS PAIN RELIEF**

*McFaul, I., Gheduzzi, S., Darling, J.*