



ESB2022

27th Congress of the European Society of Biomechanics
26 - 29 June 2022, Porto, Portugal

 European Society
of Biomechanics



European Society of Biomechanics

The European Society of Biomechanics was founded in 1976 at a meeting in Brussels of 20 scientists from 11 countries. Its goal is to encourage, foster, promote and develop re-

search, progress and information concerning the science of biomechanics. It is now the largest biomechanics society in Europe with over 1500 members.

ESB Council Members

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KU Leuven, Belgium

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Maastricht University, the Netherlands

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WELCOME



Dear colleagues,

On behalf of the organising committee, it is a great pleasure for us to welcome you all here in Porto in order to gather again with colleagues and friends after two long years of virtual exchanges. It has a great importance for us to welcome the annual congress of the European Society of Biomechanics in Porto, a city where history and modernity are in great symbiosis. While you certainly won't miss the historical architecture - the old colourful azulejo tiles and impressive barroque churches, it is crucial to highlight that Porto is also known for its focus on research and innovations and won, among other titles, the Best Start up friendly City of Europe in 2018. Biomechanics to Porto has a long tradition of more than 60 years and in 2013 the specialized Porto Biomechanics Laboratory LABIOMEPE opened at the University.

We have received more than 800 abstracts for the ESB 2022 congress and put together an extensive scientific programme divided in 8 parallel streams running throughout the full three conference days. The programme includes 31 perspective talks, 3 plenary lectures and over 450 podium and 240 poster presentations. Given the huge number of submissions, a large poster area has been set up in the ex-

hibition where, besides the three organized poster viewing sessions, we will hold accompanying events and gather during breaks. The main theme of the congress Biomechanics: Innovation, technology and societal impact, is reflected in the programme satellite events and activities.

Last but not least, we would like to introduce the International Symposium on Research and Entrepreneurship that has a special importance to us. The events of the symposium will be completing the scientific programme and offering various activities under the theme - Making the Leap: from Biomechanics research to Business, mainly a pre-course on Design Thinking, a contest for start-ups ideas and inspiring talks.

We would like to take the opportunity and thank all members of the International Scientific Committee and the ESB Council who have offered us a great support during the abstract review process and finalization of the conference programme and big thanks go also to our exhibitors, sponsors and also to the city of Porto for their support.

We wish you all a great congress!



Joao Manuel R.S. Tavares
*Faculdade de Engenharia da
Universidade do Porto*



Renato Natal Jorge
*Faculdade de Engenharia da
Universidade do Porto*



Paulo R. Fernandes
*Instituto Superior Técnico,
Universidade de Lisboa*

ESB 2022 LOCAL ORGANISING COMMITTEE



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FEUP/INEGI/LABIOMEIP

Pedro Martins

FEUP/INEGI/LABIOMEIP

Marta Campos Ferreira

FEUP

Dulce Oliveira

INEGI/LABIOMEIP

Nilza Ramiao

INEGI/LABIOMEIP

Elisabete Silva

INEGI/LABIOMEIP

Filipa Sousa

FADEUP/LABIOMEIP

Joao Paulo Vilas-Boas

FADEUP/LABIOMEIP

Joao Folgado

IST/IDMEC

José Machado

FEUP/INEGI

Goncalo Joao Almeida

FEUP

Enrico Dall'Ara

University of Sheffield, ESB Council Member

ESB 2022 INTERNATIONAL SCIENTIFIC COMMITTEE



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Henrique Amorim Almeida

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Stephen Ferguson

ETH Zurich, Switzerland

Maria Pia Ferraz

University Fernando Pessoa, Portugal

Alejandro Frangi

University of Leeds, UK

Diego Gallo

Politecnico di Torino, Italy

José Manuel García Aznar

University of Zaragoza, Spain

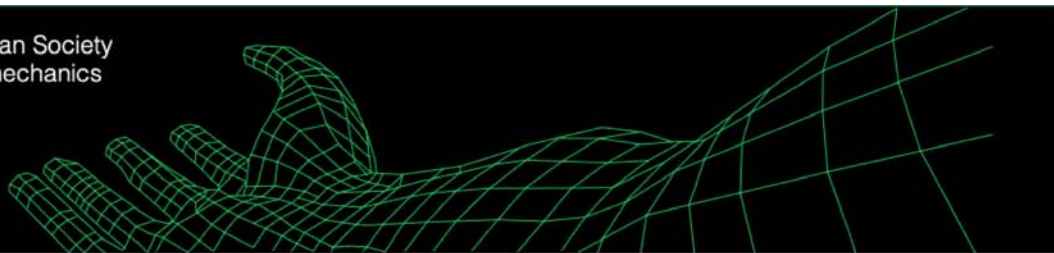
Balázs Gerics

University of Veterinary Medicine, Vienna, Austria

Richie Gill

University of Bath, UK

Margit Gföhler*Vienna University of Technology, Austria***Maria José Gómez-Benito***University of Zaragoza, Spain***Ridha Hambli***University of Orléans, France***Marie-Christine Ho Ba Tho***University of Technology of Compiègne, France***Hanna Isaksson***Lund University, Sweden***Dennis Janssen***Orthopaedic Research Laboratory, the Netherlands***Ilse Jonkers***KU Leuven, Belgium***Leo Jaskowicz***Hebrew University of Jerusalem, Israel***Hans Kainz***University of Vienna, Austria***Sebastian Laporte***ENS d'Arts et Métiers, Paris, France***Michele Marino***University of Rome Tor Vergata, Italy***Jorge Martins***University of Lisbon, Portugal***Edoardo Mazza***ETH Zurich, Switzerland***David Mitton***Université Gustave Eiffel, Lyon, France***Jérôme Molimard***ENS des Mines de Saint-Étienne, France***Fernando Jorge Monteiro***University of Porto, Portugal***Konstantinos Moustakas***University of Patras, Greece***Luca Modenese***Imperial College London, UK***Annegret Mündermann***University of Basel, Switzerland***Kristin Myers***Columbia University NY, USA***Jérôme Noailly***Pompeu Fabra University, Barcelona, Spain***Dieter Pahr***Vienna University of Technology, Austria***Christian Peham***University of Veterinary Medicine, Vienna, Austria***Estefania Pena***University of Zaragoza, Spain***Françoise Peyrin***University of Lyon, France***Mathias Pierlinck***Delft University of Technology, the Netherlands***Agustina Giuliadori Picco***Polytechnic University of Catalonia, Spain***María Ángeles Pérez Ansón***University of Zaragoza, Spain***William R. Taylor***ETH Zurich, Switzerland***Barbara Pierscionek***Anglia Ruskin University, UK***Gwendolen Reilly***University of Sheffield, UK***Rodolfo Repetto***University of Genoa, Italy***José Felix Rodriguez***Politecnico di Milano, Italy***Davide Ruffoni***University of Liège, Belgium***Benedikt Sagl***Medical University of Vienna, Austria***Massimo Sartori***University of Twente, the Netherlands***Alberto Sensini***University of Bologna, Italy***Lennart Scheys***KU Leuven, Belgium***Selda Sherifova***Graz University of Technology, Austria***Ciaran Simms***Trinity College Dublin, Ireland***Eduardo Soudah***Polytechnic University of Catalonia, Spain***Frans van de Vosse***Eindhoven University of Technology, the Netherlands***Harry Van Lenthe***KU Leuven, Belgium***Hans Van Oosterwyck***KU Leuven, Belgium***Ted Vaughan***National University of Ireland***Mark Thompson***University of Oxford, UK***Antonio Veloso***University of Lisbon, Portugal***Claudio Vergari***ENS d'Arts et Métiers, Paris, France***Marco Viceconti***University of Bologna, Italy***Xiao Yun Xu***Imperial College London, UK***Xuguang Wang***Université Gustave Eiffel, France***Uwe Wolfram***Heriot Watt University, Edinburgh, UK***Feihu Zhao***Swansea University, UK*



ESB Membership

General Member Benefits

- Reduced rate at ESB Annual Congresses & endorsed meetings
- Free subscription to ESB Newsletter
- Electronic access to a large network of biomechanics specialists through ESB website
- Reduced rate to various biomechanics-related journals
- Lab listed on the ESB website
- Access to ESB Facebook and LinkedIn sites
- Job posting through the ESB media (website, Facebook, LinkedIn, Twitter)
- Eligibility to large pool of ESB Awards
- Eligibility to candidate your Institution for organizing the annual ESB congress

+Additional Student Benefits

- Detailed information of biomechanics laboratories with ESB members
- Information about possible exchange to another laboratory
- Information about available courses (in biomechanics and other related fields)
- Job opportunities in biomechanics (offer, demand and information) in industry & academia
- Student events at the ESB Congress
- Access to ESB social media discussion forums on LinkedIn and Facebook
- List of funding sources
- Eligibility to ESB Student Award and Best Doctoral Thesis, ESB Mobility Award for Young Researchers, and ESB Student Committee

+Additional Corporate Benefits (*industrial parties*)

- Exclusive access to wide community of top EU scientists and researchers (1300+ ESB members)
- Exclusive right for job advertisement through ESB website, official social networks & ESB events
- Participate in all activities organised by the ESB (ESB Congress, Meetings of the ESB National Chapters,, ...)
- Corporate logo and company link website on the ESB homepage (<http://www.esbiomech.org/>)
- Submit contents (product news, special offers for ESB, workshops, ...) for Newsletter, YouTube Channel
- Priority to be a lead sponsor for ESB activities
- 20% discount for ESB Congress exhibition booth
- Opportunity to make a 10-15 min presentation in a dedicated parallel Corporate session at the ESB Congress
- Opportunity to organise a parallel user or award session at the ESB congress
- Contact person gets Regular Member benefits and can punctually transfer these benefits to any other employee of the company
- Contact person gets a personal subscription to Journal of Biomechanics

Members from institutions in Low Income Countries can get a 80% fee reduction

Becoming a member with the [online tool](#) is easy!

<https://esbiomech.org/esb-membership-benefits/online-application-form/>

CORPORATE MEMBERS OF THE ESB:



GENERAL INFORMATION

Conference venue

Alfândega Congress Centre

Address: Rua Nova da Alfândega, 4050-430 Porto, Portugal
www.ccalfandegaporto.com

Historic building recovered by the Pritzker Prize laureate architect Eduardo Souto de Moura, the unique Alfandega Congress center is located in the heart of Porto, on the quay of the Douro river.

All podium sessions and keynote presentations will take place on the second floor of the Alfandega Congress Centre, while the exhibition, poster sessions, lunch and coffee breaks will be organized on the ground floor level, in the West Ground Floor area.

How to get to the venue

A wide range of public transport options exist close to Alfandega and a large number of hotels and sights are located within walking distance.



From Porto city centre:



Alfandega congress centre is located in central Porto on the banks of the Douro River.



From the Airport



Direct bus 601: from the Airport to the Hospital St. Antonio (550m from the venue), operating between 5h30 and 00h30, (every 30 min), 50 min duration.

Metro

Line E: Airport to Trindade metro station (city center), change to Sao Bento (historical city center) where most hotels are located. Bus 500 is connecting the Sao Bento station and the Alfandega Congress Center in 5 minutes.



20 minutes, 25€ (from the airport)

Coffee breaks & lunches

Coffee and lunch will be served in the exhibition and poster area – West Ground Floor – according to the time mentioned in the programme.

Conference app

The Conference4me smartphone app provides you with the most comfortable tool for planning your participation at ESB 2022. Browse the complete programme directly from your phone or tablet and create your very own agenda on the fly. The app is available for Android, iOS, and Windows Phone. You can also use the app in order to reach out to other participants and colleagues, view the exhibition list, abstracts and more!

To download the mobile app, please visit:
<https://conference4me.psnc.pl/download/>



Certificates of attendance

All participants will receive a certificate of participation by e-mail after the congress.

Abstract book

The complete Abstract book is available for download in pdf on the conference website (www.esbiomech2022.org).

Printing companies

Peninsular - Stationery & Printing

(a 11-min walk from the congress venue)

Address: R. de Mouzinho da Silveira 67,
4050-416 Porto, Portugal.

Mon - Fri 9AM–12:30PM, 14–19PM

+351 22 200 5225

Busilis

Address: R. de Ferreira Borges 92,
4050-252 Porto

<https://busilis.com.pt/>

+351 222 080 150 | +351 968 090 481

Mon - Fri 9.30AM - 13PM & 14PM - 19PM

EBS 2022 Congress secretariat: Codan Consulting

The Codan Consulting team will be available onsite to assist with any queries that you might have related to the registration, scientific programme, exhibition and social events.

Student assistants will be available in the meeting rooms and in the poster area.

Exhibition

The exhibition area is located in the West Ground Floor. The exhibition opening hours are:

- Monday, 27th June 09:00 – 18:00
- Tuesday, 28th June 09:00 – 18:00
- Wednesday, 29th June 09:00 – 15:30

Internet access

There is free internet access in all areas of the venue.

Network: ESB2022guest

Password: ESB2022Porto

Registration information

For registration and collection of congress materials, please visit the registration area located on the ground floor level, near the West Ground floor (exhibition and poster area).

Opening hours

- Sunday, 26th June 13:00 – 19:30
- Monday, 27th June 07:15 – 17:00
- Tuesday, 28th June 07:30 – 16:30
- Wednesday, 29th June 07:30 – 16:30

Please note that all registration documents have been prepared for registered participants. When approaching the appropriate registration counter make sure to clearly state your last name (family name) under which you have registered.

Please have your confirmation letter and ID close at hand.

On-Site Registration / Open Payments: These counters are for participants registering and paying their registration fees on-site or with an outstanding payment.

Name badge

The participants are kindly required to wear and display their name badge at all times in order to enter the congress venue.

Payments

All payments made onsite need to be made in cash EUR or by debit/credit card (VISA/Mastercard accepted only).

Taxi companies

Taxis Porto

www.taxisporto.pt

+351 918 888 600

+351 220 997 336

Taxis Invicta

www.taxisinvicta.com

+351 225 076 400

Uber works very well in Porto.

ESB 2022 SOCIAL AND NETWORKING EVENTS

Student night

26th June 2022 | 19:30



Event open to students exclusively!

Venue: No Mercado restaurant, Market Ferreira Borges, R. da Bolsa 22, Porto

Relaxed networking event, music, Portuguese food... and speed dating student icebreaker game!

How to get to the Student night venue



Welcome reception

27th June 2022 | 19:00



Venue: Alfandega Congress Center, Noble Hall and riverside

Warm welcome to all participants and occasion to catch up with colleagues: gold Portuguese evening sun, drinks and fabulous music by the music group Tuna de Engenharia from the Engineering Faculty of the University of Porto!

Congress dinner

28th June 2022 | 20:00

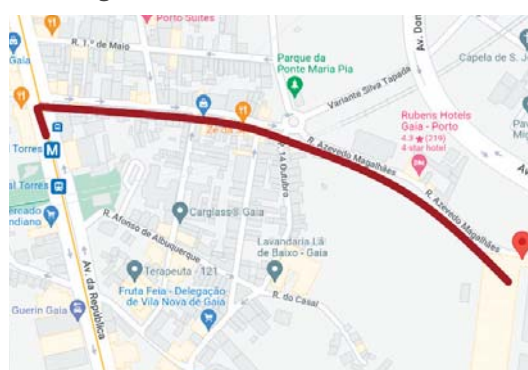


Venue: Real Companhia Velha cellars – Rua Azevedo Magalhães 314, Vila Nova de Gaia, metro: General Torres

Enjoy a networking evening with colleagues and friends in settings that

represent the essence of one's visit to Porto – at the premises of the oldest wine company in Portugal, the Real Companhia Velha.

How to get to the Conference dinner venue



If you have booked Registration including networking or a separate ticket for the Congress dinner, you will receive your dinner ticket at the registration desk. Please make sure to bring the ticket to the Congress dinner.

NETWORKING AND MENTORING EVENTS

Meet the PI

Tuesday | 28th June 2022 | 7:30 – 8:15
West Ground Floor

Would you like to know more about their current research, or what are their next scientific challenges? Don't miss the Meet the PIs mentoring session. On Tuesday 28th of June, have your breakfast with a senior researcher and discuss informally in small groups about research and/or career. The Meet the PI groups will meet in the exhibition and poster area, West Ground Floor. More practical information will be available in the registration area.



Women in Biomechanics with Aperó

Monday | 27th June 2022 | 18:00
Archive Hall

The "Women in Biomechanics aperó", takes place on Monday 27th June at 6 pm. During this event, you will have the opportunity to hear the testimonies and advice of inspiring women from our field, followed by informal discussions and exchange on initiatives and suggestions that could be launched within the ESB to improve diversity and inclusivity.

Greet Kerckhofs, from UCLouvain and KU Leuven, Belgium
Marlène Mengoni, from University of Leeds, United Kingdom
Barbara Pierscionek, from Anglia Ruskin University, United Kingdom
Areti Papastavrou, from Nuremberg Institute of Technology, Germany

ESB 2022 PRE-COURSES



The basics of mechanical characterization of soft biological tissue

Sunday | 26th June 2022 | 13:30 – 15:30
D. Maria Hall

Nele Famaey, Department of Mechanical Engineering, KU Leuven, Belgium

Sayed Ali Elahi, Movement Sciences Department and Department of Mechanical Engineering, KU Leuven, Belgium

Participants will learn the basic principles of three common mechanical tests for soft biological tissue: uniaxial tensile testing, biaxial tensile testing and unconfined compression testing; get insights into the pitfalls and challenges of biological tissue testing; refresh three basic constitutive models for biological soft tissue: neo-hookean model, transversely isotropic 'Gasser-Ogden-Holzapfel' model, poro-elastic model.



Explainable artificial intelligence methods in biomedical engineering for supporting medical diagnosis

Sunday | 26th June 2022 | 16:00 – 18:00
D. Maria Hall

Angela Lombardi, Physics Department, University of Bari, Italy

In this workshop, we will see the general taxonomy of the most popular XAI algorithms and we will focus on some applied clinical examples. The principal aim is to show how to realize fully interpretable AI models for supporting medical diagnoses.

Ideation Course

Sunday | 26th June 2022 | 10:00 – 12:00
D. Maria Hall

part of the Symposium on Research and Entrepreneurship

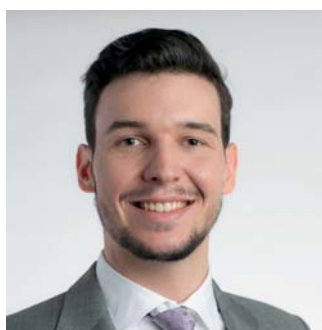
This session will be held by Everythink (<https://everythink.com/>), a design studio from Porto. This course aims to increase the impact of biomechanics on society, stimulating entrepreneurship and raising awareness of the processes of creativity, generation of ideas and value propositions. This pre-course is dedicated to creativity and design thinking, the main objective is for participants to deepen their knowledge in the area and learn about the main tools and best practices to be successful entrepreneurs.

ESB 2022 AWARDS SESSIONS



ESB S.M. Perren Research Award

Tuesday | 28th June 2022 | 16:00-17:00
Archive Hall



The winner of the 2022 ESB S.M. Perren Research Award is Michael Dreyer from the ETH, Zurich (Switzerland) for the manuscript entitled: **“Standardized Tibio-Femoral Implant Loads and Kinematics”** by MJ. Dreyer, A. Trepczynski, SH.

Hosseini Nasab, I. Kutzner, P. Schütz, B. Weisse, J. Dymke, B. Postolka, P. Moewis, G. Bergmann, GN. Duda, WR. Taylor, P. Damm, and CR. Smith.

Michael Dreyer is originally from Munich, Germany. He did his Bachelor's and Master's degree in mechanical engineering at ETH Zurich, Switzerland. There, he focused on robotics and composite materials. Currently, Michael is pursuing a Ph.D. under the supervision of Prof. William R. Taylor at the Laboratory for Movement Biomechanics at ETH Zurich and in close collaboration with Empa, the Swiss Federal Laboratories for Materials Science and Technology. In his project, Michael investigates the wear of joint implants. The project

aims to develop validated simulation tools for the preclinical prediction of polyethylene wear in implants. This multidisciplinary project involves mechanical testing of materials and implants, finite-element simulation, and retrieval analysis. Outside of research, Michael volunteers as a rhetoric coach and enjoys hiking and skiing in the Swiss Alps.

ESB Clinical Biomechanics Award

Monday | 27th June 2022 | 14:00-15:30
Archive Hall

- Biomechanics index for diabetic foot risk classification, **J. Menze**, T. Rojas, M. A. Zumstein, S. J. Ferguson, K. Gerber
- Biomechanical evaluation of diagnostic tests for rotator cuff lesions, R. Rynkevicius, C. Soares, L. Hympanova, **E. Silva**, T. Mascarenhas, P. Martins
- Effect of alendronate on bone fracture toughness in osteogenesis imperfecta, **A. Muñoz**, A. Carriero
- Application of cog threads for vaginal wall prolapse repair: ex-vivo study, A. Guiotto, G. Bortolami, A. Ciniglio, F. Spolaor, G. Guarneri, A. Avogaro, F. Cibin, F. Silvestri, **Z. Sawacha**

The four selected finalists will present their work in a dedicated session on Monday, 27th June from 14:00 in Miragaia Hall.



~~Best Doctoral Thesis Award~~

Wednesday | 29th June 2022 | 14:00 – 15:00
Archive Hall

~~The Best Doctoral Thesis award will be presented in the main plenary, Archive Hall. More information about the awarded thesis and author will be available in the online programme.~~

ESB Student Award

The student award session will take place on **Monday, 27th June from 16:00 – 17:00**, in the **Archive Hall**. One prize and three runner up awards will be given to the four finalists:

- Assessing the performance of thrombectomy devices with in silico models (Clinical and translational biomechanics / in silico trials)
Sara Bridio, Politecnico di Milano, Italy
- Predicting surgical outcomes across nine corrective techniques for sagittal craniosynostosis (Advance computing for biomechanics)
Connor Cross, University College London, United Kingdom
- Angiography-derived wall shear stress topological skeleton variability predicts myocardial infarction (Cardiovascular biomechanics)
Maurizio Lodi Rizzini, Politecnico di Torino, Italy
- Biomechanics and mechanobiology of mineralized fibrocartilage at the tendon-bone attachment (Hard tissue biomechanics)
Alexandra Tits, University of Liege, Belgium

ESB Poster Award

The ESB Poster Award is given at each ESB Congress with the purpose of raising the quality of poster presentations at the meeting. The selection is made by an ad hoc Poster Award Committee appointed by the ESB Council and chaired by the ESB Awards Committee Chairman.

ESB Travel Awards

The European Society of Biomechanics and the organisers proposed Travel Awards to financially help young researchers to participate at the ESB 2022 Congress. The awards will be presented during the congress dinner.

2022 ESB Best Doctoral thesis Award

The winner of the 2022 ESB Best Doctoral Thesis Award is Monika Colombo for her thesis entitled “Impact of fluid dynamics and drug transport on restenosis in femoral arteries after endovascular treatment” conducted at the Politecnico di Milano (Milano, Italy) under supervision of Prof. F. Migliavacca (co-advisor: Prof. C. Chiastra). Monika obtained her Master degree in Biomedical Engineering from Politecnico di Milano (2017), specializing in Biomechanics. Following an experience as graduate researcher in cardiovascular biomechanics at the Center for Computational Surgery at the Houston Methodist Research Institute (Texas, USA), she pursued a PhD in Bioengineering (completed in 2021) at Politecnico di Milano, exploring image and computational tools for in-silico analysis and prediction of adverse vascular events. Winning the Rocca Fellowship in 2019, she performed part of her research at the Edelman Lab at the Massachusetts Institute of Technology (Massachusetts, USA), focusing on pharmacokinetics and cell engineering. In 2020, she (virtually) stayed at the James Watt School of Engineering at the University of Glasgow (UK) to exploit drug transport models for cardiovascular applications. Monika is currently a Post-Doc in the deMello group in the Institute for Chemical and Bioengineering (ICB) at ETH Zurich (Switzerland). She creates computational models for real-time detection in immuno-assays for infectious diseases and fabricates microfluidic platform technologies for the investigation of cardiovascular pathologies.



INVITED KEYNOTE SPEAKERS

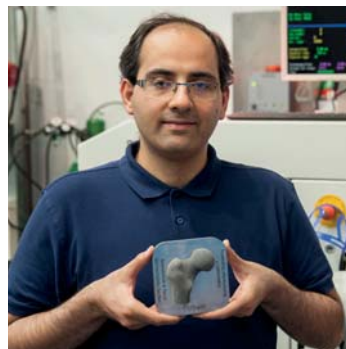


Ellen Kuhl

Walter B. Reinhold Professor in the School of Engineering and Robert Bosch Chair of Mechanical Engineering at Stanford University

Lecture: Personalized modeling of Alzheimer's disease
Monday | 27th June 2022 | 11:45 – 12:30
Archive Hall

Ellen Kuhl is the Walter B. Reinhold Professor in the School of Engineering and Robert Bosch Chair of Mechanical Engineering at Stanford University. She received her PhD from the University of Stuttgart in 2000 and her Habilitation from the University of Kaiserslautern in 2004. Her area of expertise is Living Matter Physics, the design of theoretical and computational models to simulate and predict the behavior of living systems. Ellen has published more than 200 peer-reviewed journal articles and written a textbook on COVID-19; she is an active reviewer for more than 50 journals at the interface of engineering and medicine and an editorial board member of seven international journals in her field. She is a founding member of the Living Heart Project, a translational research initiative to revolutionize cardiovascular science through realistic simulation with 400 participants from research, industry, and medicine from 24 countries. Prof. Kuhl is the current Chair of the US National Committee on Biomechanics and a Member-Elect of the World Council of Biomechanics. She is a Fellow of the American Society of Mechanical Engineers and of the American Institute for Mechanical and Biological Engineering. She received the National Science Foundation Career Award in 2010, was selected as Midwest Mechanics Seminar Speaker in 2014, and received the Humboldt Research Award in 2016 and the ASME Ted Belytschko Applied Mechanics Award in 2021. Ellen is an All American triathlete, a multiple Boston, Chicago, and New York marathon runner, and a Kona Ironman World Championship finisher.



Amir Zadpoor

*Professor, Chaired Professor of Biomaterials & Tissue Biomechanics
 Professor of Orthopedics (Leiden Univ Med Center),
 Director of the Additive Manufacturing Lab, Delft University of Technology (TUDelft)*

Lecture: Meta-biomaterials
Tuesday | 28th June 2022 | 11:45 – 12:30
Archive Hall

Amir Zadpoor is Antoni van Leeuwenhoek Professor, the Chaired Professor of Biomaterials & Tissue Biomechanics, and the founding director of the Additive Manufacturing Laboratory at Delft University of Technology (TU Delft). At Leiden University Medical Center, he holds another professorial chair in Department of Orthopedics. He specializes in the development of advanced additive manufacturing techniques for the fabrication of metamaterials with unprecedented or rare mechanical, physical, or biological properties. Moreover, he is a world recognized expert in origami and kirigami-based (bio)materials that are made by combining shape-shifting (e.g. self-folding) with additive manufacturing. Developing biomaterials-based approaches for the prevention and treatment of implant-associated infections is an integral of his research where he uses physical forces and nano-scale features to both kill antibiotic-resistant bacteria and modulate the immune response. Prof. Zadpoor has received many awards including an ERC grant, a Vidi personal grant, a Veni personal grant, the Jean Leray scientific achievement award of the European Society of Biomaterials, and the Early Career Award of the Journal of the Mechanical Behavior of Biomedical Materials. He has served on the editorial boards of international journals (e.g., Acta Biomaterialia), on the review panels of funding agencies, and as a member of award committees.



Massimo Sartori

*Director, Neuromechanical Modeling & Engineering Lab
University of Twente
TechMed Centre, Department of Biomechanical Engineering*

**Lecture: Modeling the human neuromuscular system
across aptio-temporal scales for a new class of
movement enhancing technologies**

**Wednesday | 29th June 2022 | 11:45 – 12:30
Archive Hall**

Massimo Sartori is Professor and Chair of Neuromechanical Engineering at the University of Twente (Faculty of Engineering Technology, Department of Biomechanical Engineering) where he directs the Neuromechanical Modelling & Engineering Lab. His research focuses on understanding how human movement emerges from the interplay between the nervous system and the musculoskeletal system, both in healthy and impaired individuals. His overarching goal is to translate such knowledge towards the development of novel human-robot interfaces for restoring movement. On these topics Prof. Sartori is directing prestigious personal grants (e.g., European Research Council) as well as consortium-based research projects (e.g., H2020-MSCA-ITN, H2020-RIA-ICT).

Prof. Sartori currently serves as an Associate Editor at the IEEE Transactions on Neural Systems and Rehabilitation Engineering as well as at Frontiers in Neurorobotics and Frontiers in Bionics and Biomimetics. He is a member of scientific societies including: the European Society of Biomechanics, the International Society of Biomechanics, the IEEE Robotics and Automation Society, the IEEE Engineering in Medicine and Biology Society, and the IEEE International Consortium on Rehabilitation Robotics.



PERSPECTIVE TALKS OVERVIEW



BIOMECHANICS OF CRANIOFACIAL GROWTH

Mehran Moazen; University College London, United Kingdom

TR02.10: Musculoskeletal biomechanics IV: Methods, Infante Hall, 29 June, 10.15-10.40

C4BIO: COMMUNITY CHALLENGE TOWARDS CONSENSUS ON CHARACTERIZATION OF BIOLOGICAL TISSUE

Nele Famaey; KU Leuven, Belgium

TR06.6: Clinical and translational biomechanics / in silico trials II, Arrabida Hall, 28 June, 10.40-11.05

CELLULAR FORCE EXERTION DURING VASCULAR INVASION: MEASUREMENT AND APPLICATION TO DISEASE

Hans Van Oosterwyck; KU Leuven, Belgium

TR04.1: Mechanobiology I: Tools, D. Luis Hall, 27 June, 8.30-8.55

CHALLENGES OF VALIDATING COMPUTATIONAL THROMBOSIS MODELS

Keefe B. Manning; The Pennsylvania State University, United States of America

TR02.6: Cardiovascular biomechanics V: Thrombi and plaques, Infante Hall, June 28, 10.15-10.40

COMPUTATIONAL SIMULATIONS TO UNRAVEL CELL MECHANOTRANSDUCTION IN PATHOLOGICAL AND PHYSIOLOGICAL PROCESSES

Maria José Gómez-Benito; University of Zaragoza, Spain

TR06.2: Computational biology I, Arrabida Hall, 27 June, 10.15-10.40

COMPUTER MODELLING AND INVESTIGATIONS OF CAPSULE DYNAMICS IN FLOWS: MEMBRANE VISCOSITY EFFECT

Junfeng Zhang; Laurentian University, Canada

TR08.10: Biofluid and transport I, S. Joao Hall, 29 June, 10.15-10.40

DIGITAL TWINS AND COUPLED APPROACHES FOR MANAGEMENT OF TIBIAL PLATEAU FRACTURE

Arnaud Germaneau; Institut Pprime CNRS - Université de Poitiers, France

TR06.9: Impact / injury biomechanics I, Arrabida Hall, 29 June, 8.30-8.55

EMMA4DRIVE - DIGITAL HUMAN TWINS FOR EVALUATING ERGONOMICS AND SAFETY IN NEW MOBILITY SOLUTIONS

Jörg Fehr; University of Stuttgart, Germany

TR07.10: Ergonomics / occupational biomechanics / rehabilitation I, Miragaia Hall, 29 June, 10.40-11.05

EXPERIMENTAL AND BIOMECHANICAL MODELING INVESTIGATIONS FOR UNDERSTANDING SEATING DISCOMFORT

Xuguang Wang; Université Gustave Eiffel, France

TR07.10: Ergonomics / occupational biomechanics / rehabilitation I, Miragaia Hall, 29 June, 10.15-10.40

HARNESSING 3D PRINTING TO OPTIMISE MEDICAL DEVICE INTERACTION WITH SOFT TISSUE

Eoin O'Cearbhaill; University College Dublin, Ireland

TR02.2: Implants / orthotics / prosthetics / devices II: 3D Technology, Infante Hall, 27 June, 10.15-10.40

HEMODYNAMICAL STUDY OF A NOVEL PERCUTANEOUS LEFT VENTRICLE ASSIST DEVICE

Idit Avrahami; Ariel University, Israel

TR07.6: Artificial intelligence in biomechanics II, Miragaia Hall, 28 June, 10.15-10.40

IN SILICO TRIALS TO ASSESS THE SAFETY AND EFFICACY OF NEW TREATMENTS FOR MUSCULOSKELETAL DISEASES

Marco Viceconti; Alma Mater Studiorum - University of Bologna, Italy

TR06.8: Clinical and translational biomechanics / in silico trials III, Arrabida Hall, 28 June, 17.00-17.25

INDIVIDUALIZED VS. POPULATION-BASED MUSCULOSKELETAL SIMULATION FOR MEDICAL AND PRODUCT ENGINEERING

Jörg Miehling; Friedrich-Alexander-Universität

Erlangen-Nürnberg, Germany

TR07.12: Ergonomics / occupational biomechanics / rehabilitation II, Miragaia Hall, 29 June, 15.30-15.55

INVESTIGATING THE BIOMECHANICS OF THE SPINE WITH DIGITAL IMAGE CORRELATION (DIC)

Luca Cristofolini; Alma Mater Studiorum - University of Bologna, Italy

TR05.7: Spine biomechanics III, Porto Hall, 28 June, 14.00-14.25

KNEE JOINT FORCES AND CARTILAGE STRESS IN OSTEOARTHRITIS

Vasilios Baltzopoulos; Liverpool John Moores University, United Kingdom

TR07.7: Virtual and augmented reality in biomechanics, Miragaia Hall, 28 June, 14.00-14.25

MECHANOSENSING IN BONE USING FLUID FLOW THROUGH NETWORKS

Richard Weinkamer; Max Planck Institute of Colloids and Interfaces, Germany

TR04.3: Musculoskeletal biomechanics I: Multiple topics, D. Luis Hall, 27 June, 14.00-14.25

MINERALIZED FIBROCARILAGE AS A HIGHLY TUNABLE TISSUE ALLOWING THE INTEGRATION OF TENDON INTO BONE

Davide Ruffoni; University of Liege, Belgium

TR03.3: Hard tissue I: Tissue interactions, D. Maria Hall, 27 June, 14.00-14.25

MODELLING BLAST INJURY; FROM CLINICAL DATA TO PATHOPHYSIOLOGY AND PROTECTION

Spyros Masouros; Imperial College London, United Kingdom

TR06.10: Impact / injury biomechanics II, Arrabida Hall, 29 June, 10.15-10.40

MODELLING MECHANICAL DEMANDS ARISING FROM CLINICAL REQUIREMENTS FOR FRACTURE FIXATION

Pankaj Pankaj; The University of Edinburgh, United Kingdom

TR02.3: Implants / orthotics / prosthetics / devices III: Fracture repair, Infante Hall, 27 June, 14.00-14.25

MULTISCALE BIOMECHANICAL AND STRUCTURAL PROPERTIES OF LUMBAR INTERVERTEBRAL DISCS: MECHANISMS OF INJURY

John J. Costi; Flinders University, Australia

TR05.6: Spine biomechanics II, Porto Hall, 28 June, 10.15-10.40

OPPORTUNITIES IN MULTISCALE AND MULTIPHYSICS HUMAN HEART MODELING

Mathias Peirlinck; Delft University of Technology, the Netherlands

TR01.10: Cardiovascular biomechanics VIII: Multiscale computational modeling, Archive Hall, 29 June, 10.15-10.40

PHYLOGENIC AND ONTOGENIC DETERMINANTS OF MECHANOTRANSDUCTION IN THE HUMAN AORTA

Jean-Baptiste Michel; Lorraine University, France

TR01.1: Cardiovascular biomechanics I: Developmental biomechanics and mechanobiology, Archive Hall, 27 June, 8.30-8.55

PRESENT AND FUTURE OF COMPUTER-AIDED DIAGNOSIS, PLANNING AND SURGERY

Maria Angeles Perez Anson; University of Zaragoza, Spain

TR07.1: Computer aided diagnosis, planning and surgery I, Miragaia Hall, 27 June, 8.30-8.55

QUANTITATIVE FUNCTIONAL ASSESSMENT IN THE SETTING OF ADULT SPINAL DEFORMITY USING 3D MOVEMENT ANALYSIS

Ayman Assi; University of Saint-Joseph, Lebanon

TR01.7: Biomechanics of movement and posture: Upper limb and trunk function and posture, Archive Hall, 28 June, 14.00-14.25

REAL WORLD MONITORING OF GAIT: CHALLENGES AND SOLUTIONS FOR A COMPREHENSIVE TECHNICAL VALIDATION

Claudia Mazzà; The University of Sheffield, United Kingdom

TR03.1: Biomechanics of movement and posture I: Sensor-based evaluation of movement, D. Maria Hall, 27 June, 8.30-8.55

SKIN – AN ACCESSIBLE WINDOW TO HEALTH

Michael Crichton; Heriot Watt University, United Kingdom

TR07.9: Skin biomechanics, Miragaia Hall, 29 June, 8.30-8.55

TAILOR-MADE POLYMERS: AN ADDITIONAL DEGREE OF FREEDOM IN THE TUNING OF MECHANICAL PROPERTIES IN TISSUE MODELING

Gianluca Ciardelli; Politecnico di Torino, Italy

TR07.8: Biomaterials II, Miragaia Hall, 28 June, 17.00-17.25

THE BIOMECHANICS OF THE EYE LENS AND ACCOMMODATIVE SYSTEM: CLINICAL OPPORTUNITIES AND BIOMECHANICAL CHALLENGES

Barbara Pierscionek; Anglia Ruskin University, United Kingdom

TR07.3: Ocular biomechanics I, Miragaia Hall, 27 June, 14.00-14.25

TRANSLATIONAL COMPUTATIONAL STUDIES TOWARD PREVENTING POST-TRAUMATIC OSTEOARTHRITIS AFTER JOINT INJURY

Donald D. Anderson; University of Iowa, United States of America

TR06.6: Clinical and translational biomechanics / in silico trials II, Arrabida Hall, 28 June, 10.15-10.40

VISCOSITY AND NONLINEAR ELASTOGRAPHY WILL BECOME THE NEXT GENERATION BIOMARKERS IN CLINICAL DIAGNOSIS

Inas H. Faris; University of Granada, Spain

TR04.7: Biomedical imaging II, D. Luis Hall, 28 June, 14.00-14.25

X-RAY BASED 3D HISTOLOGY OF BIOLOGICAL TISSUES

Greet Kerckhofs; UC Louvain, Belgium

TR04.6: Biomedical imaging I, D. Luis Hall, 28 June, 10.15-10.40

GUIDELINE FOR PRESENTERS AND CHAIRS



Guidelines for podium presenters

Please check the time and room of your presentation in the daily programme and in the conference app as there might have been some last-minute changes.

All presentations must be prepared and delivered **in English**. All presenters are asked to respect the duration of presentations as follows:

- **12 min.** (incl. discussion) for *podium presentations*,
- **25 min.** (incl. discussion) for *perspective talks*,
- **45 min.** (incl. discussion) for *keynote lectures*.

The chairs are requested to stop the presentation after the allotted time has passed.

Technical requirements:

Slide format:

- MS PowerPoint, landscape format (all congress center PC's have **Office 2019**)
- **16:9 HD** presentations (**1080p**)
- films embedded videos in power point for optimal compatibility (do not forget to embed your fonts and to bring your video files separately, as back-up solution)
- the use of personal laptops for presentation is not allowed

Presentations upload:

Central speakers' upload center will be located in the Congress center and technicians will check the presentation with you and upload it to the correct meeting room. Please bring your presentation on USB and **come to upload it at least 2 hours before your session or on the day before**.

If you are presenting in one of the first morning sessions on June 27, you should come to upload your presentation on the day before (June 26) in the afternoon OR directly on June 27 at 7:30 am. No presentations should be uploaded directly in the meeting rooms.

Make sure to **be present in the meeting room at least 10 minutes prior to the start of your session** and let the chairperson know you are there. Please make sure to stay in your session from the beginning on to ensure smooth changes between the individual presentations.

There will be assisting staff in each lecture room if any problems occur.

Guidelines for poster presenters

Due to a high number of submissions, an exceptionally large poster area is planned this year with special time slots dedicated exclusively to poster presentations viewing. Networking and accompanying events will take place in the poster area to allow maximum space for discussions there.

The **poster sessions** are scheduled as follows:

- Poster session 1 - 6 Monday, 27th June, 13:15 – 14:00
- Poster session 7 - 12 Tuesday, 28th June, 13:15 – 14:00
- Poster session 13 - 18 Wednesday, 29th June, 13:15 – 14:00

Presenters are kindly asked to be present by their posters during the indicated session time to present their posters (3 minutes per poster presentation) and answer any questions from the conference delegates.

Set up of posters:

You have to bring your printed paper poster to the venue. The measurements should be approximately A0 Portrait (841 x 1189 mm). The poster should be easily readable from a distance of 2 meters.

Each poster will get a specific number, therefore please make sure to mount your poster on the poster board with the corresponding number. An overview of each poster session will be available in the poster area.

The poster area is located in the exhibition on the ground floor.

Velcro tape will be provided by the organizers, and onsite assistance will be available to help you to display your poster.

Posters should be mounted on Sunday, June 26, between 15:00 and 20:00 or on Monday, June 27, 07:30 – 11:00.

Posters should be removed on Wednesday, June 29, after the afternoon coffee break or right after the closing of the congress (by 17:30). Please note that all posters not dismantled at 17:30 on June 29, will be removed and disposed by the congress staff.

ESB 2022 Chairs Guidelines

The chair of a podium session holds a key position in making the programme run as smoothly as possible.

These guidelines are to help you before, during and after the session you are chairing.

- Please arrive in the room of your session at least 10 minutes before it starts.
- 1 student assistant will be present in the room, preparing name signs, water etc. and making sure that all presentations of the sessions are uploaded.
- All presentations are uploaded via the central uploading centre.
- A technician will make sure in advance that all devices and audio equipment operate as planned. The technician can assist you in any technical question you may have.
- Please remind the speakers of the time limit of their presentation (according to the final ESB 2022 programme).
- Each podium presenter has been informed to prepare a presentation for maximum **12 minutes including Q&A**. The perspective talks have been informed that their presentation should be planned for 25 minutes including Q&A.
- Please prepare some possible questions for the presenters in case no one from the audience will ask a question.
- Discussion: Take charge of the discussion period. Recognize questions from the audience and allow each person who would like to do so to participate in the discussion. Ask the participant to introduce herself/himself and to speak slowly into the microphone.
- Please do not exceed the time assigned for the session. The programme is very tight, and it is important to avoid delays.
- You are kindly asked to switch between presentations by simply announcing the name of the next presenter and the title of the presentation. Due to the tight schedule, there will not be sufficient time for introducing individual lecturers in a more detailed manner.
- If a presentation cannot be given or if a presenter does not appear (no-show), please stick to the original programme and fill out the remaining time with questions or start a discussion.
- Once more, thank you for your contribution to the ESB 2022 Congress.

If you have any questions before, during or after the conference, please contact the ESB 2022 conference secretariat (at the registration desks)

ESB 2022 PROGRAMME OVERVIEW



Monday, 27th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
All day	Registration openend			
8:30 – 9:45	TR01.1 CARDIOVASCULAR BIOMECHANICS I: DEVELOPMENTAL BIOMECHANICS AND MECHANOBIOLOGY <i>Chairs: Selda Sherifova, Stéphane Avril</i>	TR02.1 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES I: CRANIOMAXILLOFACIAL <i>Chairs: Harry van Lenthe, Dennis Janssen</i>	TR03.1 BIOMECHANICS OF MOVEMENT AND POSTURE I: SENSOR-BASED EVALUATION OF MOVEMENT <i>Chairs: William R. Taylor, Erica Beaucage-Gauvreau</i>	TR04.1 MECHANOBIOLOGY I: TOOLS <i>Chairs: Hans Van Oosterwyck, Daphne Weihs</i>
09:45 – 10:15	Coffee break			
10:15 – 11:40	TR01.2: CARDIOVASCULAR BIOMECHANICS II: MATERIAL CHARACTERIZATION <i>Chairs: Selda Sherifova, Stéphane Avril</i>	TR02.2 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES II: 3D TECHNOLOGY <i>Chairs: Harry van Lenthe, Vasja Plesec</i>	TR03.2 BIOMECHANICS OF MOVEMENT AND POSTURE II: MODELLING AND SIMULATION OF MOVEMENT <i>Chairs: Seyyed Hamed Hosseini Nasab, Lennart Schey</i>	TR04.2 MECHANOBIOLOGY II: IN VITRO / IN SILICO <i>Chair: Hans Van Oosterwyck</i>
11:45 – 12:30	Keynote lecture 1 PERSONALIZED MODELING OF ALZHEIMER'S DISEASE, Ellen Kuhl <i>Chairs: Harry van Lenthe, Joao Manuel R.S. Tavares</i>			
12:30 – 13:15	Lunch break			
13:15 – 14:00	Poster session 1 - 6			
14:00 – 15:30	TR01.3 CLINICAL BIOMECHANICS AWARD SESSION <i>Chairs: Markus Heller, Michele Conti</i>	TR02.3 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES III: FRACTURE REPAIR <i>Chairs: Marlène Mengoni, Maikel Timmermans</i>	TR03.3 HARD TISSUE I: TISSUE INTERACTIONS <i>Chairs: Uwe Wolfram, Pia Stefanek</i>	TR04.3 MUSCULOSKELETAL BIOMECHANICS I: MULTIPLE TOPICS <i>Chairs: Vee San Cheong, Enrico dall'Ara</i>
15:30 – 16:00	Coffee break			
16:00 – 17:00	ESB Student Award Session <i>Chairs: Markus Heller, Aurelie Carlier</i>			
17:00 – 18:00	TR01.4 CARDIOVASCULAR BIOMECHANICS III: TREATMENT DESIGN & CLINICAL OUTCOME <i>Chairs: Nele Famaey, Mathias Peirlinck</i>	TR02.4 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES IV: TOTAL HIP ARTHROPLASTY <i>Chair: Dennis Janssen, Corina Nüesch</i>	TR03.4 PATIENT-SPECIFIC MODELLING I <i>Chair: Sebastian Laporte</i>	TR04.4 MUSCULOSKELETAL BIOMECHANICS II: UPPER LIMB <i>Chairs: Massimo Sartori, Mohamed Irfan Mohamed Refai</i>
18:00 – 19:00	Women in Biomechanics			
19:00 – 21:30	Welcome Reception			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				All day
TR05.1 SOFT TISSUE BIOMECHANICS I <i>Chairs: Maria José Gómez-Benito, José Felix Rodriguez Matas</i>	TR06.1 BIOMATERIALS I	TR07.1 COMPUTER AIDED DIAGNOSIS, PLANNING AND SURGERY I <i>Chairs: Jérôme Noailly, Miguel Ángel Ariza Gracia</i>	TR08.1 DENTAL BIOMECHANICS <i>Chairs: Christoph Bourauel, Benedikt Sagl</i>	8:30 – 9:45
TR05.2 SOFT TISSUE BIOMECHANICS II <i>Chairs: Dulce Oliveira, José Felix Rodriguez Matas</i>	TR06.2 COMPUTATIONAL BIOLOGY I <i>Chairs: Maria Angeles Perez Anson, Aurélie Carlier</i>	TR07.2 COMPUTER AIDED DIAGNOSIS, PLANNING AND SURGERY II <i>Chairs: Jérôme Noailly, Miguel Ángel Ariza Gracia</i>	TR08.2 EXPERIMENTAL BIOMECHANICS I <i>Chairs: Luca Cristofolini, Ingmar Fleps</i>	10:15 – 11:40
				11:45 – 12:30
				12:30 – 13:15
TR05.3 SOFT TISSUE BIOMECHANICS III <i>Chair: José Felix Rodriguez Matas, Maria José Gómez-Benito</i>	TR06.3 COMPUTATIONAL BIOLOGY II <i>Chairs: Maria Angeles Perez Anson, Aurélie Carlier</i>	TR07.3 OCULAR BIOMECHANICS I <i>Chairs: Miguel Ángel Ariza Gracia, Philippe Buechler</i>	TR08.3 3D PRINTING IN BIOMEDICINE <i>Chairs: Henrique Amorim Almeida</i>	14:00 – 15:30
				15:30 – 16:00
				16:00 – 17:00
TR05.4 SOFT TISSUE BIOMECHANICS IV <i>Chairs: Dulce Oliveira, Maria José Gómez-Benito</i>	TR06.4 ROUND TABLE ON TECHNOLOGY TRANSFER IN BIOMECHANICS <i>Chair: Jos Vander Sloten</i> <i>Tine Van Lommel, Leuven Research and Development</i> <i>Mrs. Maria Oliveira, Start-up from Portoarea</i> <i>Ir. Patricia Lopes, Materialise NV, Markus Windolf, AO Foundation</i> <i>Wafa Skalli, ParisTech</i>	TR07.4 OCULAR BIOMECHANICS II <i>Chairs: Miguel Ángel Ariza Gracia, Philippe Buechler</i>	TR08.4 EXPERIMENTAL BIOMECHANICS II <i>Chairs: Luca Cristofolini, Ingmar Fleps</i>	17:00 – 18:00
				18:00 – 19:00
				19:00 – 21:30

Tuesday, 28th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
7:30 – 8:15	Meet the PI - Student breakfast networking event			
8:30 – 9:45	TR01.5 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES V: TOTAL KNEE ARTHROPLASTY <i>Chairs: William R. Taylor, Corine Post</i>	TR02.5 CARDIOVASCULAR BIOMECHANICS IV: COMPUTATIONAL METHODS <i>Chairs: Selda Sherifova, Stéphane Avril</i>	TR03.5 PATIENT-SPECIFIC MODELLING II <i>Chairs: Claudio Vergari, Laura Lafuente Gracia</i>	TR04.5 TISSUE ENGINEERING I <i>Chairs: Gwendolen Reilly, Alberto Sensini</i>
09:45 – 10:15	Coffee break			
10:15 – 11:40	TR01.6 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES VI: MULTIPLE TOPICS (TOTAL KNEE ARTHROPLASTY, FRACTURE REPAIR) <i>Chair: Bernardo Innocenti</i>	TR02.6 CARDIOVASCULAR BIOMECHANICS V: THROMBI AND PLAQUES <i>Chairs: Selda Sherifova, Stéphane Avril</i>	TR03.6 HARD TISSUE BIOMECHANICS II: BONE TISSUE LEVEL <i>Chairs: Vee San Cheong, Gianluca Tozzi</i>	TR04.6 BIOMEDICAL IMAGING I <i>Chairs: Dieter Pahr, Uwe Wolfram</i>
11:45 – 12:30	Keynote lecture 2 META-BIOMATERIALS, Amir Zadpoor <i>Chairs: David Mitton, Renato Natal Jorge</i>			
12:30 – 13:15	Lunch break			
13:15 – 14:00	Poster session 7 - 12			
14:00 – 15:30	TR01.7 BIOMECHANICS OF MOVEMENT AND POSTURE: UPPER LIMB AND TRUNK FUNCTION AND POSTURE <i>Chairs: Lennart Scheys, William R. Taylor</i>	TR02.7 CARDIOVASCULAR BIOMECHANICS VI: TREATMENT DESIGN AND CLINICAL OUTCOME <i>Chairs: Selda Sherifova, Stéphane Avril</i>	TR03.7 HARD TISSUE BIOMECHANICS III: BONE ORGAN LEVEL <i>Chairs: Helene Follet, Marta Peña Fernández</i>	TR04.7 BIOMEDICAL IMAGING II <i>Chairs: Dieter Pahr, Inas H Faris</i>
15:30 – 16:00	Coffee break			
16:00 – 17:00	ESB S.M. Perren Research Award STANDARDIZED TIBIO-FEMORAL IMPLANT LOADS AND KINEMATICS, Michael J. Dreyer, ETH Zurich <i>Chairs: Markus Heller, Harry van Lenthe</i>			
17:00 – 18:00	TR01.8 BIOMECHANICS OF MOVEMENT AND POSTURE: MOTOR CONTROL IN AGEING AND PATHOLOGY <i>Chairs: William R. Taylor, Lennart Scheys</i>	TR02.8 CARDIOVASCULAR BIOMECHANICS VII: IMAGE-BASED BIOMECHANICS <i>Chairs: Nele Famaey, Mathias Peirlinck</i>	TR03.8 PATIENT-SPECIFIC MODELLING III <i>Chair: Sebastien Laporte, Lucia Donno</i>	TR04.8 TISSUE ENGINEERING II <i>Chairs: Gwendolen Reilly, Alberto Sensini</i>
18:00 – 19:00	ESB General Assembly			
20:00 – 23:00	ESB 2022 Congress Dinner Venue: Real Companhia Velha Cellars - address: Azevedo Magalhaes 314, Via Nova de Gaia. Metro: General Torres			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				All day
TR05.5 SPINE BIOMECHANICS I <i>Chairs: Marco Palanca, John Costi</i>	TR06.5 CLINICAL AND TRANSLATIONAL BIOMECHANICS / IN SILICO TRIALS I <i>Chairs: Richie Gill, Marco Viceconti</i>	TR07.5 ARTIFICIAL INTELLIGENCE IN BIOMECHANICS + ROBOTS IN BIOMECHANICS <i>Chair: Massimo Sartori</i>	TR08.5 RESPIRATORY BIOMECHANICS <i>Chair: Sam Bayat</i>	8:30 – 9:45
TR05.6 SPINE BIOMECHANICS II <i>Chairs: André P.G. Castro, John Costi</i>	TR06.6: CLINICAL AND TRANSLATIONAL BIOMECHANICS / IN SILICO TRIALS II <i>Chairs: Richie Gill, Marco Viceconti</i>	TR07.6 ARTIFICIAL INTELLIGENCE IN BIOMECHANICS II <i>Chairs: Konstantinos Moustakas, Idit Avrahami</i>	TR08.6 ADVANCE COMPUTING FOR BIOMECHANICS I	10:15 – 11:40
				11:45 – 12:30
				12:30 – 13:15
TR05.7 SPINE BIOMECHANICS III <i>Chairs: André P.G. Castro, Marco Palanca</i>	TR06.7 BIOMECHANICS OF AGEING AND NEUROMUSCULAR CONTROL <i>Chairs: Stephen Ferguson, Annegret Mündermann</i>	TR07.7 VIRTUAL AND AUGMENTED REALITY IN BIOMECHANICS <i>Chairs: Konstantinos Moustakas, Bill Baltzopoulos</i>	TR08.7 ADVANCE COMPUTING FOR BIOMECHANICS II	14:00 – 15:30
				15:30 – 16:00
				16:00 – 17:00
TR05.8 ESB CORPORATE MEMBERS SESSION	TR06.8 CLINICAL AND TRANSLATIONAL BIOMECHANICS / IN SILICO TRIALS III <i>Chairs: Richie Gill, Marco Viceconti</i>	TR07.8 BIOMATERIALS II <i>Chair: Hanna Isaksson</i>	TR08.8 ADVANCE COMPUTING FOR BIOMECHANICS III	17:00 – 18:00
				18:00 – 19:00
				20:00 – 23:00

Wednesday, 29th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
8:30 – 9:45	TR01.9 PATIENT-SPECIFIC MODELLING IV <i>Chair: Claudio Vergari</i>	TR02.9 MUSCULOSKELETAL BIOMECHANICS III: HIP, TRUNK, FOOT <i>Chairs: Ilse Jonkers, Erica Beaucage-Gauvreau</i>	TR03.9 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES VII: BONE RESPONSE <i>Chair: Peter Zioupos, Federico Andrea Bologna</i>	TR04.9 MECHANOBIOLOGY III: IN SILICO <i>Chair: Hans Van Oosterwyck</i>
09:45 – 10:15	Coffee break			
10:15 – 11:40	TR01.10 CARDIOVASCULAR BIOMECHANICS VIII: MULTISCALE COMPUTATIONAL MODELING <i>Chairs: Fanette Chassagne, Diego Gallo</i>	TR02.10 MUSCULOSKELETAL BIOMECHANICS IV: METHODS <i>Chairs: Claudia Mazzà, Simon Herger</i>	TR03.10 HARD TISSUE BIOMECHANICS IV: BONE REMODELLING, AND DISEASES <i>Chairs: Enrico Dall'Ara, Alexandra Tits</i>	TR04.10 MECHANOBIOLOGY IV: IN SILICO <i>Chairs: Hans Van Oosterwyck, Daphne Weihs</i>
11:45 – 12:30	Keynote lecture 3 MODELLING THE HUMAN NEUROMUSCULAR SYSTEM ACROSS SPATIO-TEMPORAL SCALES FOR A NEW CLASS OF MOVEMENT ENHANCING TECHNOLOGIES , Massimo Sartori <i>Chairs: Jérôme Noailly, Paulo Rui Fernandes</i>			
12:30 – 13:15	Lunch break			
13:15 – 14:00	Poster session 13 - 18			
14:00 – 15:00	Best Doctoral Thesis Award <i>Chairs: Markus Heller, Ilse Jonkers</i>			
15:00 – 15:30	Coffee break			
15:30 – 16:45	TR01.12 CARDIOVASCULAR IX: IMAGE-BASED BIOMECHANICS <i>Chairs: Fanette Chassagne, Diego Gallo</i>	TR02.12 MUSCULOSKELETAL BIOMECHANICS V: KNEE AND OTHERS <i>Chairs: Annegret Mundermann, Claude Fifi Hayford</i>	TR03.12 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES VIII: MULTIPLE TOPICS <i>Chairs: Peter Varga, Mauricio Cruz Saldivar</i>	TR04.12 ANIMAL AND PLANT BIOMECHANICS <i>Chairs: Christian Peham, Balázs Gerics</i>
16:45 – 17:15	ESB 2022 Closing Ceremony			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
TR05.9 SPORT BIOMECHANICS I <i>Chairs: Hans Kainz, António Prieto Veloso</i>	TR06.9 IMPACT / INJURY BIOMECHANICS I <i>Chairs: David Mitton, Ciaran Simms</i>	TR07.9 SKIN BIOMECHANICS <i>Chairs: Jérôme Molimard, Michael Crichton</i>	TR08.9 INSPIRATIONAL KEY NOTE LECTURE -"HOW TO COMMUNICATE SCIENCE" <i>Joana Lobo Antunes</i>	8:30 – 9:45
TR05.10 SPORT BIOMECHANICS II <i>Chairs: António Prieto Veloso, Joao Paulo Vilas-Boas</i>	TR06.10 IMPACT / INJURY BIOMECHANICS II <i>Chairs: David Mitton, Ciaran Simms</i>	TR07.10 ERGONOMICS / OCCUPATIONAL BIOMECHANICS / REHABILITATION I <i>Chairs: Margit Gföhler, Xuguang Wang</i>	TR08.10 BIOFLUID AND TRANSPORT I <i>Chairs: Frans van de Vosse, Junfeng Zhang</i>	10:15 – 11:40
				11:45 – 12:30
				12:30 – 13:15
				13:15 – 14:00
				14:00 – 15:00
				15:00 – 15:30
TR05.12 SPORT BIOMECHANICS III <i>Chairs: Joao Paulo Vilas-Boas, Hans Kainz</i>	TR06.12 IMPACT / INJURY BIOMECHANICS III <i>Chair: David Mitton</i>	TR07.12 ERGONOMICS / OCCUPATIONAL BIOMECHANICS / REHABILITATION II <i>Chairs: Margit Gföhler, Xuguang Wang</i>	TR08.12 BIOFLUID AND TRANSPORT II <i>Chairs: Frans van de Vosse, Junfeng Zhang</i>	15:30 – 16:45
				16:45 – 17:15

ESB 2022 DETAILED PROGRAMME



Monday, 27th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
All day	Registration opened			
8:30 – 9:45	<p>TR01.1 CARDIOVASCULAR BIOMECHANICS I: DEVELOPMENTAL BIOMECHANICS AND MECHANOBIOLOGY <i>Chairs: Selda Sherifova, Stéphane Avril</i></p> <p>8:30am - 8:55am PHYLOGENIC AND ONTOGENIC DETERMINANTS OF MECHANOTRANSDUCTION IN THE HUMAN AORTA J.-B. Michel</p> <p>8:55am - 9:07am FLUID MECHANICS OF THE ZEBRAFISH EMBRYONIC HEART TRABECULATION A. G. Cairelli, R. W. Chow, J. Vermot, C. H. Yap</p> <p>9:07am - 9:19am FLUID MECHANICS OF FETAL AORTIC VALVULOPLASTY IN FETAL AORTIC STENOSIS AND EVOLVING HLHS H. S. Wong, H. Wiputra, A. Tulzer, G. Tulzer, C. H. Yap</p> <p>9:19am - 9:31am BIOMECHANICAL MODELLING OF THE AORTA IN ADULT ZEBRAFISH M. Van Impe, M. Stapanoni, P. Sips, J. DeBacker, P. Segers</p> <p>9:31am - 9:43am HEMODYNAMICS-DRIVEN AORTIC GROWTH FOR GENETICALLY MODIFIED MICE MODELS M. S. Bazzi, J. E. Wagenseil, V. H. Barocas</p>	<p>TR02.1 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES I: CRANIOMAXILLOFACIAL <i>Chairs: Harry van Lenthe, Dennis Janssen</i></p> <p>8:30am - 8:42am AN INSTRUMENTED ORTHOSIS PROTOTYPE FOR CRANIAL CORRECTION B. Garate, A. Zabala, A. Elawadly, S. Taylor, O. Jeelani, D. Dunaway, G. James, S. Schievano, A. Borghi</p> <p>8:42am - 8:54am TOWARDS THE DESIGN OF A NOVEL NITINOL DISTRACTOR FOR CRANIOFACIAL SURGERY L. Zabala, N. Rodriguez-Florez, D. Silva, O. Jeelani, G. James, D. Dunaway, J. Ong, S. Schievano, A. Borghi</p> <p>8:54am - 9:06am A NOVEL METHOD TO MEASURE DISTRACTION FORCES DURING MID-FACE ADVANCEMENT A. Zabala Monasterio, B. Garate Andikoetxea, S. Taylor, J. Ong, D. Dunaway, O. Jeelani, S. Schievano, A. Borghi</p> <p>9:06am - 9:18am FINITE ELEMENT MODELLING OF A CRANIAL IMPLANT DURING IMPACT R. Alves de Sousa, P. Santos, F. Fernandes</p> <p>9:18am - 9:30am FINITE ELEMENT MODELLING OF ACOUSTIC EMISSIONS FOR DENTAL IMPLANT MONITORING G. Boron, R. Reuben, U. Wolfram</p> <p>9:30am - 9:42am ON THE BIOMECHANICS OF RECONSTRUCTED MANDIBLES WITH CAD/CAM FIXATION DEVICES G. Biesso, V. Orassi, C. Janka, C. Rendenbach, S. Checa</p>	<p>TR03.1 BIOMECHANICS OF MOVEMENT AND POSTURE I: SENSOR-BASED EVALUATION OF MOVEMENT <i>Chairs: William R. Taylor, Erica Beaucage-Gauvreau</i></p> <p>8:30am - 8:55am REAL WORLD MONITORING OF GAIT: CHALLENGES AND SOLUTIONS FOR A COMPREHENSIVE TECHNICAL VALIDATION C. Mazzà</p> <p>8:55am - 9:07am VALIDATION OF AN INERTIAL-BASED GAIT ANALYSIS SYSTEM USING A SIX DEGREES-OF-FREEDOM JOINT SIMULATOR A. Ortigas Vásquez, A. Maas, W. R. Taylor, T. M. Grupp</p> <p>9:07am - 9:19am BIOMECHANICS IN THE WILD: VALIDATION OF A WEARABLE KINETIC MEASUREMENT SYSTEM H. Wang, A. Basu, G. Durandau, M. Sartori</p> <p>9:19am - 9:31am SINGLE IMU BASED OPEN-SOURCE AND LOW-COST GAIT EVENT DETECTION WEARABLE DEVICE N. Breitman, A. Fischer</p> <p>9:31am - 9:43am KINEMATIC CHANGES DURING WALKING WITH WHOLE-BODY VIBRATION AND PSYCHOMOTOR TESTING A. P. Moorhead, A. Mazzoleni, A. Goggi, S. Marelli, G. Lorenzini, M. Tarabini</p>	<p>TR04.1 MECHANOBIOLOGY I: TOOLS <i>Chairs: Hans Van Oosterwyck, Daphne Weihs</i></p> <p>8:30am - 8:55am CELLULAR FORCE EXERTION DURING VASCULAR INVASION: MEASUREMENT AND APPLICATION TO DISEASE H. Van Oosterwyck</p> <p>8:55am - 9:07am QUANTITATIVE PHASE MICROSCOPY-BASED CELL VISCOELASTICITY MEASUREMENT BY SHEAR STRESS J. Gumulec, T. Vicar, J. Chmelik, J. Navratil, J. Balvan, R. Kolar, L. Chmelikova, V. Cmiel, M. Masarik</p> <p>9:07am - 9:19am PHOTO-SWITCHABLE BIO-INTERFACES FOR DYNAMIC CELL CULTURES F. Mauro, C. Natale, V. Panzetta, P. A. Netti</p> <p>9:19am - 9:31am MECHANOREGULATION OF CRISPR/CAS9 MEDIATED BONE CELL REPORTER MICE UNDER CYCLIC MECHANICAL LOADING D. Yilmaz, F. Correia Marques, E. Wehrle, G. A. Kuhn, R. Müller</p>
09:45 – 10:15	Coffee break			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				All day
TR05.1 SOFT TISSUE BIOMECHANICS I <i>Chairs: Maria José Gómez-Benito, José Felix Rodriguez Matas</i> 8:30am - 8:42am FRACTURE TOUGHNESS DETERMINATION OF MUSCLE TISSUE BASED ON AQLV MODEL DERIVED VISCOUS DISSIPATED ENERGY <i>O. J. Aryeetey, M. Frank, A. Lorenz, D. H. Pahr</i> 8:42am - 8:54am MECHANO-STRUCTURAL MATURATION OF THE BONE CALLUS TISSUE UNDER DISTRACTION <i>P. Blázquez-Carmona, J. A. Sanz-Herrera, J. Mora-Macías, J. J. Toscano, J. Morgaz, J. Domínguez, E. Reina-Romo</i> 8:54am - 9:06am ADVANTAGES OF ESTIMATING BIOMECHANICAL PROPERTIES OF THE CORNEA USING TORSIONAL WAVE ELASTOGRAPHY <i>I. H. Faris, J. Torres, A. Callejas, G. Rus</i> 9:06am - 9:18am MECHANICAL MEASUREMENTS FOR CLINICAL ASSESSMENT OF COMPARTMENT SYNDROME <i>C. Tacchella, E. Clutton, Y. Chen, M. Crichton</i> 9:18am - 9:30am THE IN-VITRO TEST CONDITIONS INFLUENCE THE BIOMECHANICAL PROPERTIES OF DEGENERATED LATERAL MENISCI <i>L. de Roy, O. Piquet, G. Teixeira, M. Weiske, H. Mayr, M. Seidenstücker, A. Seitz</i> 9:30am - 9:42am TISSUE INTERNAL STRAINS COMPUTED BY A FINITE ELEMENT MODEL OF THE HUMAN HEEL AND MEASURED FROM MR IMAGES <i>A. Trebbi, M. Bailet, A. Perrier, Y. Payan</i>	TR06.1 BIOMATERIALS I 8:30am - 8:42am BIOREACTOR EVALUATION OF AN ANTIBACTERIAL AND OSTEOGENIC SILICON NITRIDE REINFORCED CRYOGEL SYSTEM <i>S. S. Lee, L. Laganenka, X. Du, W.-D. Hardt, S. J. Ferguson</i> 8:42am - 8:54am CORRODED MAGNESIUM-BASED SCAFFOLDS FATIGUE STRAIN ACCUMULATION AND MECHANICAL BEHAVIOUR UNDER CYCLIC LOADING <i>R. Bonithon, S. Davis, M. Morgan, G. Blunn, A. Karali</i> 8:54am - 9:06am MULTISCALE PERFORMANCES OF ELECTROSPUN BIOSTABLE DEVICES FOR TENDON AND LIGAMENT REPLACEMENT <i>A. Sensini, C. Gotti, C. Gualandi, M. V. Ricioppo, G. Marchiori, N. Sancisi, M. Fini, M. L. Focarete, L. Cristofolini, A. Zucchielli</i> 9:06am - 9:18am DYNAMIC MECHANICAL ANALYSIS OF COLLAGEN FIBRILS AND ELECTROSPUN PLLA NANOFIBERS <i>M. Nalbach, A. Sensini, N. Motoi, M. Rufin, O. Andriotis, A. Zucchielli, G. Schitter, L. Cristofolini, P. Thurner</i> 9:18am - 9:30am NATURE-INSPIRED MEMBRANES FOR ARTIFICIAL RESPIRATION – PRODUCTION OF MICRO-STRUCTURED POLYMER HOLLOW FIBERS <i>M. Pekovits, P. Ecker, F. Imran, J. A. Kalarus, M. Harasek, M. Gföhler</i> 9:30am - 9:42am NANOFIBRE CAPPED MELT ELECTROWITTEN GRID STRUCTURES MIMICKING THE ARCHITECTURE OF ARTICULAR SURFACES <i>M. Santschi, L. Bienz, M. Leunig, S. Ferguson</i>	TR07.1 COMPUTER AIDED DIAGNOSIS, PLANNING AND SURGERY I <i>Chairs: Jérôme Noailly, Miguel Ángel Ariza Gracia</i> 8:30am - 8:55am PRESENT AND FUTURE OF COMPUTER-AIDED DIAGNOSIS, PLANNING AND SURGERY <i>M. A. Perez Anson</i> 8:55am - 9:07am AN INVESTIGATION OF SPARSE 3D POINT CLOUD REGISTRATION COST FUNCTIONS FOR ESTIMATING 3D POSE OF HUMAN BONE <i>D. A. Christie, R. Fluit, G. V. Durandau, M. Sartori, N. J. J. Verdonshot</i> 9:07am - 9:19am PREDICTION OF GUIDEWIRE INDUCED AORTIC DEFORMATIONS DURING EVAR: FEA AND IN VITRO STUDY <i>M. Emendi, K.-H. Støverud, G. Tangen, H. Ulsaker, S. K. Dahl, V. E. Prot, T. Langø</i> 9:19am - 9:31am IN-SILICO BIOMECHANICAL DESCRIPTORS TO STRATIFY REAL WORLD CASES OF PROXIMAL JUNCTION FAILURE IN SPINE SURGERY <i>M. Rasouligandomani, A. del Arco, F. Pellisé, M. González Ballester, F. Galbusera, J. Noailly</i>	TR08.1 DENTAL BIOMECHANICS <i>Chairs: Christoph Bourauel, Benedikt Sagl</i> 8:30am - 8:42am DIFFERENCES IN TMJ LOADING BETWEEN MEDIOTRUSIVE AND LATERO TRUSIVE TOOTH GRINDING <i>B. Sagl, M. Schmid-Schwap, E. Piehslinger, X. Rausch-Fan, I. Stavness</i> 8:42am - 8:54am IMPACT OF SIMULATED TOOTHBRUSHING AND THERMOCYCLING ON SURFACE ROUGHNESS OF CAD/CAM RESIN MATRIX CERAMICS <i>L. Porojan, R. D. Vasiliu, F. R. Toma, S. D. Porojan</i> 8:54am - 9:06am NUMERICAL AND EXPERIMENTAL ASSESSMENT OF MULTIROOTED ROOT ANALOG IMPLANTS <i>M. Aldesoki, L. Keilig, I. Dörsam, C. Bourauel</i> 9:06am - 9:18am THE EFFECT OF TRIMMING LINE GEOMETRY ON FORCE TRANSMISSION BY ORTHODONTIC ALIGNERS (A FINITE ELEMENT STUDY) <i>T. Elshazly, L. Ludger, A. Ghoneima, M. Abuzayda, C. Bourauel</i> 9:18am - 9:30am DESIGN EVALUATION OF SIMPLIFIED CERAMIC CANTILEVER SINGLE-RETAINER RESIN-BONDED FIXED DENTAL PROSTHESES USING FEA <i>N. Hjort, P. Boitelle, I. Sailer, J.-P. Attal, A. Benoit</i> 9:30am - 9:42am EFFICIENCY AND LEARNABILITY OF MAGNETIC Mallet AS A RETRIEVAL TOOL FOR DENTAL CROWNS: A PRELIMINARY STUDY <i>A. T. Lugas, G. Caraceni, G. Schierano, A. L. Audenino, D. Baldi, C. Bignardi, M. Terzini</i>	8:30 – 9:45

Monday, 27th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
10:15 – 11:40	TR01.2: CARDIOVASCULAR BIOMECHANICS II: MATERIAL CHARACTERIZATION <i>Chairs: Selda Sherifova, Stéphane Avril</i>	TR02.2 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES II: 3D TECHNOLOGY <i>Chairs: Harry van Lenthe, Vasja Plesec</i>	TR03.2 BIOMECHANICS OF MOVEMENT AND POSTURE II: MODELLING AND SIMULATION OF MOVEMENT <i>Chairs: Seyyed Hamed Hosseini Nasab, Lennart Schey</i>	TR04.2 MECHANOBIOLOGY II: IN VITRO / IN SILICO <i>Chair: Hans Van Oosterwyck</i>
	10:15am - 10:27am AORTIC MEDIA UNDER RADIAL TENSION: GLOBAL AND LOCAL EFFECTS OF RELAXATION <i>S. Sherifova, S. Avril, G. A. Holzapfel</i>	10:15am - 10:40am HARNESSING 3D PRINTING TO OPTIMISE MEDICAL DEVICE INTERACTION WITH SOFT TISSUE <i>E. O'Ceirbhail</i>	10:15am - 10:27am PATELLAR TENDON LOADING AND STIFFNESS DERIVED FROM IN VIVO LOADS AND KINEMATICS <i>P. F. Kneifel, P. Moewis, P. Damm, P. Schutz, J. Dymke, W. R. Taylor, G. N. Duda, A. Trepczynski</i>	10:15am - 10:27am MECHANOBIOLOGY-BASED RAPID DIAGNOSIS AND EARLY PROGNOSIS OF METASTATIC RISK IN CANCER <i>D. Weihs</i>
	10:27am - 10:39am CHARACTERISING DISSECTION IN AORTIC TISSUE: EFFECT OF LOCATION AND DISSECTED LAYER <i>I. Ríos-Ruiz, M. Á. Martínez, E. Peña</i>	10:40am - 10:52am 3D PRINTED SOFT METAMATERIAL FORCE SENSORS FOR GAIT MONITORING USING TPU-GRAPHENE COMPOSITES <i>I. Sanz-Pena, N. Rubio Carrero, H. Xu, M. Hopkins</i>	10:27am - 10:39am THE EFFECT OF FOOT ORIENTATION MODIFICATIONS ON KNEE JOINT BIOMECHANICS DURING DIFFERENT ACTIVITIES <i>Y. Wan, L. Wade, P. McGuigan, J. Bilzon</i>	10:27am - 10:39am NANOMECHANICAL SIGNATURE OF FIBROSARCOMA: FROM SINGLE CELLS TO TISSUE LEVEL <i>A. Stylianou, K. Polemidiotou, F. Mpekris, T. Stylianopoulos</i>
	10:39am - 10:51am GLOBAL AND LOCAL STIFFENING OF HUMAN THORACIC AORTAS UNDERGOING TEVAR IN VITRO: A MOCK-LOOP STUDY <i>E. Agrafiotis, G. Sommer, C. Mayer, M. Grabenwöger, P. Regitnig, H. Mächler, G. A. Holzapfel</i>	10:52am - 11:04am AN EXPERIMENTAL AND COMPUTATIONAL STUDY ON A PATIENT SPECIFIC 3D PRINTED Ti6Al4V HEMIPELVIS PROSTHESIS <i>L. Ciriello, F. Danielli, R. Verga, F. Alemani, M. Cicero, J. F. M. Rodriguez, G. Pennati, L. La Barbera</i>	10:39am - 10:51am CAN WALKING SPEED BE ACCURATELY ESTIMATED USING A MARKER-BASED GAIT EVENT DETECTION METHOD? <i>T. Bonci, F. Salis, K. Scott, L. Alcock, C. Becker, A. Cereatti, E. Gazit, C. Hansen, J. Hausdorff, W. Maetzler, P. Luca, L. Rochester, B. Sharrack, I. Vogiatzis, C. Mazzà</i>	10:39am - 10:51am EXPERIMENTAL INVESTIGATION OF TROPICOLLAGEN MECHANICS <i>A. Rohatschek, P. Steinbauer, S. Baudis, P. Thurner</i>
	10:51am - 11:03am LOCAL RUPTURE ANALYSIS OF ATHEROSCLEROTIC HUMAN CAROTID PLAQUES BY STRUCTURAL IMAGING, DIC AND UNIAXIAL TESTING <i>S. Guvenir Torun, P. de Miguel Munoz, H. Crielaard, H. J. Verhagen, A. van der Lugt, G. J. Kremers, A. C. Akyildiz</i>	11:04am - 11:16am CAN 3D-PRINTED VORONOI STRUCTURES REDUCE FRICTION IN ORTHOPAEDIC IMPLANTS? <i>C. Hou, I. Nemes-Károly, L. Pastrav, B. Vrancken, G. Kocsis, K. Denis, G. Szabenyi</i>	10:51am - 11:03am ASSESSING THE IMPACT OF A REHABILITATION TREATMENT WITH EXOSKELETON IN PD: A MUSCULOSKELETAL MODELLING APPROACH <i>M. Romanato, F. Fichera, F. Spolaor, D. Volpe, Z. Sawacha</i>	10:51am - 11:03am THEORETICAL AND EXPERIMENTAL MODELLING OF CELL AND TUMOUR GROWTH <i>B. Huxford, V. Kumar, L. McNamara, E. McEvoy</i>
	11:03am - 11:15am MECHANICAL CHARACTERIZATION OF PASSIVE MYOCARDIAL TISSUE PROPERTIES IN HEALTHY AND INFARCTED PORCINE HEARTS <i>N. Laita, M. Á. Martínez, M. Doblaré, E. Peña</i>	11:16am - 11:28am ADDITIVELY MANUFACTURED MICROLATTICE STRUCTURES FOR AN INNOVATIVE INTERVERTEBRAL DEVICE <i>F. Distefano, G. Epasto, E. Guglielmino, R. Mineo</i>	11:03am - 11:15am A QUALITY CHECK TO ENABLE RELIABLE MULTICENTRIC STEREOPHOTOGAMMETRIC DATA COLLECTION <i>K. Scott, T. Bonci, L. Alcock, C. Hansen, L. Schwickert, E. Gazit, A. Cereatti, C. Mazzà</i>	11:03am - 11:15am COMBINED EXPERIMENTAL AND COMPUTATIONAL STUDY OF TENSIONAL HOMEOSTASIS IN CELL-SEEDED TISSUE-EQUIVALENTS <i>D. Paukner, J. F. Eichinger, J. D. Humphrey, C. J. Cyron</i>
	11:15am - 11:27am NON-HOMOGENEOUS GEOMETRICAL INFLUENCE ON RING-OPENING STRESS RECONSTRUCTION <i>A. Utrera, M. Inostroza, E. Rivera, D. Celentano, C. Garcia-Herrera</i>		11:15am - 11:27am MUSCLE CONTRIBUTIONS TO CENTER OF MASS ACCELERATION IN SIMULATED CROUCH GAIT BY HEALTHY CHILDREN <i>C. Cardadeiro, F. João, R. Mateus, A. P. Veloso</i>	11:15am - 11:27am CREEP BEHAVIOR OF INDIVIDUAL COLLAGEN FIBRILS IN TENSION IS DEPENDENT ON CROSS-LINKING <i>M. Nalbach, N. Motoi, M. Rufin, O. Andriotis, G. Schitter, P. Thurner</i>
	11:27am - 11:39am INVESTIGATING LOCAL PROPERTIES OF ATHEROSCLEROTIC PLAQUE CAPS USING A TISSUE-ENGINEERED MODEL <i>H. Crielaard, T. B. Wissing, S. Guvenir Torun, P. de Miguel, R. M. Hengst, G. Kremers, F. J. H. Gijzen, K. van der Heiden, A. C. Akyildiz</i>		11:27am - 11:39am PROPRIOCEPTION, MUSCLE ACTIVITY AND TIBIAL TRANSLATION DURING HEEL STRIKE IN RUNNING: ROLE OF ACL SURGERY TYPE <i>L. Bühl, N. Blechner, C. Nüesch, S. Müller, G. Pagenstert, C. Egloff, A. Mündermann</i>	11:27am - 11:39am PERFORMANCE OF LINEAR AND NONLINEAR APPROACHES IN TRACTION FORCE MICROSCOPY FOR COLLAGEN HYDROGELS <i>A. Apolinar-Fernández, J. Barrasa-Fano, M. Condor, H. Van Oosterwyck, J.A. Sanz-Herrera</i>

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
<p>TR05.2 SOFT TISSUE BIOMECHANICS II <i>Chairs: Dulce Oliveira, José Felix Rodriguez Matas</i></p> <p>10:15am - 10:27am INTER-DONOR VARIABILITY IN THE TENSILE AND COMPRESSIVE BEHAVIOUR OF IN VITRO HUMAN THROMBI <i>R. Cahalane, J. de Vries, M. de Maat, K. van Gaalen, H. van Beusekom, A. van der Lugt, A. Akyildiz, F. Gijzen</i></p> <p>10:27am - 10:39am A BAYESIAN CONSTITUTIVE MODEL SELECTION FRAMEWORK FOR BIAXIAL MECHANICAL TESTING OF PLANAR SOFT TISSUES: APPLICATION TO PORCINE AORTIC VALVES <i>A. AGGARWAL, L. T. Hudson, D. W. Laurence, C.-H. Lee, S. Pant</i></p> <p>10:39am - 10:51am MECHANICAL PROPERTIES OF PLANTAR TISSUES: A COUPLED EXPERIMENTAL AND NUMERICAL APPROACH <i>S. Pettenuzzo, A. Berardo, E. Belluzzi, A. Pozzuoli, P. Ruggieri, R. Boscolo Berto, R. De Caro, E. L. Carniel, C. G. Fontanella</i></p> <p>10:51am - 11:03am OPTIMIZATION OF SINGLE-SIDED NMR AND INDENTATION PROTOCOLS IN EVALUATING CARTILAGE STRUCTURE AND MECHANICS <i>M. Berni, C. Golini, C. Testa, N. F. Lopomo, L. Brizi, M. Baleani</i></p> <p>11:03am - 11:15am STRUCTURAL MECHANISMS IN SOFT FIBROUS TISSUES: LESSONS FROM BIOMIMETICS <i>M. Sharabi</i></p> <p>11:15am - 11:27am VISCOELASTIC PROPERTIES OF TUMOUR TISSUE: RELATION WITH STRUCTURE AND COMPOSITION <i>A. Levillain, C. B. Confavreux, M. Decaussin-Petrucci, E. Durieux, P. Paparel, K. Le-Bail Carval, L. Maillard, F. Bermond, D. Mitton, H. Follet</i></p> <p>11:27am - 11:39am UNIAXIAL TENSILE TESTS ON HUMAN FASCIA LATA: STRESS RELAXATION AND FAILURE PHENOMENA FROM FROZEN CADAVERS <i>L. Bonaldi, C. G. Fontanella, C. Stecco, A. Berardo</i></p>	<p>TR06.2 COMPUTATIONAL BIOLOGY I <i>Chairs: Maria Angeles Perez Anson, Aurélie Carlier</i></p> <p>10:15am - 10:40am COMPUTATIONAL SIMULATIONS TO UNRAVEL CELL MECHANOTRANSDUCTION IN PATHOLOGICAL AND PHYSIOLOGICAL PROCESSES <i>M. J. Gómez-Benito</i></p> <p>10:40am - 10:52am MODELLING THE MECHANO-INFLAMMATORY REGULATION OF CHONDROCYTE IN EARLY OSTEOARTHRITIS <i>M. Segarra-Queralt, G. Piella, J. Noailly</i></p> <p>10:52am - 11:04am A NOVEL TOP-DOWN NETWORK MODELLING APPROACH TO ESTIMATE CELL ACTIVITY IN MULTIFACTORIAL ENVIRONMENTS <i>L. Baumgartner, M. Á. González Ballester, J. Noailly</i></p> <p>11:04am - 11:16am IN SILICO ANALYSIS OF THE INFLUENCE OF THE SUBSTRATE STIFFNESS ON THE EVOLUTION OF 3D CULTURES OF GLIOBLASTOMA <i>M. Pérez-Aliacar, L. Palos, C. Bayona, J. Ayensa-Jiménez, I. Ochoa, M. Doblaré</i></p> <p>11:16am - 11:28am SIMULATION OF PIEZOELECTRIC SCAFFOLD FOR BONE REGENERATION <i>V. Badali, M. Mohammadkhah, S. Checa, M. M. Zehn</i></p> <p>11:28am - 11:40am CELLULAR SENESCENCE IN A MECHANOBIOLOGICAL MODEL OF LONGITUDINAL BONE GROWTH OF THE FEMUR <i>A. Lipphaus, A. Wegener-Panzer, R.-B. Tröbs, U. Witzel</i></p>	<p>TR07.2 COMPUTER AIDED DIAGNOSIS, PLANNING AND SURGERY II <i>Chairs: Jérôme Noailly, Miguel Ángel Ariza Gracia</i></p> <p>10:15am - 10:27am A NUMERICAL STUDY OF THE IMPACT ON GRAFT LONGEVITY FROM CORONARY ARTERY BYPASS GRAFTS' BULK-BODY GEOMETRY <i>C. J. Bright, A. Deyranlou, S. Grant, A. Keshmiri</i></p> <p>10:27am - 10:39am TOLERANCE ANGLE DETERMINATION FOR PEDICULAR SCREW INSERTION <i>L. Leblond, Y. Godio-Rabouet, Y. Glard, M. Evin</i></p> <p>10:39am - 10:51am A WEB PLATFORM FOR DATA-DRIVEN REAL-TIME MODELING AND VISUALIZING CARDIOVASCULAR PROBLEMS <i>N. Demo, P. Siena, M. Girefoglio, M. Conti, G. Rozza, F. Auricchio</i></p> <p>10:51am - 11:03am A BONE-REMODELING DRIVEN NUMERICAL FRAMEWORK FOR HIP PROSTHESIS DESIGN <i>F. Rotini, S. Marconi, G. Alaimo</i></p> <p>11:03am - 11:15am EVALUATION OF PHARMACOLOGICAL TREATMENTS FOR OSTEOPOROSIS USING DXA-BASED 3D FINITE ELEMENT MODELS <i>C. Ruiz Wills, M. Qasim, R. Winzenrieth, S. Di Gregorio, L. Del Rio, L. Humbert, J. Noailly</i></p> <p>11:15am - 11:27am INFLUENCE OF PLATE DESIGN ON SUBCONDYLAR FRACTURE FIXATION: A COMPARATIVE FINITE ELEMENT ANALYSIS <i>A. Gupta, A. Dutta, K. Mukherjee</i></p> <p>11:27am - 11:39am LEFT VENTRICULAR ASSIST DEVICE SURGICAL OPTIMISATION USING COMPUTATIONAL FLUID DYNAMICS <i>G. B. López-</i></p>	<p>TR08.2 EXPERIMENTAL BIOMECHANICS I <i>Chairs: Luca Cristofolini, Ingmar Fleps</i></p> <p>10:15am - 10:27am DIGESTION OF COLLAGEN FIBRILS TROUGH MMP-1: LIVE TRACKING OF MECHANICS THROUGH NANOINDENTATION <i>M. Ruffin, S. Jaritz, G. J. Schütz, P. J. Thurner, O. G. Andriotis</i></p> <p>10:27am - 10:39am EXPERIMENTAL VALIDATION OF A MECHANISTIC MODEL OF THE BERLIN HEART EXCOR USING A MOCK CIRCULATION LOOP <i>V. Yuan, L. Rompani, F. De Gaetano, M. L. Costantino</i></p> <p>10:39am - 10:51am REPRODUCIBLE GENERATION OF PREDEFINED TIBIA FRACTURES <i>K. Wickert, M. Roland, A. Andres, S. Diebels</i></p> <p>10:51am - 11:03am HOW DOES KINEMATIC ALIGNMENT INFLUENCE FEMOROTIBIAL KINEMATICS IN MEDIAL STABILISED TKA COMPARED TO MECHANICAL ALIGNMENT? <i>L. Bauer, M. Woiczinski, C. Thorwächter, P. Müller, B. Holzapfel, T. Niethammer, J.-M. Simon</i></p> <p>11:03am - 11:15am DESIGN OF BIOMECHANICAL TESTING DEVICE FOR THE PELVIS INCLUDING GAIT MUSCLE FORCES <i>A. Soliman, P.-L. Ricci, S. Kedziora, J. Kelm, T. Gerich, S. Maas</i></p> <p>11:15am - 11:27am DEVELOPMENT OF A PHYSICAL TWIN FOR CARDIOVASCULAR LIFE-SUPPORT DEVICES ANALYSIS AND COMPARISON <i>E. Vignali, E. Gasparotti, F. Bardi, S. Prizio, D. Haxhiademi, P. Del Sarto, S. Celi</i></p> <p>11:27am - 11:39am MECHANICAL PERFORMANCE OF HYBRID FIBROUS STRUCTURES FOR TENDON REPAIR <i>T. Peixoto, M. A.</i></p>	10:15 – 11:40

Monday, 27th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
11:45 – 12:30	Keynote lecture 1 PERSONALIZED MODELING OF ALZHEIMER'S DISEASE , <i>Ellen Kuhl</i> <i>Chairs: Harry van Lenthe, Joao Manuel R.S. Tavares</i>			
12:30 – 13:15	Lunch break			
13:15 – 14:00	Poster sessions: PS1 – PS6			
14:00 – 15:30	TR01.3 CLINICAL BIOMECHANICS AWARDS SESSION <i>Chairs: Markus Heller, Michelle Conti</i> 2:00pm – 2:12pm BIOMECHANICS INDEX FOR DIABETIC FOOT RISK CLASSIFICATION <i>A. Guiotto, G. Bortolami, A. Ciniglio, F. Spolaor, G. Guarneri, A. Avogaro, F. Cibir, F. Silvestri, Z. Sawacha</i> 2:12pm – 2:24pm BIOMECHANICAL EVALUATION OF DIAGNOSTIC TESTS FOR ROTATOR CUFF LESIONS <i>J. Menze, T. Rojas, M. A. Zumstein, S. J. Ferguson, K. Gerber</i> 2:24pm – 2:36pm EFFECT OF ALENDRONATE ON BONE FRACTURE TOUGHNESS IN OSTEOGENESIS IMPERFECTA <i>A. Muñoz, A. Carriero</i> 2:36pm – 2:48pm APPLICATION OF COG THREADS FOR VAGINAL WALL PROLAPSE REPAIR: EX-VIVO STUDY <i>R. Rynkevici, C. Soares, L. Hympanova, E. Silva, T. Mascarenhas, P. Martins</i>	TR02.3 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES III: FRACTURE REPAIR <i>Chair: Marlène Mengoni, Maikel Timmermans</i> 2:00pm – 2:25pm MODELLING MECHANICAL DEMANDS ARISING FROM CLINICAL REQUIREMENTS FOR FRACTURE FIXATION <i>P. Pankaj</i> 2:25pm – 2:37pm LIGHT-CURABLE FIXATION COMPARABLE WITH PLATES IN TORSION <i>P. Schwarzenberg, T. Colding-Rasmussen, D. J. Hutchinson, D. Mischler, P. Horstmann, M. Moerk Peterson, M. Malkock, C. Wong, P. Varga</i> 2:37pm – 2:49pm ARTICULAR CONTACT VS. EMBEDDING: THE EFFECT OF BOUNDARY CONDITIONS ON VOLAR PLATE FIXATION AT THE DISTAL RADIUS <i>L. Berger, D. H. Pahr, A. Synek</i> 2:49pm – 3:01pm AFFORDABLE SOLUTION FOR LOW AND MIDDLE-INCOME COUNTRIES: UNILATERAL EXTERNAL FIXATOR <i>M. Saeidi, S. Barnes, M. Berthume, S. R. Holthof, A. M. J. Bull, J. Jeffers</i> 3:01pm – 3:13pm BIOMECHANICAL ANALYSIS OF HELICAL VERSUS STRAIGHT PLATING OF PROXIMAL THIRD HUMERAL SHAFT FRACTURES <i>I. Zderic, T. Pastor, K. van Kneegsel, B.-C. Link, F. J. Beeres, F. Migliorini, R. Babst, S. Nebelung, B. Ganse, C. Schoeneberg, B. Gueorguiev, M. Knoke</i>	TR03.3 HARD TISSUE I: TISSUE INTERACTIONS <i>Chairs: Uwe Wolfram, Pia Stefanek</i> 2:00pm – 2:25pm MINERALIZED FIBROCARILAGE AS A HIGHLY TUNABLE TISSUE ALLOWING THE INTEGRATION OF TENDON INTO BONE <i>D. Ruffoni</i> 2:25pm – 2:37pm COLD-WATER CORALS RETAIN OUTSTANDING TISSUE STRENGTH BUT LOSE TISSUE STIFFNESS IN ACIDIFIED WATERS <i>U. Wolfram, M. Peña Fernández, S. McPhee, E. Smith, R. Beck, J. Shephard, M. Roberts, S. Hennige</i> 2:37pm – 2:49pm DEGREE OF MINERALIZATION AND MINERALIZED COLLAGEN FIBRE ORIENTATION PREDICTS THE ELASTIC MODULUS OF BONE IN OSTEOGENESIS IMPERFECTA <i>M. Indermaur, T. Kochetkova, D. Casari, B. Willie, J. Michler, J. Schwiedrzik, P. Zysset</i> 2:49pm – 3:01pm THERMAL ACTIVATION ANALYSIS OF HYDRATED LAMELLAR OVINE BONE <i>C. R. P. Peruzzi, T. Kochetkova, S. Remund, B. Neuenschwander, J. Michler, J. Schwiedrzik</i> 3:01pm – 3:13pm MINERAL CONTENT AND BIOMECHANICAL PROPERTIES OF FIBROLAMELLAR BONE <i>A. Cantamessa, P. Muraro, Y. Delaunoy, P. Compère, S. Blouin, M. A. Hartmann, D. Ruffoni</i> 3:13pm – 3:25pm OPTIMISING METHODS OF MODELLING OSTEOCHONDRAL GRAFTS IN HUMAN TIBIOFEMORAL JOINTS <i>G. A. Day, A. C. Jones, M. Mengoni, R. KWilcox</i>	TR04.3 MUSCULOSKELETAL BIOMECHANICS I: MULTIPLE TOPICS <i>Chairs: Vee San Cheong, Enrico Dall'Ara</i> 2:00pm – 2:25pm MECHANOSENSING IN BONE USING FLUID FLOW THROUGH NETWORKS <i>R. Weinkamer</i> 2:25pm – 2:37pm A REPRESENTATIVE VOLUME ELEMENT FOR BONE EXTRACELLULAR MATRIX <i>E. Alizadeh, D. Casari, J. Michler, J. Schwiedrzik, P. Zysset</i> 2:37pm – 2:49pm TEMPORAL CHANGES IN THE BONE MICROENVIRONMENT PRIOR TO AND FOLLOWING OVERT BREAST-CANCER OSTOLYSIS <i>A. S. Verbruggen, R. M. Dwyer, E. C. McCarthy, L. M. McNamara</i> 2:49pm – 3:01pm TOWARDS AN IN SILICO BIOREGULATORY MODEL OF OSTEOGENESIS AND SPROUTING ANGIOGENESIS IN 3D <i>L. Lafuente-Gracia, M. Barzegari, L. Geris</i> 3:01pm – 3:13pm ALTERED MECHANICAL LOADING IN AMPUTEES RESULTS IN MILD SIGNS OF KNEE DEGENERATION 8 YEARS POST TRAUMA <i>F. P. Behan, A. N. Bennett, A. M. J. Bull</i> 3:13pm – 3:25pm FATIGUE ANALYSIS USING ELECTROMYOGRAPHY DRIVEN MUSCULOSKELETAL TRUNK MODELS <i>M. I. Mohamed Refai, H. Wang, A. Moya-Esteban, M. Sartori</i>

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				11:45 – 12:30
				12:30 – 13:15
				14:00 – 15:30
TR05.3 SOFT TISSUE BIOMECHANICS III <i>Chairs: José Felix Rodriguez Matas, Maria José Gómez-Benito</i> 2:00pm - 2:12pm HIGH FIDELITY SIMULATION OF CEREBRAL ANEURYSM WITH FLOW-DIVERTER <i>E. Hachem</i> 2:12pm - 2:24pm A COMPUTATIONAL METHODOLOGY FOR STUDYING THE MURINE BLOOD-BRAIN BARRIER HEMODYNAMICS <i>S. Mañosas, A. Sanz, C. Ederia, A. Urbiola, E. Rojas de Miguel, A. Ostiz, I. Cortés, N. Ramírez, C. Ortiz de Solórzano, A. Villanueva, M. Malve</i> 2:24pm - 2:36pm HOW MACROSCOPIC TISSUE DEFORMATION AFFECTS THE BRAIN'S MICROSTRUCTURE <i>N. Reiter, F. Paulsen, S. Budday</i> 2:36pm - 2:48pm CHARACTERIZATION OF MECHANICAL DAMAGE ON THE ESOPHAGEAL WALL OF CHRONIC-HYPOXIC LAMBS <i>A. Bezmalinovic, C. García-Herrera</i> 2:48pm - 3:00pm NON-LINEAR HOMOGENIZATION OF SOFT TISSUES: APPLICATION TO TENDONS AND ARTERIES <i>C. Morin, C. Hellmich, S. Avril</i> 3:00pm - 3:12pm MESH ANCHORING TECHNIQUE IN UTERINE PROLAPSE REPAIR SURGERY: A FINITE ELEMENT ANALYSIS <i>E. Silva, R. Rynkevici, S. Brandão, T. Mascarenhas, A. Augusto Fernandes</i> 3:12pm - 3:24pm PORCINE KNEE CARTILAGE MAPS DETERMINED WITH AUTOMATED INDENTATION AND CHARACTERIZED BY MACHINE LEARNING <i>E. Hamsayeh Abbasi Niasar, L. Li</i>	TR06.3 COMPUTATIONAL BIOLOGY II <i>Chairs: Maria Angeles Perez Anson, Aurélie Carlier</i> 2:00pm - 2:12pm COMPUTATIONAL EVIDENCE FOR A MULTI-LAYER CROSSTALK BETWEEN CADHERIN-11 AND PDGFR SIGNALING <i>Z. Karagöz, F. Passanha, L. Robeerst, M. van Griensven, V. L. S. LaPointe, A. Carlier</i> 2:12pm - 2:24pm UNRAVELLING THE IMPACT OF PRENATAL MUSCLE FORCES ON THE DYNAMIC CELL BEHAVIOURS DRIVING JOINT GROWTH IN MICE <i>J. Godivier, Y. Huang, A. J. Bodey, C. L. Hammond, H. Isaksson, N. C. Nowlan</i> 2:24pm - 2:36pm AGENT-BASED SIMULATIONS OF BONE REMODELLING INCLUDING OSTEOGENESIS PREDICT RAPID BONE LOSS POST DENOSUMAB <i>C. Ledoux, D. Boaretti, J. J. Kendall, R. Müller, C. J. Collins</i> 2:36pm - 2:48pm A MULTISCALE, MECHANOBIOLOGICAL MODEL OF CORTICAL BONE ADAPTATION DUE TO PTH AND MECHANICAL LOADING <i>C. J. Miller, E. Pickering, E. Dall'ara, V. S. Cheong, P. Pivonka</i> 2:48pm - 3:00pm AGENT-BASED IN-SILICO MODEL FOR MULTIPLE MYELOMA TUMOR GROWTH ANALYSIS <i>P. Urdeix, M. H. Doweidar</i> 3:00pm - 3:12pm IN SILICO IMMUNOFLUORESCENCE: A NOVEL APPROACH TO CALIBRATE MECHANOREGULATORY MODELS OF EARLY BONE FRACTURE HEALING <i>E. Borgiani, G. Nasello, C. Schlundt, K. Schmidt-Bleek, L. Geris</i> 3:12pm - 3:24pm UMBRELLA SAMPLING FOR THE ESTIMATION OF THE FREE ENERGY BARRIER OF PI RELEASE IN MYOSIN <i>R. Manevy, M. Caruel, F. Detrez, I. Navizet</i>	TR07.3 OCULAR BIOMECHANICS I <i>Chairs: Miguel Ángel Ariza Gracia, Philippe Buechler</i> 2:00pm - 2:25pm THE BIOMECHANICS OF THE EYE LENS AND ACCOMMODATIVE SYSTEM: CLINICAL OPPORTUNITIES AND BIOMECHANICAL CHALLENGES <i>B. Pierscionek, K. Wang</i> 2:25pm - 2:37pm TISSUE BIOMECHANICS AND PARAMETER IDENTIFICATION OF EX VIVO PORCINE CORNEAL TISSUE <i>M. H. Nambiar, L. Liechti, F. Mueller, W. Bernau, T. G. Seiler, P. Büchler</i> 2:37pm - 2:49pm A MECHANICAL MODEL OF EXUDATIVE MACULAR OEDEMA <i>A. Ruffini, M. Dvoriashyna, R. Repetto</i> 2:49pm - 3:01pm MECHANICAL MODELING OF LOCALIZED CROSS-LINKING PATTERN IN HUMAN AND PORCINE CORNEAS <i>M. Frigelli, P. Büchler, S. Kling</i> 3:01pm - 3:13pm A THEORETICAL MODEL OF AQUEOUS HUMOUR PRODUCTION <i>M. Dvoriashyna, A. J. E. Foss, E. A. Gaffney, R. Repetto</i> 3:13pm - 3:25pm DOES CORNEAL STIFFNESS PLAY A ROLE IN POST-SURGICAL CORNEAL ECTASIA? <i>B. Fantaci, B. Calvo Calzada, J. Grasa Orús, M. A. Ariza Gracia</i>	TR08.3 3D PRINTING IN BIOMEDICINE <i>Chairs: Henrique Amorim Almeida</i> 2:00pm - 2:12pm MECHANICAL PROPERTIES OF 3D-PRINTED GLASS-CERAMIC SCAFFOLDS ASSESSED THROUGH MICRO-CT-BASED FINITE ELEMENT MODELS <i>L. D'Andrea, F. Bairo, E. Verné, D. Gastaldi, P. Vena</i> 2:12pm - 2:24pm 3D BIOPRINTING OF ECM-BASED MULTI-LAYERED SEGMENTS OF TUBULAR CONSTRUCTS <i>F. Potere, G. A. Croci, P. Petrini, F. Boschetti, S. Mantero</i> 2:24pm - 2:36pm DESIGN AND FUNCTIONAL EVALUATION OF A 3D PRINTABLE CUSTOM PROSTHESIS FOR TALUS REPLACEMENT <i>F. Danielli, F. Berti, L. La Barbera, A. Nespoli, C. G. Fontanella, S. Pettenuzzo, T. Villa, L. Petrini</i> 2:36pm - 2:48pm MATRIGEL COAXIAL BIOPRINTING FOR IN VITRO CANCER MODELS <i>P. DE STEFANO, E. BIANCHI, M. BASHA, R. BIANCHI, G. DUBINI</i> 2:48pm - 3:00pm MECHANICAL REPLICA OF SOFT TISSUES: A STRUCTURAL APPROACH <i>V. Serantoni, C. Rouby, J. Boisson</i> 3:00pm - 3:12pm AN IN-SILICO MODEL FOR CELLS EXTRUSION IN BIOPRINTING <i>G. Santesarti, G. Vairo, F. Viola, R. Verzicco, M. Marino</i> 3:12pm - 3:24pm BIOMECHANICAL FAILURE BEHAVIOUR OF 3D PRINTED FEMORAL BONES COMPARED TO ARTIFICIAL AND HUMAN BONES <i>K. Nägl, A. Reisinger, D. H. Pahr</i> 3:24pm - 3:36pm FINITE ELEMENT MODELING OF BIPHASIC CALCIUM PHOSPHATE BONE SCAFFOLDS: AN EXPLORATORY STUDY <i>N. Rosa, S. Olhero, P. Torres, R. Natal, M. Parente</i>	

Monday, 27th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
15:30 – 16:00	Coffee break			
16:00 – 17:00	ESB STUDENT AWARD SESSION <i>Chairs: Markus Heller, Aurelie Carlier</i> - ASSESSING THE PERFORMANCE OF THROMBECTOMY DEVICES WITH IN SILICO MODELS; <i>S. Bridio</i> - PREDICTING SURGICAL OUTCOMES ACROSS NINE CORRECTIVE TECHNIQUES FOR SAGITTAL CRANIOSYNOSTOSIS; <i>C. Cross</i> - ANGIOGRAPHY-DERIVED WALL SHEAR STRESS TOPOLOGICAL SKELETON VARIABILITY PREDICTS MYOCARDIAL INFARCTION; <i>M. Lodi Rizzini</i> - BIOMECHANICS AND MECHANOBIOLOGY OF MINERALIZED FIBROCARILAGE AT THE TENDON-BONE ATTACHMENT; <i>A. Tits</i>			
17:00 – 18:00	TR01.4 CARDIOVASCULAR BIOMECHANICS III: TREATMENT DESIGN & CLINICAL OUTCOME <i>Chairs: Nele Famaey, Mathias Peirlinck</i> 5:00pm - 5:12pm MYOCARDIAL BIOMECHANICS OF LEFT ATRIAL LIGATION CHICK EMBRYONIC MODEL OF HYPOPLASTIC LEFT HEART SYNDROME <i>S.S. Lashkarinia, W. X. Chan, Z. Yu, H. B. Siddiqui, M. Coban, B. Sevgin, K. Pekkan, C. H. Yap</i> 5:12pm - 5:24pm FINITE ELEMENT SIMULATIONS OF THE CARIOBAND PROCEDURE FOR THE TREATMENT OF THE REGURGITANT MITRAL VALVE <i>E. Gasparotti, E. Vignali, M. Mariani, S. Berti, S. Celi</i> 5:24pm - 5:36pm ON THE RELATIONSHIP BETWEEN KINETIC ENERGY AND HELICITY IN PROSTHETIC HEART VALVES HEMODYNAMICS <i>D. Gallo, M. D. De Tullio, U. Morbiducci</i> 5:36pm - 5:48pm A PHENOMENOLOGICAL DEGRADATION MODEL TO PREDICT THE LONG-TERM PERFORMANCE OF A POLYMERIC SCAFFOLD <i>C. J. Fiuza, K. Polak-Krasna, G. Poletti, L. Antonini, G. Pennati, W. Ronan, T. Vaughan</i> 5:48pm - 6:00pm A NOVEL MODEL FOR THE HEMODYNAMICS OF CEREBRAL ANEURYSMS TREATED WITH ENDOVASCULAR COILS BASED ON SYNCHROTRON IMAGING AND EXPERIMENTAL VALIDATION <i>J. Romero Bhathal, S. Faisal, F. Chassagne, L. Marsh, M. Levitt, C. Geindreau, A. Aliseda</i>	TR02.4 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES IV: TOTAL HIP ARTHROPLASTY <i>Chair: Dennis Janssen, Corina Nüesch</i> 5:00pm - 5:12pm A FINITE ELEMENT MODEL TO PREDICT THE RISK OF INTRAOPERATIVE FRACTURES IN NEW CEMENTLESS HIP STEM DESIGNS <i>M. Petrucci, A. A. La Mattina, C. Curreli, M. Viceconti</i> 5:12pm - 5:24pm COMBINED MULTIBODY AND FINITE ELEMENT ANALYSES FOR THE EVALUATION OF THE TAPER JUNCTION IN THA <i>G. Putame, F. A. Bologna, M. Terzini, A. L. Audenino</i> 5:24pm - 5:36pm FEMORAL FRACTURE PREVENTION VIA VIBRATION ANALYSIS DURING TOTAL HIP ARTHROPLASTY <i>G. Athanassoulis Makris, M. Timmermans, L. Pastrav, Q. Goossens, M. Mulier, G. Vles, W. Desmet, K. Denis</i> 5:36pm - 5:48pm DVC: A NEW DIAGNOSIS METHOD FOR MICROMOTION AND REMAINING ATTACHMENT LOOSENING OF HIP ARTHROPLASTY <i>M. Severyns, K. Aubert, V. Valle, T. Vendeuvre, A. Germaneau</i> 5:48pm - 6:00pm ADVANCES IN FIXATION STRENGTH OF REORIENTATING RECTANGULAR TRIPLE PELVIC INNOMATE OSTEOTOMY <i>J. Richter, D. Ciric, K. Kalchschmidt, C. D'Aurelio, A. Pommer, J. Dauwe, B. Gueorguiev</i>	TR03.4 PATIENT-SPECIFIC MODELLING I <i>Chair: Sebastian Laporte</i> 5:00pm - 5:12pm COMPARATIVE VALIDATION OF TWO PATIENT-SPECIFIC MODELLING PIPELINES FOR PREDICTIVE KNEE JOINT FORCES <i>D. Princelle, G. Davico, M. Viceconti</i> 5:12pm - 5:24pm SIGNATURE OF DISEASE PROGRESSION IN KNEE OSTEOARTHRITIS: INSIGHT FROM AN INTEGRATED MULTI-SCALE MODELING APPROACH <i>I. Mohout, A. Esrafilian, S. A. Elahi, B. A. Killen, R. K. Korhonen, S. Verschuere, F. Luyten, I. Jonkers</i> 5:24pm - 5:36pm SHOULD ROBOTIC-ASSISTED TKA RECONSTRUCT PREMORBID STAGE? THE EFFECTS OF OSTEOPHYTES ON KNEE FUNCTIONALITY <i>P. Tzanetis, K. de Souza, S. Robertson, R. Fluit, B. Koopman, N. Verdonshot</i> 5:36pm - 5:48pm INTRA-SUBJECT VARIABILITY OF FEMORAL GROWTH SIMULATIONS BASED ON PERSONALIZED FINITE ELEMENT MODELS <i>W. Koller, A. Baca, H. Kainz</i> 5:48pm - 6:00pm SUBJECT SPECIFIC LOWER LIMB ANTHROPOMETRIC REGRESSION WITH LONG, SHORT AND NO COUNTERMOVEMENT- PERFORMANCE <i>C. Rodrigues, M. Correia, J. Abrantes, M. Benedetti, J. Nadal</i>	TR04.4 MUSCULOSKELETAL BIOMECHANICSII: UPPER LIMB <i>Chairs: Massimo Sartori, Mohamed Irfan Mohamed Refai</i> 5:00pm - 5:12pm EFFECT OF SHAPE AND SIZE OF SUPRASPINATUS TEARS IN ROTATOR CUFF STRAIN DISTRIBUTION: AN IN-VITRO STUDY <i>I. Santos, L. Pichler, C. Thorwächter, M. Saller, H. Traxler, P. E. Müller</i> 5:12pm - 5:24pm SHOULDER POSITIONING DURING SUPERIOR CAPSULAR RECONSTRUCTION: A COMPUTATIONAL ANALYSIS <i>M. Antunes, C. Quental, J. Folgado, C. de Campos Azevedo, A. C. Ângelo</i> 5:24pm - 5:36pm THE POSITION OF THE SCAPULA INFLUENCES THE DISTANCE BETWEEN LIGAMENOUS INSERTION OF THE AC AND CC LIGAMENTS <i>J. C. Katthagen, J. Sußiek, M. J. Raschke, E. Herbst, F. Dyrna, O. Riesenbeck, J. Wermers, S. Oenning</i> 5:36pm - 5:48pm GLENOHUMERAL JOINT FORCE PREDICTION WITH MACHINE LEARNING <i>P. Eghbali, F. Becce, P. Goetti, P. Büchler, D. Pioletti, A. Terrier</i> 5:48pm - 6:00pm PERSONALISED APPROACH TO RESTORATION OF ARM FUNCTION IN PEOPLE WITH TETRAPLEGIA: IDENTIFYING MUSCLE WEAKNESS <i>M. Seyres, D. Blana, N. Postans, R. J. O'Connor, S. Pickard, E. K. Chadwick</i>
18:00 – 19:00	Women in Biomechanics			
19:00 – 21:30	Welcome Reception			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				15:30 – 16:00
				16:00 – 17:00
<p>TR05.4 SOFT TISSUE BIOMECHANICS IV <i>Chairs: Dulce Oliveira, Maria José Gómez-Benito</i></p> <p>5:00pm - 5:12pm IN VIVO UNLOADING OF RAT ACHILLES TENDONS LEADS TO A DELAYED COLLAGEN STRUCTURAL RESPONSE TO IN SITU LOADING <i>I. Silva Barreto, M. Pierantoni, M. Hammerman, A. Diaz, J. Engqvist, P. Eliasson, H. Isaksson</i></p> <p>5:12pm - 5:24pm DEVELOPMENT OF A FINITE ELEMENT MODEL TO SIMULATE CHILDBIRTH-RELATED INJURIES <i>R. Moura, D. Oliveira, M. Parente, T. Mascarenhas, R. Natal Jorge</i></p> <p>5:24pm - 5:36pm MECHANICAL CHARACTERIZATION OF THE FETAL MEMBRANE AS A BILAYER STRUCTURE <i>D. Fidalgo, D. Oliveira, K. Myers, E. Malanowska, M. Parente, R. Natal</i></p> <p>5:36pm - 5:48pm MECHANICAL LOADING PROMOTES ANGIOGENESIS: A COMPUTATIONAL APPROACH <i>A. Guerra, J. Belinha, R. Natal Jorge</i></p>	<p>TR06.4 ROUND TABLE ON TECHNOLOGY TRANSFER IN BIOMECHANICS <i>Moderator: Jos Vander Sloten, KU Leuven</i> <i>Tine Van Lommel, Innovation Manager Leuven Research and Development</i> <i>Maria Oliveira, Business Director UPTEC</i> <i>Behnam Esfandiar, Academic Market and Innovation Manager Materialise NV</i> <i>Ricardo Moura, CEO Wisify Tech Solutions</i> <i>Peter Varga, Senior Project Leader Biomedical Development AO Foundation</i> <i>Wafa Skalli, ParisTech</i></p>	<p>TR07.4 OCULAR BIOMECHANICS II <i>Chairs: Miguel Ángel Ariza Gracia, Philippe Buechler</i></p> <p>5:00pm - 5:12pm A DETAILED METHODOLOGY TO MODEL THE NON CONTACT TONOMETRY: A FLUID-STRUCTURE INTERACTION STUDY. <i>E. Redaelli, J. Grasa Orús, J. F. RodriguezMatas, B. Calvo Calzada, G. Luraghi</i></p> <p>5:12pm - 5:24pm A NOVEL TECHNIQUE FOR RETINA BIOMECHANICAL CHARACTERIZATION <i>B. Belgio, F. Berti, S. Mantero, F. Boschetti</i></p> <p>5:24pm - 5:36pm COMPUTATIONAL STUDY OF RETINAL BLOOD FLOW COUPLED TO A GLOBAL CIRCULATION MODEL <i>A. Casalucci, L. O. Muller, A. Siviglia, E. Toro, R. Repetto</i></p>	<p>TR08.4 EXPERIMENTAL BIOMECHANICS II <i>Chairs: Luca Cristofolini, Ingmar Fleps</i></p> <p>5:00pm - 5:12pm COMBINING NUMERICAL AND EXPERIMENTAL APPROACHES TO ASSESS THE TANGENTIAL DEBONDING OF COIN-SHAPED IMPLANTS <i>Y. Hériveaux, S. Le Cann, K. Immel, E. Vennat, V.-H. Nguyen, R. A. Sauer, G. Haiat</i></p> <p>5:12pm - 5:24pm SPATIALLY-RESOLVED PROTEOMICS AND MICROMECHANICS OF HUMAN MENISCI <i>M. Handelshausen, O. G. Andriotis, M. Marchetti-Deschmann, P. J. Thurner</i></p> <p>5:24pm - 5:36pm PRIMARY STABILITY OF A PRESS-FIT CUP COMBINED WITH IMPACTION GRAFTING IN AN ACETABULAR DEFECT MODEL <i>R. A. Schierjott, G. Hettich, M. Baxmann, F. Morosato, L. Cristofolini, T. M. Grupp</i></p> <p>5:36pm - 5:48pm PERMEABILITY TEST BENCH FOR CHARACTERIZING HARD AND SOFT SCAFFOLD FOR TISSUE ENGINEERING APPLICATIONS <i>B. Masante, S. Gabetti, C. Massini, R. Tassi, F. Mochi, C. Del Gaudio, A. Schiavi, D. Massai</i></p> <p>5:48pm - 6:00pm INTEGRATING μCT AND INDENTATION PROTOCOLS TO ASSESS STRUCTURE AND MECHANICS OF ARTIFICIAL MENISCUS IMPLANTS <i>M. Berni, G. Marchiori, M. Fini, M. Zingales, C. Trombino, S. Di Paolo, S. Zaffagnini, N. F. Lopomo, M. Baleani</i></p>	17:00 – 18:00
				18:00 – 19:00
				19:00 – 21:30

Tuesday, 28th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
7:30 – 8:15	Meet the PI – Student breakfast networking event (West Ground Floor)			
8:30 – 9:45	<p>TR01.5</p> <p>IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES V: TOTAL KNEE ARTHROPLASTY <i>Chairs: William R. Taylor, Corine Post</i></p> <p>8:30am - 8:42am IN VIVO CONTACT MECHANICS IN TOTAL KNEE ARTHROPLASTY IS GOVERNED BY THE IMPLANT CONFORMITY <i>S. H. Hosseini Nasab, B. Szazi, C. Smith, P. Schütz, B. Postolka, W. R. Taylor</i></p> <p>8:42am - 8:54am CRUCIATE RETAINING TOTAL KNEE ARTHROPLASTY SYSTEMS MAY BE UNSUCCESSFUL IN AVOIDING ANTERIOR FEMORAL SHIFT DESPITE DIFFERENT BEARING GEOMETRY. <i>P. Moewis, H. Hommel, A. Trepczynski, L. Krah, G. Duda</i></p> <p>8:54am - 9:06am BIOMECHANICAL ANALYSIS OF FLEXIBLE FEMORAL CONES IN HINGED TOTAL KNEE ARTHROPLASTY <i>B. Innocenti</i></p> <p>9:06am - 9:18am DYNAMIC KNEE JOINT LINE ORIENTATION IS NOT A RELIABLE PREDICTOR OF CONTACT LOAD DYNAMICS IN VIVO <i>A. Trepczynski, P. Moewis, P. Damm, P. Schütz, J. Dymke, H. Hommel, W. R. Taylor, G. N. Duda</i></p> <p>9:18am - 9:30am UNDERSTANDING KNEE STABILITY AFTER TKA BY MEANS OF DYNAMIC VIDEOFLUOROSCOPY <i>L. Rao, N. Meister, N. Horn, W. R. Taylor, B. Postolka, S. Preiss, P. Schütz</i></p> <p>9:30am - 9:42am BIOMECHANICAL ANALYSIS OF DIFFERENT LEVEL OF CONSTRAINT IN TOTAL KNEE ARTHROPLASTY DURING DAILY ACTIVITIES <i>E. Bori, S. Pianigiani, L. Rapallo, G. Innocenti, B. Innocenti</i></p>	<p>TR02.5</p> <p>CARDIOVASCULAR BIOMECHANICS IV: COMPUTATIONAL METHODS <i>Chairs: Selda Sherifova, Stéphane Avril</i></p> <p>8:30am - 8:42am SEGMENTATION AND MECHANICAL CHARACTERIZATION OF ATHEROSCLEROTIC PLAQUES. <i>Á. T. Latorre Molins, M. Á. Martínez Barca, M. Cilla Hernández, J. Ohayon, E. PeñaBaquedano</i></p> <p>8:42am - 8:54am ARTIFICIAL NEURAL NETWORK FOR PREDICTION OF MECHANICAL PROPERTIES OF ATHEROMA PLAQUE <i>R. Caballero Masa, M. Á. Martínez Barca, E. Peña Baquedano</i></p> <p>8:54am - 9:06am ON THE CFD MODELLING OF HEMODYNAMICS IN UNRUPTURED INTRACRANIAL ANEURYSMS <i>P. Jeken Rico, A. Goetz, R. Nemer, P. Meliga, A. Larcher, J. Viquerat, A. F. Sanches, Y. Özpynirci, T. Liebig, E. Hachem</i></p> <p>9:06am - 9:18am PULSE WAVE VELOCITY AS A GUIDE TO REDUCE THE MATERIAL PARAMETERSPACE IN ARTERIAL COMPUTATIONAL BIOMECHANICS <i>L. Gheysen, L. Maes, N. Famaey, P. Segers</i></p> <p>9:18am - 9:30am FLUID STRUCTURE INTERACTION MODELING OF COMPLIANT AORTIC VALVES USING THE LATTICE BOLTZMANN CFD AND FEM METHODS <i>A. Morany, K. Lavon, R. Bardon, B. Kovarovic, A. Hamdan, D. Bluestein, R. Haj-Ali</i></p> <p>9:30am - 9:42am COMPUTATIONAL MODELLING OF THE EFFECT OF INFARCT STIFFENING ON LOCAL MYOFIBER MECHANICS <i>K. L. P. M. Janssens, M. Kraamer, P. H. M. Bovendeerd</i></p>	<p>TR03.5</p> <p>PATIENT-SPECIFIC MODELLING II <i>Chairs: Claudio Vergari, Laura Lafuente Gracia</i></p> <p>8:30am - 8:42am TOWARDS A REPOSITORY OF PATIENT-SPECIFIC INTERVERTEBRAL DISCS FINITE ELEMENT MODELS <i>E. Muñoz-Moya, M. Rasouligandomani, C. Ruiz Wills, G. Piella, J. Noailly</i></p> <p>8:42am - 8:54am LUMBAR INTERVERTEBRAL DISC 3D SEGMENTATION FOR BIOMECHANICAL SIMULATION <i>R. Matos, P. R. Fernandes, N. M. P. L. Matela, A. P. G. Castro</i></p> <p>8:54am - 9:06am EFFECT OF INSTRUMENTATION INACCURACIES ON BIOMECHANICAL AND COMPUTATIONAL FAILURE RISK OF FRACTURE FIXATIONS <i>D. Mischler, L. Tenisch, J. F. Schader, J. Dauwe, B. Gueorguiev, M. Windolf, P. Varga</i></p> <p>9:06am - 9:18am VERTEBRAL STRENGTH PREDICTION FROM SINGLE ENERGY BIPLANAR RADIOGRAPHS <i>C. Heidsieck, L. Gajny, J.-Y. Lazennec, C. Traver, W. Skalli</i></p> <p>9:18am - 9:30am PATIENT SPECIFIC GROWTH MODEL FOR CRANIOSYNOSTOSIS <i>M. Geoffroy, M. Abbad Andaloussi, P.-M. François, R. H. Khonsari, S. Laporte</i></p> <p>9:30am - 9:42am MODELLING STRATEGIES FOR ORTHOGNATHIC SURGERY: MECHANICAL OPTIMIZATION OF PATIENT-SPECIFIC PLATES <i>I. Rota, A. Giglio, F. Grecchi, M. Bonacina, D. Gastaldi</i></p>	<p>TR04.5</p> <p>TISSUE ENGINEERING I <i>Chairs: Gwendolen Reilly, Alberto Sensini</i></p> <p>8:30am - 8:42am PATIENT SPECIFIC OSTEOGENESIS IMPERFECTA BONE ORGANOIDS DEMONSTRATE INCREASED TISSUE MINERALIZATION <i>J. K. Griesbach, A. de Leeuw, T. Minacci, P. J. Lim, M. Rüger, M. Rohrbach, C. Giunta, R. Müller</i></p> <p>8:42am - 8:54am TOWARDS CONTROLLED FORMATION AND RESORPTION IN A 3D HUMAN IN VITRO BONE REMODELING MODEL. <i>B. de Wildt, L. Cuypers, K. Ito, S. Hofmann</i></p> <p>8:54am - 9:06am 3D ELECTROSPUN ARCADE-LIKE SCAFFOLDS FOR ARTICULAR CARTILAGE <i>A. Semitela, C. Sousa, A. F. Mendes, P. A. A. P. Marques, A. Completo</i></p> <p>9:06am - 9:18am AUTOMATED PARALLEL BIOREACTOR PLATFORM COMBINING PERFUSION AND PEMF STIMULATION <i>S. Gabetti, F. Daou, B. Masante, G. Putame, A. Sanginario, E. Zenobi, F. Mochi, C. Del Gaudio, C. Bignardi, L. Rimondini, A. Cochis, D. Massai</i></p> <p>9:18am - 9:30am WALL SHEAR STRESS ANALYSIS TOWARDS THE OPTIMAL DESIGN IN TPMS TISSUE ENGINEERING SCAFFOLDS <i>T. Pires, A. P. G. Castro, P. R. Fernandes</i></p> <p>9:30am - 9:42am COMPOSITE METHACRYLOYL GELATIN-BASED HYDROGELS FOR BONE TISSUE ENGINEERING APPLICATIONS <i>G. Giardelli, R. Laurano, R. Pappalardo, V. Chiono, M. Boffito</i></p>
09:45 – 10:15	Coffee break			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	All day
<p>TR05.5</p> <p>SPINE BIOMECHANICS I</p> <p><i>Chairs: Marco Palanca, John Costi</i></p> <p>8:30am - 8:42am</p> <p>IN VITRO TESTING OF HYDROGELS FOR THE IVD THERAPY USING A NOVEL ORGAN CULTURE APPROACH: CHONDROITINASE OR PAPAIN?</p> <p><i>J. U. Jansen, G. Q. Teixeira, A. Vernengo, S. Grad, K. Benz, C. Neidlinger-Wilke, H.-J. Wilke</i></p> <p>8:42am - 8:54am</p> <p>USE OF DISPLACEMENTS FIELD TO VALIDATE SUBJECT-SPECIFIC FINITE ELEMENT MODELS OF SPINE SEGMENTS WITH METASTASIS</p> <p><i>C. Garavelli, C. Curreli, A. Aldieri, E. Paoli, M. Palanca, L. Cristofolini, M. Viceconti</i></p> <p>8:54am - 9:06am</p> <p>DESIGN AND CHARACTERISATION OF A NOVEL TI-PVA/PAAM ARTIFICIAL INTERVERTEBRAL DISC</p> <p><i>X. Du, L. Kölle, D. Schümperlin, S. J. Ferguson</i></p> <p>9:06am - 9:18am</p> <p>DEVELOPMENT OF IMAGE-BASED MULTIPHASIC MODELS OF THE INTERVERTEBRAL DISC</p> <p><i>I. Fleps, E. Morgan</i></p> <p>9:18am - 9:30am</p> <p>BIOMECHANICAL COMPARISON BETWEEN POLY AXIAL AND OAK SCREWS FOR THORACOLUMBAR FRACTURE REDUCTION</p> <p><i>A. Y. Moufid, F. Zot, A. Duit, M. Severyns, A. Germaneau, T. Vendeuvre</i></p> <p>9:30am - 9:42am</p> <p>THE INFLUENCE OF LOADING CONDITIONS ON THE PRINCIPAL AND NON-PRINCIPAL STIFFNESS OF CERVICAL DISC PROSTHESIS</p> <p><i>H. Ansari pour, S. J. Ferguson, M. Flohr</i></p>	<p>TR06.5</p> <p>CLINICAL AND TRANSLATIONAL BIOMECHANICS / IN SILICO TRIALS I</p> <p><i>Chairs: Richie Gill, Marco Viceconti</i></p> <p>8:30am - 8:42am</p> <p>A PARAMETRIC STUDY TO IMPROVE SURGICAL PLANNING OF SPRING-ASSISTED POSTERIOR VAULT EXPANSION</p> <p><i>L. Deliege, K. Ramdat Misier, G. James, J. Ong, D. Dunaway, N. U. O. Jeelani, S. Schievano, A. Borghi</i></p> <p>8:42am - 8:54am</p> <p>ASSESSING CREDIBILITY OF A MULTISCALE MODEL FOR JOINT REPLACEMENTS SOLUTIONS</p> <p><i>C. Curreli, S. Huebner, A. Di Pietro, G. Davico, M. Viceconti</i></p> <p>8:54am - 9:06am</p> <p>A MODELING FRAMEWORK TO ENABLE THE DIFFERENTIAL DIAGNOSIS FOR THE LOSS OF MUSCLE FORCE</p> <p><i>G. Davico, L. Labanca, F. Bottin, F. Baruffaldi, M. G. Benedetti, M. Viceconti</i></p> <p>9:06am - 9:18am</p> <p>RELIABILITY OF FLUOROSCOPIC ASSESSMENT OF GLENOHUMERAL TRANSLATION DURING A 30° SHOULDER ABDUCTION TEST</p> <p><i>E. Croci, M. Künzler, S. Börlin, F. Eckers, C. Nüesch, D. Baumgartner, A. M. Müller, A. Mündermann</i></p> <p>9:18am - 9:30am</p> <p>INVESTIGATION OF LIMITED CT SCAN COVERAGE IN BIOFIDELIC SIDEWAYS-FALL MODELS FOR CLINICAL COHORTS</p> <p><i>A. Baker, I. Fleps, P. Guy, S. J. Ferguson, B. Helgason</i></p>	<p>TR07.5</p> <p>ARTIFICIAL INTELLIGENCE IN BIOMECHANICS + ROBOTS IN BIOMECHANICS</p> <p><i>Chair: Massimo Sartori</i></p> <p>8:30am - 8:42am</p> <p>EXAMINATION OF 2D MARKERLESS MOTION CAPTURE FOR SAGITTAL AND FRONTAL JOINT ANGLES OF THE KNEE AND HIP</p> <p><i>L. Wade, L. Needham, M. Evans, M. P. McGuigan, S. Colyer, D. Cosker, J. Bilzon</i></p> <p>8:42am - 8:54am</p> <p>INTEGRATING ANN-BASED REAL-TIME JOINT FORCE PREDICTION WITH DEEP AUTO-REGRESSIVE GOAL-DRIVEN MOTION SYNTHESIS</p> <p><i>I. Loi, E. I. Zacharaki, K. Moustakas</i></p> <p>8:54am - 9:06am</p> <p>CONTROL SYSTEM OF A MUSCULAR CONTROLLED, EXPERIMENTAL GLENOHUMERAL SIMULATOR</p> <p><i>J. Genter, G. Rauter, M. Rohner, A. M. Müller, A. Mündermann, D. Baumgartner</i></p> <p>9:06am - 9:18am</p> <p>INTERFACING NEUROMUSCULOSKELETAL MODELS WITH EXOSKELETONS FOR CONTROLLING NEURO-MUSCULOTENDON PARAMETERS IN VIVO</p> <p><i>G. Durandau, H. van der Kooij, M. Sartori</i></p> <p>9:18am - 9:30am</p> <p>FORM AND FUNCTION IN THE TAIL FEATHERS OF CLIMBING BIRDS</p> <p><i>M. Granatosky, M. Young, N. Flaim, D. Deleon, B. Zou, B. Bas, L. Reader, E. Dickinson</i></p> <p>9:30am - 9:42am</p> <p>NEURAL NETWORK FINITE ELEMENT MODELING OF THE HEART MECHANICS</p> <p><i>W. Zhang, M. S. Sacks</i></p>	<p>TR08.5</p> <p>RESPIRATORY BIOMECHANICS</p> <p><i>Chair: Sam Bayat</i></p> <p>8:30am - 8:42am</p> <p>THE EFFECT OF PRONE AND SUPINE POSITION VENTILATION ON ALVEOLAR OVERDISTENSION AND COLLAPSE</p> <p><i>S. Quicken, U. Strauch, E. van Engelen, M. van Mil, F. van de Vosse</i></p> <p>8:42am - 8:54am</p> <p>HOW LUNG LESIONS LOCATION IN ARDS MODIFIES RESPIRATORY BIOMECHANICS? A COMPUTATIONAL FRAMEWORK</p> <p><i>C. Bruna-Rosso, S. Bousсен</i></p> <p>8:54am - 9:06am</p> <p>SPHERICAL, TRANSPARENT AND STRETCHABLE MEMBRANES FOR REPLICATING THE ALVEOLAR INTERFACE IN-VITRO</p> <p><i>L. Cacopardo, N. Guazzelli, P. Signorello, A. Ahluwalia</i></p> <p>9:06am - 9:18am</p> <p>SIMULATION OF FLUID-STRUCTURE INTERACTION OF FLOW IN COLLAPSIBLE TUBES: A SIMPLIFIED MODEL FOR OBSTRUCTIVE SLEEP APNEA</p> <p><i>B. Akbar, S. G. Johnsen, P. R. Leinan, B. Müller</i></p> <p>9:18am - 9:30am</p> <p>ASTHMA SEVERITY LEVELS MONITORING BASED ON EEG SIGNALS USING NOVEL CLASSIFICATION ALGORITHMS</p> <p><i>A. Ratnovsky, R. Haba, G. Singer, M. R. Kramer, S. Naftali</i></p>	8:30 – 9:45

Tuesday, 28th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
10:15 – 11:40	<p>TR01.6</p> <p>IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES VI: MULTIPLE TOPICS (TOTAL KNEE ARTHROPLASTY, FRACTURE REPAIR)</p> <p><i>Chair: Bernardo Innocenti</i></p> <p>10:15am - 10:27am</p> <p>STANDARDIZED IN VIVO KNEE IMPLANT KINETICS AND KINEMATICS AND THEIR APPLICATION TO IMPLANT WEAR SIMULATION</p> <p>M. J. Dreyer, A. Trepczynski, B. Weisse, W.R. Taylor, P. Damm, C. R. Smith</p> <p>10:27am - 10:39am</p> <p>COMPREHENSIVE BOUNDARY CONDITIONS FOR INVESTIGATING TOTAL KNEE REPLACEMENT WEAR DURING WALKING</p> <p>M. Febrer-Nafria, M. Dreyer, N. Guo, S. H.Hosseini Nasab, C. R. Smith, W. R. Taylor</p> <p>10:39am - 10:51am</p> <p>A SIMULATION BASED APPROACH FOR KINEMATICS EVALUATION AND WORST-CASE DETERMINATION IN PRE-CLINICAL TESTING</p> <p>A. Maas, A. L. Puente Reyna, T. M. Grupp</p> <p>10:51am - 11:03am</p> <p>THE EFFECT OF INTERFERENCE FIT AND COEFFICIENT OF FRICTION ON THE INTERFACE GAPS OF A PEEK FEMORAL COMPONENT</p> <p>C. Post, T. Bitter, A. Briscoe, N. Verdonshot, D. Janssen</p> <p>11:03am - 11:15am</p> <p>SYSTEMATIC VALIDATION OF FINITE ELEMENT SIMULATIONS OF LOCKING PLATE FIXATIONS</p> <p>D. Mischler, M. Knecht, P. Varga</p> <p>11:15am - 11:27am</p> <p>INFLUENCE OF CERCLAGE WIRE APPLICATION ON THE DYNAMIC BEHAVIOUR OF A FRACTURED IMPLANT-CYLINDER SYSTEM</p> <p>M. Timmermans, G. Athanassoulis Makris, L. Van Bel, J. Verhoeven, L. C. Pastrav, K. Denis</p> <p>11:27am - 11:39am</p> <p>ANALYTICAL MODEL FOR THE MECHANICAL PERFORMANCE PREDICTION OF A BONE-PLATE IMPLANT</p> <p>F. A. Bologna, M. Terzini, A. L. Audenino</p>	<p>TR02.6</p> <p>CARDIOVASCULAR BIOMECHANICS V: THROMBI AND PLAQUES</p> <p><i>Chairs: Selda Sherifova, Stéphane Avril</i></p> <p>10:15am - 10:40am</p> <p>CHALLENGES OF VALIDATING COMPUTATIONAL THROMBOSIS MODELS</p> <p>K. B. Manning</p> <p>10:40am - 10:52am</p> <p>THE INFLUENCE OF PLAQUE STRUCTURAL STRESS AND WALL SHEAR STRESS ON HUMAN CORONARY PLAQUE PROGRESSION</p> <p>A. Tziotziou, E. Hartman, S.-A. Korteland, A. F. van der Steen, J. Daemen, J. Wentzel, A. C. Akyildiz</p> <p>10:52am - 11:04am</p> <p>IMAGE-BASED SIMULATION OF FLOW IN A PLATELET AGGREGATE</p> <p>Y. Hao, G. Závodszy, C. Tersteeg, A. Hoekstra</p> <p>11:04am - 11:16am</p> <p>ON THE INFLUENCE OF THROMBUS PERMEABILITY ON FLUID DYNAMICS IN THORACIC AORTIC ANEURYSM: IN SILICO MODELS</p> <p>C. GUIVIER-CURIEN, V. DEPLANO</p> <p>11:16am - 11:28am</p> <p>THE EFFECT OF SIZE AND PROXIMITY OF MICRO-BEADS ON THE RUPTURE THRESHOLD OF ATHEROMA CAP LABORATORY MODELS</p> <p>A. Corti, D. Khalil, S. Weinbaum, L. Cardoso</p> <p>11:28am - 11:40am</p> <p>WALL SHEAR STRESS TOPOLOGICAL SKELETON VARIABILITY PREDICTS PLAQUE GROWTH IN HUMAN CORONARY ARTERIES</p> <p>G. De Nisco, E. Hartman, V. Mazzi, D. Gallo, C. Chiastra, J. Daemen, J. Wentzel, U. Morbiducci</p>	<p>TR03.6</p> <p>HARD TISSUE BIOMECHANICS II: BONE TISSUE LEVEL</p> <p><i>Chairs: Vee San Cheong, Gianluca Tozzi</i></p> <p>10:15am - 10:27am</p> <p>REPLICABILITY OF A FINITE ELEMENT MODEL TO QUANTIFY HUMAN FEMUR FAILURE LOAD</p> <p>M. Gardegaront, A. Sas, F. Bermond, C. Confavreux, J.-B. Pialat, G. H. van Lenthe, H. Follet, D. Mitton</p> <p>10:27am - 10:39am</p> <p>THE INFLUENCE OF FORAMINA ON FEMORAL NECK FRACTURES AND STRAINS PREDICTED WITH FINITE ELEMENT ANALYSIS</p> <p>J. Kok, L. Grassi, H. Isaksson</p> <p>10:39am - 10:51am</p> <p>HIP FRACTURE RISK PREDICTION BASED ON STATISTICAL MODELS INFORMED BY DXA IMAGES</p> <p>A. Aldieri, F. Pagotto, P. Bhattacharya, M. Paggiosi, R. Eastell, C. Bignardi, A. L. Audenino, M. Terzini</p> <p>10:51am - 11:03am</p> <p>IDENTIFICATION OF STATISTICAL CRITICAL AREA TO DISCRIMINATE PROXIMAL FEMUR FRACTURE DUE TO LATERAL FALL</p> <p>N. Morando, C. Ruiz Wills, J. Noailly, S. Tassani</p> <p>11:03am - 11:15am</p> <p>AGE MODULATES BMD AND STRENGTH BUT NOT FORCE RELAXATION IN HUMAN FEMORA</p> <p>S. Martelli</p> <p>11:15am - 11:27am</p> <p>PRINCIPAL COMPONENT ANALYSIS FOR ELUCIDATING IMPORTANT CHANGES IN MOUSE TIBIA GEOMETRY</p> <p>S. Moraiti, V. S. Cheong, E. Dall'Ara, V. Kadirkamanathan, P. Bhattacharya</p>	<p>TR04.6</p> <p>BIOMEDICAL IMAGING I</p> <p><i>Chairs: Dieter Pahr, Uwe Wolfram</i></p> <p>10:15am - 10:40am</p> <p>X-RAY BASED 3D HISTOLOGY OF BIOLOGICAL TISSUES</p> <p>G. Kerckhofs</p> <p>10:40am - 10:52am</p> <p>THE OSTEOCYTE LACUNO-CANALICULAR NETWORK AT THE BONE-IMPLANT INTERPHASE IMAGED WITH FOCUSED ION BEAM – SCANNING ELECTRON MICROSCOPY</p> <p>E. Törnquist, G. Häiat, Y. Hériveaux, H. Albini-Lomami, E. Vennat, S. Le Cann</p> <p>10:52am - 11:04am</p> <p>LONGITUDINAL CHANGES IN THE SUBCHONDRAL BONE IN A MOUSE MODEL OF KNEE POST TRAUMATIC OSTEOARTHRITIS</p> <p>S. Oliviero, Z. Chen, A. Rayson, B. Roberts, H. M. Ismail, I. Bellantuono, E. Dall'Ara</p> <p>11:04am - 11:16am</p> <p>AN IN SILICO METHOD TO EVALUATE BONE REMODELLING AFTER TOTAL HIP ARTHROPLASTY: A SIX YEARS LONGITUDINAL STUDY</p> <p>V. Betti, H. Jónsson Jr, L. Cristofolini, M. K. Gislason, P. Gargiulo</p> <p>11:16am - 11:28am</p> <p>A CORRELATIVE MULTIMODAL IMAGING APPROACH FOR MULTISCALE ANALYSIS OF BONE REGENERATION AND ADAPTATION</p> <p>F. Correia Marques, B. Schroeder, D. Yilmaz, E. Wehrle, R. Müller</p> <p>11:28am - 11:40am</p> <p>OSTEOARTHRITIC KNEES CAN BE QUANTIFIED WITH IN VIVO SCANNERS</p> <p>P. Antonacci, J. Dauwe, P. Varga, D. Ciric, D. Gehweiler, B. Gueorguiev, K. Mys</p>
11:45 – 12:30	<p>Keynote lecture 2</p> <p>META-BIOMATERIALS, Amir Zadpoor</p> <p><i>Chairs: David Mitton, Renato Natal Jorge</i></p>			

Tuesday, 28th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
12:30 – 13:15	Lunch break			
13:15 – 14:00	Poster sessions: PS7 – PS12			
14:00 – 15:30	<p>TR01.7 BIOMECHANICS OF MOVEMENT AND POSTURE: UPPER LIMB AND TRUNK FUNCTION AND POSTURE <i>Chairs: Lennart Schey, William R. Taylor</i></p> <p>2:00pm - 2:25pm QUANTITATIVE FUNCTIONAL ASSESSMENT IN THE SETTING OF ADULT SPINAL DEFORMITY USING 3D MOVEMENT ANALYSIS <i>A. Assi, V. Lafage, W. Skalli</i></p> <p>2:25pm - 2:37pm A NOVEL METHOD TO QUANTIFY PSEUDO-KINEMATICS OF THE RIB CAGE OVER THE VITAL CAPACITY RANGE <i>C. Vergari, W. Skalli, L. Clavel, M. Demuyne, R. Valentin, B. Sandoz, T. Similowski, V. Attali</i></p> <p>2:37pm - 2:49pm A SLOUCHED OR ERECT SPINAL POSTURE MODIFIES UPPER LIMB KINEMATICS <i>A. Tomezzoli, A. Naaïm, B. Fréchède, S. Duprey</i></p> <p>2:49pm - 3:01pm IMPACT OF THE TIME SCALE OF MUSCLE ACTIVATION DYNAMICS ON REACHING PERFORMANCE <i>T. Murtola, C. Richards</i></p> <p>3:01pm - 3:13pm UPPER LIMB FUNCTIONAL EVALUATION OF A COMPLEMENTARY THERAPY IN PARKINSON'S DISEASE: A PRELIMINARY STUDY <i>E. Pegolo, M. Romanato, C. Riccò, A. Cucca, F. Spolaor, D. Volpe, Z. Sawacha</i></p>	<p>TR02.7 CARDIOVASCULAR BIOMECHANICS VI: TREATMENT DESIGN AND CLINICAL OUTCOME <i>Chairs: Selda Sherifova, Stéphane Avril</i></p> <p>2:00pm - 2:12pm VASCULAR ADAPTATION FOLLOWING ENDOVASCULAR AORTIC ANEURYSM REPAIR <i>S. Zhang, J. Laubrie, J. Mousavi, S. Avril</i></p> <p>2:12pm - 2:24pm FINITE ELEMENT STUDY ON THE PROXIMAL FIXATION OF A STENT-GRAFT: IMPACT OF THE AORTIC ARCH ANGULATION <i>A. Ramella, L. Iannetti, J. F. RodriguezMata, F. Migliavacca, G. Luraghi</i></p> <p>2:24pm - 2:36pm INTEGRATING IN-SILICO AND EX-VIVO ANALYSIS FOR BIOMECHANICAL ASSESSMENT OF AORTIC ENDOGRAFTING <i>M. Conti, D. Bianchi, M. Domanin, D. Bissacco, S. Trimarchi, F. Auricchio</i></p> <p>2:36pm - 2:48pm IN VITRO INVESTIGATION OF THE IMPACT OF ANEURYSMAL SAC ASPECT RATIO AND NECK SIZE ON HEMODYNAMICS OF CEREBRAL ANEURYSMS TREATED WITH FLOW DIVERTING STENTS <i>F. Chassagne, M. C. Barbour, M. R. Levitt, A. Aliseda</i></p> <p>2:48pm - 3:00pm PREDICTING 1-YEAR IN-STENT RESTENOSIS IN FEMORAL ARTERIES THROUGH MULTISCALE COMPUTATIONAL MODELING <i>A. Corti, M. Colombo, J. M Rozowsky, S. Casarin, Y. He, F. Migliavacca, J. Rodriguez Matas, S. A Berceli, C. Chiastra</i></p> <p>3:00pm - 3:12pm A SMART PARTICLE IMAGE VELOCIMETRY SYSTEM FOR THE IN VITRO ASSESSMENT OF CORONARY ARTERY HEMODYNAMICS <i>E. Torta, G. C. A. Caridi, C. Chiastra, D. Gallo, U. Morbiducci</i></p> <p>3:12pm - 3:24pm A HIGH-POWER LED ILLUMINATED PIV SETUP TO CHARACTERIZE THE FLOW BEHAVIOUR IN ABDOMINAL AORTIC ANEURYSM MODELS <i>F. Bardi, E. Gasparotti, E. Vignali, M. Aguirre, S. Avril, S. Celi</i></p>	<p>TR03.7 HARD TISSUE BIOMECHANICS III: BONE ORGAN LEVEL <i>Chairs: Helene Follet, Marta Peña Fernández</i></p> <p>2:00pm - 2:12pm VALIDATION OF LINEAR AND MATERIALLY NONLINEAR MFE PREDICTED DISPLACEMENT FIELDS OF BONE BIOPSIES USING DVC <i>P. Stefanek, A. Synek, E. Dall'Ara, D. H. Pahr</i></p> <p>2:12pm - 2:24pm FULL-FIELD STRAIN EVALUATION OF BONE TISSUE SUBJECTED TO MICROINDENTATION USING SPHERICAL AND BERKOVICH INDENTERS <i>M. Peña Fernández, J. Schwiedrzik, A. Bürki, F. Peyrin, J. Michler, P. Zysset, U. Wolfram</i></p> <p>2:24pm - 2:36pm DAMAGE IN SINGLE TRABECULAE UNDER TENSION IDENTIFIED BY INVERSE RHEOLOGICAL MODELLING <i>A. Reisinger, M. Frank, P. Thurner, D. Pahr</i></p> <p>2:36pm - 2:48pm A MICROMECHANICAL PHASE FIELD DAMAGE MODEL TO INVESTIGATE THE FRACTURE PROPERTIES OF LAMELLAR BONE <i>H. Alijani, T. Vaughan</i></p> <p>2:48pm - 3:00pm MEASUREMENT UNCERTAINTIES OF A GLOBAL DVC APPROACH ARE WEAKLY AFFECTED BY THE VERTEBRAL BONE MICROSTRUCTURE <i>G. Cavazzoni, E. Dall'Ara, L. Cristofolini, M. Palanca</i></p> <p>3:00pm - 3:12pm CRACK PROPAGATION IN CORTICAL BONE ANALYZED WITH DIGITAL IMAGE CORRELATION <i>G. Galteri, L. Grassi, J. Engqvist, S. A Hall, L. Cristofolini, H. Isaksson, A. Gustafsson</i></p> <p>3:12pm - 3:24pm NOVEL METHOD TO OBTAIN MECHANICAL PROPERTIES OF ISOLATED TRABECULAE UNDER COMPRESSION IN WET CONDITION <i>K. Haslinger, M. Frank, D. H. Pahr, P. J. Thurner</i></p>	<p>TR04.7 BIOMEDICAL IMAGING II <i>Chairs: Dieter Pahr, Inas H Faris</i></p> <p>2:00pm - 2:25pm VISCOSITY AND NONLINEAR ELASTOGRAPHY WILL BECOME THE NEXT GENERATION BIOMARKERS IN CLINICAL DIAGNOSIS <i>G. Rus, I. H. Faris</i></p> <p>2:25pm - 2:37pm AUTOMATION OF MRI-BASED SPINAL MUSCLE SEGMENTATION <i>B. Peeters, T. Overbergh, D. Farotto, E. Beaucage-gauvreau, L. Schey</i></p> <p>2:37pm - 2:49pm AUTOMATIC MUSCLE SEGMENTATION WITH DEFORMABLE IMAGE REGISTRATION FROM MR IMAGES OF HUMAN LOWER LIMB <i>W. H. Henson, C. Mazzà, E. Dall'Ara</i></p> <p>2:49pm - 3:01pm A NON RIGID REGISTRATION ALGORITHM TO BUILD STATISTICAL SHAPE MODEL OF THORACIC AORTA, TOGETHER WITH AORTIC ARCH AND SUPRA AORTIC VESSELS <i>M. A. Scarpolini, M. Mazzoli, F. Bardi, K. Capellini, V. Positano, S. Celi</i></p> <p>3:01pm - 3:13pm GENERATING 3D PERSONALISED RESPIRATORY DOMAINS FOR DEPOSITION MODELS FROM CT AND CHEST X-RAYS <i>J. Williams, H. Ahlqvist, A. Cunningham, A. Kirby, S. Cunningham, A. Ozel, U. Wolfram</i></p> <p>3:13pm - 3:25pm IN-VIVO 3D MUSCLE MORPHOLOGICAL MEASUREMENT BASED ON 3D FREEHAND ULTRASOUND AND DIFFUSION TENSOR IMAGING <i>Z. Wang, F. Cenni, A. Destro, S. Petersson, R. Wang</i></p>

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				12:30 – 13:15
				14:00 – 15:30
<p>TR05.7 SPINE BIOMECHANICS III <i>Chair: André P. G. Castro</i></p> <p>2:00pm - 2:25pm INVESTIGATING THE BIOMECHANICS OF THE SPINE WITH DIGITAL IMAGE CORRELATION (DIC) L. Cristofolini</p> <p>2:25pm - 2:37pm VERTEBRA AND DISC SLENDERNESS ARE NOT AN EARLY SIGN OF ADOLESCENT IDIOPATHIC SCOLIOSIS PROGRESSION C. Vergari, W. Skalli, K. Abelin-Genevois, J. C. Bernard, Z. Hu, J. C. Y. Cheng, W. C. W. Chu, A. Assi, M. Karam, I. Ghanem, T. Bassani, F. Galbusera, L. M. Sconfienza, M. Brayda-Bruno, I. Courtois, E. Ebermeyer, R. Vialle, T. Langlais, J. Dubousset</p> <p>2:37pm - 2:49pm DETERMINATION OF A LUMPED-PARAMETER MODEL OF THE INTERVERTEBRAL JOINT FROM AN EXPERIMENTAL DATASET S. L. Gould, G. Davico, M. Palanca, L. Cristofolini, M. Viceconti</p> <p>2:49pm - 3:01pm THE EFFECT OF INTERVERTEBRAL DISC DEGENERATION ON THE FLEXIBILITY OF THE THORACIC SPINE: AN IN VITRO STUDY C. Liebsch, H.-J. Wilke</p> <p>3:01pm - 3:13pm MULTISCALE MECHANICS OF COLLAGEN-HYALURONAN INTERFACES IN ANNULUS FIBROSUS S. Bhattacharya, D. K. Dubey</p> <p>3:13pm - 3:25pm RECOVERY OF TRUNK MOTION DURING GAIT AT 1-WEEK AND 3-MONTHS AFTER SPINAL FUSION SURGERY IN AIS PATIENTS T. Ackermans, S. Schelfaut, P. Severijns, P. Moens, L. Moke, L. Schey</p>	<p>TR06.7 BIOMECHANICS OF AGEING AND NEUROMUSCULAR CONTROL <i>Chairs: Stephen Ferguson, Annegret Mündermann</i></p> <p>2:00pm - 2:12pm AGE-RELATED DEGENERATION AFFECTS THE STRUCTURE–FUNCTION RELATIONSHIP OF HUMAN MENISCI G. Q. Teixeira, J. Schwer, A. Ignatius, L. Dürselen, A. M. Seitz</p> <p>2:12pm - 2:24pm INFLUENCE OF AGEING ON MICROMECHANICAL PROPERTIES OF THE FEMORAL NECK USING THE INVERSE METHOD B. Voumard, P. Stefanek, M. Pretterklieber, D. Pahr, P. Zysset</p> <p>2:24pm - 2:36pm IN-VIVO DETERMINATION OF REGION-SPECIFIC MATERIAL PARAMETERS OF HEALTHY AND OSTEOARTHRITIC MENISCI J. Schwer, F. Galbusera, M. Sgroi, M. Faschingbauer, A. Ignatius, L. Dürselen, A. M. Seitz</p> <p>2:36pm - 2:48pm A NOVEL NEUROMECHANICAL MODEL FOR PREDICTING MUSCLE FORCE FROM MOTONEURON SPIKE TRAINS L. Modenese, A. H. Caillet, A. T. Phillips, D. Farina</p> <p>2:48pm - 3:00pm ALTERATIONS IN UPPER EXTREMITY MUSCLE COORDINATION RESULTING FROM MUSCLE DYSTROPHY AND GRAVITY COMPENSATION J. M. N. Essers, K. Meijer, A. Peters, A. Murgia</p> <p>3:00pm - 3:12pm FUNCTIONAL SIMPLIFICATION OF MOTOR CONTROL OF ANTAGONIST MUSCLES AFTER STROKE C. Delcamp, C. Cormier, A. Chalard, D. Gasq, D. Amarantini</p> <p>3:12pm - 3:24pm SHARED SYNERGIES BETWEEN COMPLEX MOVEMENTS P. Kaufmann, L. Zweier, A. Baca, H. Kainz</p>	<p>TR07.7 VIRTUAL AND AUGMENTED REALITY IN BIOMECHANICS <i>Chairs: Konstantinos Moustakas, Bill Baltzopoulos</i></p> <p>2:00pm - 2:25pm KNEE JOINT FORCES AND CARTILAGE STRESS IN OSTEOARTHRITIS V. Baltzopoulos, D. Britzman, D. Tsaopoulos</p> <p>2:25pm - 2:37pm BALANCE REACTION & MOTOR CONTROL DURING SIMULATED FEAR OF HEIGHT IN CHILDREN WITH CEREBRAL PALSY – A PILOT STUDY R. Winter, R. Lohss, N. B. Singh, W. R. Taylor, R. M. Visscher, E. Viehweger</p> <p>2:37pm - 2:49pm OACTIVE: VR-BASED GAIT RETRAINING TO ADDRESS KNEE OSTEOARTHRITIS G. Giarmatzis, S. Zouras, M. Pavlou, K. Moustakas</p> <p>2:49pm - 3:01pm A VIRTUAL REALITY ENVIRONMENT TO STUDY GAIT DERANGEMENTS IN PARKINSON'S DISEASE C. Palmisano, I. Hanafi, I. U. Isaias</p> <p>3:01pm - 3:13pm MOTION ANALYSIS FOR VIRTUAL REALITY AIDED TRAINING AND REHABILITATION M. Žuk, M. Popek, K. Bulińska, M. Wojtków, M. Łopusiewicz</p>	<p>TR08.7 ADVANCE COMPUTING FOR BIOMECHANICS II</p> <p>2:00pm - 2:12pm SPINADOID AND DUAL-LATTICE BASED ALGORITHMS FOR GENERATING BIOMIMETIC TRABECULAR BONE STRUCTURES M. Vafaefar, K. M. Moerman, T. J. Vaughan</p> <p>2:12pm - 2:24pm THE INFLUENCE OF CROSS-LINKING ON THE MECHANICAL PROPERTIES OF COLLAGEN: A BOTTOM-UP APPROACH J. T. Kamml, C.-Y. Ke, D. Kammer</p> <p>2:24pm - 2:36pm BIORESORBABLE LATTICE STRUCTURES FOR TIME-DEPENDENT STIFFNESS IN FRACTURE FIXATION DEVICES B. Hawthorn, A. Triantaphyllou, F. Khan, R. Dyson, L. E. J. Thomas-Seale</p> <p>2:36pm - 2:48pm NUMERICAL MODELLING OF A PLOYMERIC ANEURYSM IN SUPPORT FOR DIMENSIONING A MECHANICAL CHARACTERISATION DEVICE J. Raviol, G. Plet, H. Magoaric, C. Pailler-Mattei</p> <p>2:48pm - 3:00pm A TWO-PHASE GENETIC ALGORITHM TO MODEL THE MENISCAL HORN REPAIRED WITH SUTURE M. B. Estebanez Campos, A. Peñatrabalon, S. Moreno Vegas, A. Espejo Reina, F. Nadal Martinez, F. M. Garcia Vacas, A. M. Perez Dela Blanca Cobos, M. Pradonovoa</p> <p>3:00pm - 3:12pm HOW OXYGEN AND GLUCOSE INFLUENCE CELL GROWTH: A COMPUTATIONAL SIMULATION STUDY M. I. Araújo Barbosa, J. A. O. PintoBelinha, R. Natal Jorge, A. Xavier de Carvalho</p>	

Tuesday, 28th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
15:30 – 16:00	Coffee break			
16:00 – 17:00	ESB S.M. Perren Research Award <i>Chairs: Markus Heller, Harry van Lenthe</i> STANDARDIZED TIBIO-FEMORAL IMPLANT LOADS AND KINEMATICS <i>Michael J. Dreyer, ETH Zurich</i>			
17:00 – 18:00	TR01.8 BIOMECHANICS OF MOVEMENT AND POSTURE: MOTOR CONTROL IN AGEING AND PATHOLOGY <i>Chairs: William R. Taylor, Lennart Schey</i> 5:00pm - 5:12pm WALKING IN CHILDREN WITH HEMIPLEGIA USING DIFFERENT TYPES OF ANKLE FOOT ORTHOSIS F. Camuncoli, A. Barbonetti, L. Piccinini, E. Di Stanislao, C. Corbetta, L. Donno, M. Galli 5:12pm - 5:24pm A VECTOR FIELDS ANALYSIS TO INVESTIGATE FOOT-GROUND INTERACTIONS IN INFANCY DURING WALKING E. Montagnani, S. C. Morrison, C. Price 5:24pm - 5:36pm EXPLORING MINIMUM TOE CLEARANCE AS A PREDICTOR FOR RISK OF STUMBLING AND FALLS IN OLDER ADULTS M. A. Avalos, N. J. Rosenblatt 5:36pm - 5:48pm DEVELOPMENT OF GROSS MOTOR CONTROL IN SCHOOL-CHILDREN: INFLUENCE OF AGE, SEX, AND ANTHROPOMETRY R. Stagni, A. Masini, S. Toselli, S. Marini, L. Bragonzoni, A. Cecilian, M. Lanari, A. Sansavini, A. Tessari, D. Gori, L. Dallolio, M. C. Bisi 5:48pm - 6:00pm LONG TERM EFFECTS OF AN ACL RECONSTRUCTION ON KNEE JOINT KINEMATICS AND LOADING J. Eichwalder, W. Koller, A. Baca, P. Weninger, H. Kainz	TR02.8 CARDIOVASCULAR BIOMECHANICS VII: IMAGE-BASED BIOMECHANICS <i>Chairs: Nele Famaey, Mathias Peirlinck</i> 5:00pm - 5:12pm MONITORING MECHANICAL AND GEOMETRICAL PROGRESSION OF ABDOMINAL AORTIC ANEURYSMS USING 3D+ ULTRASOUND E. Maas, A. Nievergeld, J. Fonken, M. Thirugnanasambandam, M. van Sambeek, R. Lopata 5:12pm - 5:24pm AAA MECHANICS DURING ULTRASOUND PROCEDURES: A PATIENT-SPECIFIC COMPUTATIONAL STUDY M. I. Bracco, M. E. Biancolini, L. Rouet, S. Avril 5:24pm - 5:36pm USING 4D ULTRASOUND IMAGING TO QUANTIFY ARTERIAL WALL PROPERTIES IN VIVO C. Blase, A. Wittek, A. Hegner, W. Derwich, A. Huß 5:36pm - 5:48pm MECHANICAL CHARACTERIZATION OF ABDOMINAL AORTIC ANEURYSMS USING 4D ULTRASOUND AND VIRTUAL FIELDS METHOD M. Thirugnanasambandam, E. J. Maas, A. H. Nievergeld, M. van Sambeek, S. Avril, R. Lopata 5:48pm - 6:00pm US-BASED VOLUME-TIME CURVES OF THE AAA FOR ESTIMATING IN-VIVO THROMBUS COMPRESSIBILITY AND WALL STIFFNESS A. Nievergeld, E. Maas, J. Fonken, M. van Sambeek, F. van de Vosse, R. Lopata	TR03.8 PATIENT-SPECIFIC MODELLING III <i>Chair: Sebastian Laporte</i> 5:00pm - 5:12pm GENERATING PATIENT GAIT SPECIFIC FINITE ELEMENT MODELS OF THE HAEMOPHILIC ANKLE H. G. Talbott, R. A. Wilkins, A. C. Redmond, C. L. Brockett, M. Mengoni 5:12pm - 5:24pm INVESTIGATION OF THE EFFECT OF FOOT SOFT TISSUE STIFFENING ON THE PLANTAR CONTACT PRESSURE Z. Kamal, E. E. Hekman, G. Verkerke 5:24pm - 5:36pm VALIDATION OF AN MRI-BASED PERSONALIZED MODEL OF THE SUBTALAR JOINT M. Conconi, A. Pompili, N. Sancisi, A. Leardini, C. Belvedere 5:36pm - 5:48pm A COMPARISON OF FOOT MECHANICS BETWEEN AUTOMATICALLY GENERATED PERSONALISED AND SCALED GENERIC SKELETAL MODELS E. A. Meilak, L. Modenese, C. Stewart 5:48pm - 6:00pm USING CARBON FIBER CUSTOM DYNAMIC ORTHOSES TO PREVENT POST-TRAUMATIC ANKLE OSTEOARTHRITIS K. Anderson, M. Corlett, J. Wilken, D. D. Anderson	TR04.8 TISSUE ENGINEERING II <i>Chairs: Gwendolen Reilly, Alberto Sensini</i> 5:00pm - 5:12pm TISSUE-ENGINEERED COLLAGENOUS FIBROUS CAP MODELS TO EXPLORE ATHEROSCLEROTIC PLAQUE RUPTURE T. Wissing, K. van der Heiden, S. Serra, A. Smits, C. Bouten, F. Gijzen 5:12pm - 5:24pm FABRICATION OF MAGNESIUM AND STRONTIUM SUBSTITUTED HYDROXYAPATITE-POLYCAPROLACTONE COMPOSITES VIA 3D PRINTING FOR THE USAGE AS BONEFILLER D. Sylva, L. Grillini, L. Forte, F. Claeysens, G. Reilly 5:24pm - 5:36pm IN-VITRO/IN-SILICO MODELLING OF CORE-SHELL STRUCTURES AS ADVANCED BARRIER MODELS N. Guazzelli, L. Cacopardo, A. Ieva, A. Corti, A. Ahluwalia 5:36pm - 5:48pm TISSUE REMODELING AT THE INTERFACE BETWEEN PYROCARBON INTERPOSITION IMPLANTS AND HUMAN HUMERAL BONE R. Gauthier, G. Ouenzerfi, I. de Gaudemaris, N. Attik, M. Hassler, A.-M. Trunfio-Sfarghiu 5:48pm - 6:00pm ELECTROSPUN POLYMER GRAFT AS AN OPTION FOR TISSUE REPLACEMENT IN SEVERE SPRING LIGAMENT INJURIES S. Nieto, C. J. Cifuentes, J. C. Cruz, J. Hinojosa
18:00 – 19:00	ESB General Assembly			
20:00 – 23:00	ESB 2022 Congress dinner Venue: Real Companhia Velha Cellars - address: Azevedo Magalhaes 314, Via Nova de Gaia. Metro: General Torres			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
				15:30 – 16:00
				16:00 – 17:00
<p>TR05.8 ESB CORPORATE MEMBERS SESSION</p>	<p>TR06.8 CLINICAL AND TRANSLATIONAL BIOMECHANICS / IN SILICO TRIALS III <i>Chairs: Richie Gill, Marco Viceconti</i></p> <p>5:00pm - 5:25pm IN SILICO TRIALS TO ASSESS THE SAFETY AND EFFICACY OF NEW TREATMENTS FOR MUSCULOSKELETAL DISEASES M. Viceconti</p> <p>5:25pm - 5:37pm MARKOV CHAINS WITH PATIENT- SPECIFIC FE MODELS FOR IN SILICO TRIALS OF ANTIRESORPTIVE DRUGS A. A. La Mattina, M. Viceconti</p> <p>5:37pm - 5:49pm CHANGES IN GAIT PATTERNS AFTER HIP ARTHROPLASTY - COMPARING IMU- AND MARKER-BASED DATA C. Nüesch, P. Ismailidis, D. Koch, K. Stoffel, A. Mündermann</p>	<p>TR07.8 BIOMATERIALS II <i>Chair: Hanna Isaksson</i></p> <p>5:00pm - 5:25pm TAILOR-MADE POLYMERS: AN ADDITIONAL DEGREE OF FREEDOM IN THE TUNING OF MECHANICAL PROPERTIES IN TISSUE MODELING G. Ciardelli</p> <p>5:25pm - 5:37pm ALIGNED ELECTROSPUN FIBRES GUIDE COLLAGEN DEPOSITION TO SUPPORT A LAMELLA-LIKE TWISTED ORIENTATION BY MSCS A. J. Hann, G. C Reilly, N. Green, F. Claeysens</p> <p>5:37pm - 5:49pm SURFACE MODIFICATIONS TO PROMOTE THE OSTEOCONDUCTIVITY OF UHMWPE FABRICS FOR A NOVEL BIOMIMETIC ARTIFICIAL DISC PROSTHESIS: AN IN VITRO STUDY C. A. M. Jacobs, E. E. Cramer, A. A. Dias, H. Smelt, S. Hofmann, K. Ito</p> <p>5:49pm - 6:01pm A FRAMEWORK TOWARDS THE DESIGN OF TUNABLE AND GRADED OPEN-CELL BONE SCAFFOLDS WITH ANISOTROPIC PROPERTIES K. Cheikho, C. Laurent, J.-F. Ganghoffer</p>	<p>TR08.8 ADVANCE COMPUTING FOR BIOMECHANICS III</p> <p>5:00pm - 5:12pm CFD SIMULATION OF THA FOR DIFFERENT FEMUR POSITIONS INCLUDING MICROMOTION BETWEEN BONE AND IMPLANT A. Hrouda, M. Vanierschot, L. Capek, M. Mulier, K. Denis</p> <p>5:12pm - 5:24pm TESTING SIMULATED CARTILAGE BIOMECHANICS TO PREDICT KNEE OSTEOARTHRITIS: DATA FROM THE OSTEOARTHRITIS INITIATIVE A. Paz, R. K. Korhonen, J. J. García, M. E. Mononen</p> <p>5:24pm - 5:36pm FLUID-STRUCTURE INTERACTION ANALYSIS OF DESCENDING AORTA AFTER VSRR SURGERY: THE EFFECTS OF GRAFT STIFFNESS G. Nannini, M. C. Palumbo, S. Saitta, A. Caimi, J. D. Humphrey, Y. Wang, L. N. Girardi, M. Gaudino, J. W. Weinsaft, E. Votta, A. Redaelli</p> <p>5:36pm - 5:48pm IMPLEMENTATION OF SMOOTHED SURFACE, SLIDING CONTACT IN THE VOXEL BASED FINITE ELEMENT SOLVER PAROSOL F. M. Trommer, P. Bhattacharya</p>	17:00 – 18:00
				18:00 – 19:00
				20:00 – 23:00

Wednesday, 29th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
8:30 – 9:45	<p>TR01.9 PATIENT-SPECIFIC MODELLING IV <i>Chair: Claudio Vergari</i></p> <p>8:30am - 8:42am CT-BASED FEA AND COMPUTATIONAL FLUID DYNAMICS APPLIED TO SCAFFOLD-BASED RECONSTRUCTION OF A SHEEP MANDIBLE <i>B. M. Ferguson, W. Lewin, H. Zreiqat, J. Clark, Q. Li</i></p> <p>8:42am - 8:54am ULTRASOUND-BASED FSI MODELING OF AORTIC ANEURYSMS: IMPACT OF THE AORTIC BIFURCATION AND INLET VELOCITY PROFILE <i>J. Fonken, E. van Engelen, E. Maas, A. Nievergeld, M. van Sambeek, F. van deVosse, R. Lopata</i></p> <p>8:54am - 9:06am VALIDATION OF AN IMAGE-BASED APPROACH FOR PATIENT-SPECIFIC ARTERIAL MODELLING IN CORONARY STENTING SIMULATIONS <i>G. Poletti, L. Antonini, P. Tsompou, G. S. Karanasiou, D. I. Fotiadis, L. Petrini, G. Pennati</i></p> <p>9:06am - 9:18am EVALUATING THE EFFECT OF COMPUTATIONAL DOMAIN REDUCTION IN ASCENDING AORTA SIMULATIONS <i>A. Martinez, L. Geronzi, M. Daniel, P. Escrig, J. Tomasi, M. Rochette, M. E. Biancolini</i></p> <p>9:18am - 9:30am PATIENT-SPECIFIC PRE- AND POST-SURGICAL STOMACH MODELS <i>I. Toniolo, A. Berardo, S. Perretta, G. Quera, C. Fiorillo, E. L. Carniel</i></p> <p>9:30am - 9:42am ON THE USE OF DIGITAL TWIN TECHNOLOGY ARIELLE FOR THE DEVELOPMENT OF PERINATAL LIFE SUPPORT SYSTEMS <i>B. G. van Willigen, M. B. van der Hout-vander Jagt, W. Huberts, F. N. van de Vosse</i></p>	<p>TR02.9 MUSCULOSKELETAL BIOMECHANICS III: HIP, TRUNK, FOOT <i>Chairs: Ilse Jonkers, Erica Beaucage-Gauvreau</i></p> <p>8:30am - 8:42am HIP CONTACT FORCES IN PATIENTS WITH INCREASED FEMORAL ANTETORSION DO NOT DIFFER WITH DIFFERENT GAIT PATTERNS <i>N. Alexander, E. Viehweger, J. Cip, R. G. Brunner, E. De Pieri</i></p> <p>8:42am - 8:54am DIFFERENCES IN IMPINGEMENT PATTERNS IN CAM-TYPE HIPs WITH SUPERIOR AND ANTERIOR ASPHERICITY OF THE FEMUR <i>A. C. Jones, T. D. Stewart, N. Maher, C. Holton</i></p> <p>8:54am - 9:06am COMPARATIVE EFFECTS OF SURGICAL AND NON-SURGICAL THERAPY ON HIP CONTACT FORCE FOR FEMOROACETABULAR IMPINGEMENT SYNDROME <i>A. Nasser, L. Diamond, T. Savage, T. Grant, M. Hall, K. Bennell, J. Eyles, L. Spiers, D. Hunter, D. Lloyd, D. Saxby</i></p> <p>9:06am - 9:18am SINERGY-BASED MULTIBODY KINEMATICS OPTIMIZATION TO TRACK ALL THE FOOT BONES WITH A STANDARD GAIT PROTOCOL <i>A. Pompili, M. Conconi, N. Sancisi, A. Leardini, S. Durante, C. Belvedere</i></p> <p>9:18am - 9:30am REFINING THE OXFORD FOOT MODEL TO DESCRIBE THE KINEMATICS OF THE MEDIAL LONGITUDINAL ARCH <i>J. Uhan, A. Kothari, A. Zavatsky, J. Stebbins</i></p> <p>9:30am - 9:42am VALIDATION OF AN ELECTROMYOGRAPHY-DRIVEN MUSCULOSKELETAL MODEL FOR TRUNK MECHANICAL ANALYSIS <i>A. Moya-Esteban, H. van der Kooij, M. Sartori</i></p>	<p>TR03.9 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES VII: BONE RESPONSE <i>Chairs: Peter Zioupos, Federico Andrea Bologna</i></p> <p>8:30am - 8:42am TRIPLY PERIODIC MINIMAL SURFACE FOR BIOINSPIRED DISSIMILAR MATERIAL INTERFACING <i>M. Cruz Saldivar, E. Tay, E. L. Doubrovski, M. J. Mirzaali, A. A. Zadpoor</i></p> <p>8:42am - 8:54am THE ROLE OF THE SOCKET IN BMD LOSS IN TRANSFEMORAL AMPUTEES <i>J. L. Zavaleta Ruiz, S. Dimartino, L. Hutton, P. Pankaj</i></p> <p>8:54am - 9:06am INCIDENCE OF PELVIC BONE OVER THE STRESS STATE AT THE RESIDUAL LIMB/SOCKET INTERFACE OF TRANSFEMORAL AMPUTEES <i>J. Atehortua C., V. Mejía Gallón, J. Ramírez</i></p> <p>9:06am - 9:18am VALIDATED FINITE ELEMENT SIMULATION OF POROUS TITANIUM SAMPLES UNDER FATIGUE LOADING FOR DESIGN OPTIMIZATION <i>A. Vautrin, J. Aw, E. Attenborough, P. Varga</i></p> <p>9:18am - 9:30am LONGITUDINAL FUNCTIONAL ASSESSMENT OF A TRANSFERMORAL AMPUTEE PATIENT TREATED WITH OSSEOINTEGRATION SURGERY <i>S. Di Paolo, D. Alesi, A. I. Mirulla, E. Gruppioni, S. Zaffagnini, L. Bragonzoni</i></p> <p>9:30am - 9:42am THE INFLUENCE OF SCREW CONFIGURATIONS ON LCP UNDER THE TIME-DEPENDENT CALLUS HEALING PROCESS <i>Z. Li, Z. Ding, S. Zhu, Z. Wu</i></p>	<p>TR04.9 MECHANOBIOLOGY III: IN SILICO <i>Chair: Hans Van Oosterwyck</i></p> <p>8:30am - 8:42am A COUPLED FINITE ELEMENT AND SYSTEMS BIOLOGY MODEL TO STUDY THE ROLE OF MECHANICS AND INFLAMMATION IN KNEE OA <i>S. Mukherjee, R. Lesage, L. Geris</i></p> <p>8:42am - 8:54am IDENTIFICATION OF THE MOST IMPORTANT CELLULAR PROCESSES BEHIND IMPAIRED BONE REGENERATION IN TYPE-2 DIABETES <i>M. Jaber, G. Duda, S. Checa</i></p> <p>8:54am - 9:06am EMERGENCE OF BONE REMODELLING BEHAVIOUR FROM A MICRO-MULTIPHYSICS AGENT-BASED MODEL <i>J. J. Kendall, D. Boaretti, C. Ledoux, F. C. Marques, E. Wehrle, R. Müller</i></p> <p>9:06am - 9:18am BIOMECHANICAL MODEL OF BONE REMODELING COUPLED WITH ADVANCED DISCRETIZATION METHODS <i>M. Peyroteo, J. Belinha, R. Natal</i></p> <p>9:18am - 9:30am THE INFLUENCE OF WNT PATHWAY IN BONE REMODELLING AND CALCIUM CONCENTRATION IN MICROGRAVITY CONDITIONS <i>A. Pica, A. Marinozzi, F. Marinozzi, F. Bini</i></p> <p>9:30am - 9:42am DISRUPTED OSTEOCYTE CONNECTIVITY AND MECHANOSENSATION IN BONE WITH AGING AND DEFECTIVE TGF-β SIGNALLING <i>S. Verbruggen, C. Schurman, T. Alliston</i></p>
09:45 – 10:15	Coffee break			

Porto Hall	Arrabida Hall	Miragaia Hall	S. Joao Hall	
TR05.9 SPORT BIOMECHANICS I <i>Chairs: Hans Kainz, António Prieto Veloso</i> 8:30am - 8:42am HIP CONTACT FORCES DURING SPRINTING IN FEMOROACETABULAR IMPINGEMENT SYNDROME <i>B. Gonçalves, E. Meinders, D. Saxby, R. Barrett, L. Diamond</i> 8:42am - 8:54am MUSCLE CONTRIBUTIONS TO KNEE BONE-ON-BONE FORCES DURING AN HORIZONTAL DECELERATION TASK IN ELITE ATHLETES <i>R. B. Mateus, V. Ferrer-Roca, F. João, A. P. Veloso</i> 8:54am - 9:06am V-SPINE ANGLE AND GROUND REACTION FORCES IN FAST BOWLING IN CRICKET <i>R. E. Ferdinands, U. Singh</i> 9:06am - 9:18am HIGHER JOINT LOADING DUE TO INCREASED JOINT ANGLES IN PROFESSIONAL COMPARED TO NOVICE LATIN DANCERS <i>C. Egner, H.-B. Schmiedmayer, H. Kainz</i> 9:18am - 9:30am A POSTURAL STRATEGY AT STRING RELEASE IN ELITE ARCHERS <i>A. Kuch, R. Tisserand, F. Durand, T. Monnet</i> 9:30am - 9:42am THE RELIABILITY OF A NOVEL 3D MOTION CAPTURE PROTOCOL FOR THE ANALYSIS OF INSTEP SOCCER KICK KINEMATICS <i>D. Alotti, L. Scheyls</i>	TR06.9 IMPACT / INJURY BIOMECHANICS I <i>Chairs: David Mitton, Ciaran Simms</i> 8:30am - 8:55am DIGITAL TWINS AND COUPLED APPROACHES FOR MANAGEMENT OF TIBIAL PLATEAU FRACTURE <i>A. Germaneau</i> 8:55am - 9:07am A MULTIMODAL FRAMEWORK FOR EVALUATING THE EFFICACY OF ORTHOPAEDIC IMPLANTS IN A SIDEWAYS FALL IMPACT <i>E. Bliven, A. Fung, I. Fleps, A. Baker, B. Helgason, P. Guy, P. Crichton</i> 9:07am - 9:19am MECHANICAL CHARACTERIZATION OF A KNEE COMPRESSION FRACTURE BY H-DVC ON A CLINICAL CT-SCAN <i>M. Severyns, T. Vendevre, K. Aubert, V. Valle, A. Germaneau</i> 9:19am - 9:31am EXPERIMENTAL STUDY OF CERVICAL SPINE INJURY AND KINEMATICS IN LATERAL HEAD IMPACT <i>M.-H. Beausejour, N. Bailly, W. Wei, L. Troude, P. Panichelli, P.-J. Arnoux</i> 9:31am - 9:43am CHANGE OF DIRECTION BIOMECHANICS AND COORDINATION IN ANTERIOR CRUCIATE LIGAMENT-INJURED FEMALE FOOTBALLERS <i>S. Di Paolo, L. Bragonzoni, A. Grassi, S. Zaffagnini</i>	TR07.9 SKIN BIOMECHANICS <i>Chair: Jérôme Molimard, Michael Crichton</i> 8:30am - 8:55am SKIN – AN ACCESSIBLE WINDOW TO HEALTH <i>M. Crichton</i> 8:55am - 9:07am CHARACTERISING THE MECHANICAL PROPERTIES OF SKIN WOUNDS <i>S. Medina-Lombardero, J. Cash, B. Reuben, M. Crichton</i> 9:07am - 9:19am COMBINED MEASUREMENT OF FRICTION AND THROUGH-THICKNESS DEFORMATION ON EX VIVO SKIN SAMPLES <i>B. Eydan, B. Pierrat, N. Curt, H. Zahouani, J. Molimard</i> 9:19am - 9:31am TENSILE TESTING OF CELL SHEETS: AN EXPERIMENTAL APPROACH <i>M. G. Fernandes, M. D. Malta, A. André, P. Martins, A. P. Marques</i>	TR08.9 INSPIRATIONAL KEY NOTE LECTURE - HOW TO COMMUNICATE SCIENCE <i>Lecturer: Joana Lobo Antunes</i>	8:30 – 9:45

Wednesday, 29th June 2022

	Archive Hall	Infante Hall	D. Maria Hall	D. Luis Hall
10:15 – 11:40	<p>TR01.10 CARDIOVASCULAR BIOMECHANICS VIII: MULTISCALE COMPUTATIONAL MODELING <i>Chairs: Fanette Chassagne, Diego Gallo</i></p> <p>10:15am - 10:40am OPPORTUNITIES IN MULTISCALE AND MULTIPHYSICS HUMAN HEART MODELING M. Peirlinck</p> <p>10:40am - 10:52am THE INFLUENCE OF THE ORTHOTROPIC TISSUE IN A ELECTROMECHANICAL HEART MODEL D. Holz, D. Martonova, E. Schaller, M. T. Duong, M. Alkassar, S. Leyendecker</p> <p>10:52am - 11:04am USING THE DIGITAL TWIN OF HUMAN FETAL HEART TO PREDICT OUTCOMES OF A FETAL HEART INTERVENTION L. E. Green, W. X. Chan, A. Tulzer, G. Tulzer, C. H. Yap</p> <p>11:04am - 11:16am COMPUTATIONAL STUDY ON TWO IDEALIZED MODELS OF THE LEFT VENTRICLE WITH DIFFERENT MYOFIBER ARCHITECTURES K. Osouli, F. De Gaetano, P. Zunino, M. L. Costantino</p> <p>11:16am - 11:28am IMPACT OF HYPERTENSION AND ARCH MORPHOLOGY ON AORTIC HEMODYNAMICS: A PRELIMINARY NUMERICAL ANALYSIS M. A. D'Attilio, A. Caimi, M. Marrocco-Trischitta, F. Sturla, A. Redaelli</p>	<p>TR02.10 MUSCULOSKELETAL BIOMECHANICS IV:METHODS <i>Chairs: Claudia Mazzà, Simon Herger</i></p> <p>10:15am - 10:40am BIOMECHANICS OF CRANIOFACIAL GROWTH M. Moazen</p> <p>10:40am - 10:52am TENDON COMPLIANCE AFFECTS TIME-SERIES ENERGY EXPENDITURE A. I. Luis Pena, M. Afschrift, F. De Groote, E. M. Gutierrez-Farewik</p> <p>10:52am - 11:04am CALIBRATION OF A NEUROMUSCULOSKELETAL MODEL AT THE JOINT TORQUE AND JOINT STIFFNESS LEVELS SIMULTANEOUSLY C. P. Cop, A. C. Schouten, B. Koopman, M. Sartori</p> <p>11:04am - 11:16am ESTIMATING A SINGLE MAXIMUM MUSCLE-TENDON LENGTH FROM DISCRETISED MUSCLES C. F. Hayford, E. Montefiori, E. Pratt, C. Mazzà</p> <p>11:16am - 11:28am QUANTITATIVE VALIDATION OF A DEEP LEARNING BASED MARKERLESS MOTION CAPTURE SYSTEM T. Templin, T. Eliason, D. Chambers, N. Louis, O. Medjaouri, K. Saylor, D. Nicoletta</p> <p>11:28am - 11:40am SMART FLEXIBLE GARMENT AND RAPID NEUROMUSCULOSKELETAL MODELLING FOR FAST AND ACCURATE CLINICAL DECISION-MAKING D. Simonetti, B. Koopman, S. Massimo</p>	<p>TR03.10 HARD TISSUE BIOMECHANICS IV: BONE REMODELLING, AND DISEASES <i>Chairs: Enrico Dall'Ara, Alexandra Tits</i></p> <p>10:15am - 10:27am EFFECTIVENESS OF ALTERNATING PTH AND MECHANICAL LOADING TREATMENT IN AN OVARIETOMISED MOUSE MODEL V. S. Cheong, B. Roberts, V. Kadirkamanathan, E. Dall'Ara</p> <p>10:27am - 10:39am HOMOGENIZED-FE-BASED INVERSE BONE REMODELING: MODIFIED OPTIMIZATION CRITERION AND EVALUATION ON THE DISTAL RADIUS S. Bachmann, D. H. Pahr, A. Synek</p> <p>10:39am - 10:51am MICRO-FE DERIVED MECHANICAL PROPERTIES FOR TRABECULAR BONE REMODELING AND ADAPTATION UNDER LOADING D. Boarreti, F. C. Marques, J. J. Kendall, G. A. Kuhn, E. Wehrle, Y. D. Bansod, R. Müller</p> <p>10:51am - 11:03am DAMAGE MECHANICS OF TYPE-2 DIABETIC TRABECULAR BONE SUBJECT TO MONOTONIC AND CYCLIC LOADING M. Britton, J. Schiavi, T. J. Vaughan</p> <p>11:03am - 11:15am IN END-STAGE KNEE OSTEOARTHRITIS THE SUBCHONDRAL BONE MICROARCHITECTURE OF THE TIBIAL PLATEAU IS CORRELATED TO THAT OF THE DISTAL FEMUR F. Azari, W. Colyn, J. Bellemans, L. Scheys, G. H. van Lenthe</p> <p>11:15am - 11:27am NEW INSIGHTS INTO HIGH-RESOLUTION STRAIN FIELDS OF TRABECULAR BONE USING DIGITAL IMAGE CORRELATION N. Amraish, D. Pahr</p> <p>11:27am - 11:39am SITE-MATCHED MICROPILLAR COMPRESSION AND RAMAN SPECTROSCOPY TO ASSESS JAW BONE QUALITY T. Kochetkova, A. Groetsch, C. Peruzzi, M. Indermaur, S. Remund, B. Neuenschwander, J. Hofstetter, B. Bellon, J. Michler, P. Zysset, J. Schwiedrzik</p>	<p>TR04.10 MECHANOBIOLOGY IV: IN SILICO <i>Chairs: Hans Van Oosterwyck, Daphne Weihs</i></p> <p>10:15am - 10:27am A 3D COMPUTATIONAL MODEL OF AORTIC VALVE INTERSTITIAL CELL CONTRACTILE BEHAVIOR WITHIN A PEG HYDROGEL MEDIUM A. Khang, M. S. Sacks</p> <p>10:27am - 10:39am AGENT – BASED MODEL OF VASCULOGENESIS INCLUDING CELL – ECM INTERACTIONS A. Carrasco-Mantis, T. Alarcón, J. A. Sanz-Herrera</p> <p>10:39am - 10:51am THE ROLE OF OUTER-VASCULAR MECHANICS ON SPROUTING ANGIOGENESIS: AN IN SILICOSTUDY C. Dazzi, J. Mehl, G. N. Duda, S. Checa</p> <p>10:51am - 11:03am NUMERICAL AND EXPERIMENTAL APPROACH TO STUDY THE RESPONSE OF YAP AND NPC TO DIFFERENT MECHANICAL SIGNALS S. Saporito, C. F. Natale, C. Menna, P. A. Netti, M. Ventre</p> <p>11:03am - 11:15am MAGNETO-ACOUSTIC INTERACTION IN MAGNETIC NANOSYSTEMS R. Marqués, A. Ashofteh Yazdi, J. Melchor, R. Ibarra, G. Rus</p> <p>11:15am - 11:27am AGENT-BASED MODEL OF LONG-TERM DISEASE PROGRESSION IN DUCHENNE MUSCULAR DYSTROPHY K. Crump, S. Peirce-Cottler, S. Blemker</p> <p>11:27am - 11:39am IN SILICO AVATARS OF CELLS TO PREDICT AND DRIVE CELL MIGRATION ON TRAVELLING WAVES J.-L. Milan, M. Vassaux, L. Pieuchot, K. Anselme, I. Manificier</p>
11:45 – 12:30	<p>Keynote lecture 3 MODELLING THE HUMAN NEUROMUSCULAR SYSTEM ACROSS SPATIO-TEMPORAL SCALES FOR A NEW CLASS OF MOVEMENT ENHANCING TECHNOLOGIES, Massimo Sartori <i>Chairs: Jérôme Noailly, Paulo Rui Fernandes</i></p>			

Wednesday, 29th June 2022

12:30 – 13:15	Lunch break			
13:15 – 14:00	Poster sessions: PS13 – PS18			
14:00 – 15:00	Best Doctoral Thesis Award <i>Chairs: Markus Heller, Ilse Jonkers</i>			
15:00 – 15:30	Coffee break			
15:30 – 16:45	TR01.12 CARDIOVASCULAR IX: IMAGE-BASED BIOMECHANICS <i>Chairs: Fanette Chassagne, Diego Gallo</i> 3:30pm – 3:42pm DECIPHERING VORTICITY IN THE ABDOMINAL AORTIC ANEURYSM V. Mazzi, K. Calò, D. Gallo, A. Iollo, U. Morbiducci 3:42pm – 3:54pm PREDICTION OF ANALOG THROMBI MECHANICAL PROPERTIES, COMPOSITION, AND CONTRACTION USING CT IMAGING J. M. H. Cruts, J.-A. Giesen, K. van Gaalen, R. Beurskens, Y. Ridwan, M. L. Dijkshoorn, H. M. M. van Beusekom, N. Boodt, A. vander Lugt, F. Gijzen, R. Cahalane 3:54pm – 4:06pm UNIVERSAL LEFT ATRIAL APPENDAGE COORDINATES TO COMPARE AND CLASSIFY PHENOTYPIC FLOW PATTERNS J. Dueñas-Pamplona, A. Gonzalo, S. F. Bifulco, P. M. Boyle, E. McVeigh, A. M. Kahn, P. Martínez-Legazpi, J. García García, J. Sierra-Pallares, M. García-Villalba, Ó. Flores, J. Bermejo, J. C. del Álamo 4:06pm – 4:18pm PATIENT-SPECIFIC FLOW SIMULATIONS OF A DISSECTED AORTA INFORMED BY 4D FLOW MRI: THE IMPACT OF SEGMENTAL ARTERIES C. Stokes, F. Haupt, D. Becker, V. Muthurangu, H. von Tengg-Kobligh, S. Balabani, V. Diaz-Zuccarini 4:18pm – 4:30pm 4D FLOW MRI & NETWORK-BASED ANALYSIS OF THE HEMODYNAMIC CORRELATION PERSISTENCE LENGTH IN THE HEALTHY AORTA K. Calò, A. Guala, D. Gallo, J. Rodriguez Palomares, S. Scarsoglio, L. Ridolfi, U. Morbiducci 4:30pm – 4:42pm CALIBRATION OF THE MECHANICAL BOUNDARY CONDITIONS OF A THORACIC AORTA MODEL INCLUDING THE HEART MOTION EFFECT L. Geronzi, A. Martinez, M. E. Biancolini, M. Rochette, O. Boucho, A. Lalande, P. P. Valentini	TR02.12 MUSCULOSKELETAL BIOMECHANICS V: KNEE AND OTHERS <i>Chairs: Annegret Mündermann, Claude Fiifi Hayford</i> 3:30pm – 3:42pm A NEW GENERALIZED CONTINUUM APPROACH TO MODEL SPINAL GROWTH N. M. Castoldi, M. Antico, M. Martin, P. Pivonka, V. Sansalone 3:42pm – 3:54pm EXPERIMENTAL INVESTIGATION OF THE FRACTURE MECHANICS OF FEMURS OF ZUCKER DIABETIC FATTY (ZDF) RATS G. E Monahan, J. Schiavi-tritz, T. J. Vaughan 3:54pm – 4:06pm INFLUENCE OF LIMB ALIGNMENT AND KNEE JOINT LOADING ON CONDYLAR KINEMATICS USING DYNAMIC VIDEOFLUOROSCOPY B. Postolka, O. Ulrich, W. R. Taylor, R. List, P. Schütz 4:06pm – 4:18pm CHARACTERISING THE RELATIONSHIP BETWEEN KNEE BONE GEOMETRY AND PASSIVE KINEMATICS D. O'Rourke, F. Bucci, W. Burton, R. Al-Dirini, M. Taylor, S. Martelli 4:18pm – 4:30pm VARIATION IN KNEE CONTACT MECHANICS DUE TO ANATOMY J. Yao, G. Day, N. Wijayathunga, A. Jones, R. Wilcox, M. Mengoni 4:30pm – 4:42pm HIGH TIBIAL OSTEOTOMY NORMALIZES KNEE AMBULATORY LOADS E. De Pieri, C. Nüesch, G. Pagenstert, E. Viehweger, C. Egloff, A. Mündermann	TR03.12 IMPLANTS / ORTHOTICS / PROSTHETICS / DEVICES VIII: MULTIPLE TOPICS <i>Chairs: Peter Varga, Mauricio Cruz Saldivar</i> 3:30pm – 3:42pm A LUBRICIN-BINDING COATING FOR CARTILAGE RESURFACING IMPLANTS TO REDUCE FRICTION A. H. A. Damen, C. C. van Donkelaar, P. K. Sharma, T. A. Schmidt, K. Ito 3:42pm – 3:54pm LOAD TRANSFER IN CUSTOM MADE IMPLANT FOR OSTEOCHONDRAL LESION, A FINITE ELEMENT STUDY A. Ramos, M. Vieira 3:54pm – 4:06pm BIOMECHANICAL EVALUATION OF A NOVEL BIOMIMETIC ARTIFICIAL DISC PROSTHESIS IN CANINE CERVICAL CADAVERIC SPINES C. A. M. Jacobs, R. J. Doodkorte, S. A. Kamali, A. M. Abdelgawad, S. Ghazanfari, M. A. Tryfonidou, J. Arts, B. P. Meij, K. Ito 4:06pm – 4:18pm NOVEL BIODEGRADABLE CAROTID GRAFT: EXPERIMENTAL ASSESSMENT THROUGH HAN ANIMAL TRIAL A. Hendrickx, M. Ghasemi, T. Vervenne, T. Langenaeken, H. Bauer, H. Fehervary, M. Cox, P. Claus, F. Rega, N. Famaey, B. Meuris 4:18pm – 4:30pm INTEGRATION OF MUSCULOSKELETAL AND MODEL ORDER REDUCED FE SIMULATION FOR PASSIVE ANKLE FOOT ORTHOSIS DESIGN D. Scherb, P. Steck, S. Wartzack, J. Miehling 4:30pm – 4:42pm HIGH-FIDELITY FINITE ELEMENT STENT-GRAFT MODELING A. Ramella, F. Migliavacca, J. F. Rodriguez Matas, F. Dedola, M. Conti, F. Heim, S. Allievi, D. Bissacco, M. Domanin, S. Trimarchi, G. Luraghi	TR04.12 ANIMAL AND PLANT BIOMECHANICS <i>Chairs: Christian Peham, Balázs Gerics</i> 3:30pm – 3:42pm A COMPUTATIONAL MODEL OF THE ZEBRAFISH HEART ELECTROPHYSIOLOGY L. Cestariolo, G. Luraghi, P. L'Eplattenier, J. F. Rodriguez Matas 3:42pm – 3:54pm LAMENESS INFLUENCES BREAKOVER DURATION IN HORSES E. V. Briggs, C. Mazzà 3:54pm – 4:06pm HISTOMORPHOMETRIC ANALYSIS OF CANINE TRABECULAR BONE IN THE OSTEOPOROTIC CONTEXT E. Kostenko, A. Pocevičius, A. Maknickas
16:45 – 17:15	ESB 2022 Closing Ceremony			

				12:30 – 13:15
				13:15 – 14:00
				14:00 – 15:00
				15:00 – 15:30
TR05.12 SPORT BIOMECHANICS III <i>Chairs: Joao Paulo Vilas-Boas, Hans Kainz</i> 3:30pm - 3:42pm BALL-FINGER POSITIONING FOR ACCURATE BASEBALL PITCHING <i>A. Kusafuka, K. Nishikawa, N. Tsukamoto, K. Kudo</i> 3:42pm - 3:54pm GROUND REACTION FORCE PREDICTION DURING RUNNING USING A FULL-BODY MULTIBODY MODEL <i>G. Marta, J. Folgado, C. Quental, F. G. Pinto</i> 3:54pm - 4:06pm EFFECT OF DIFFERENT PLAYERS' MOTION MODELS ON LINEAR AND NON-LINEAR MEASURES OF SPACE CONTROL IN FUTSAL <i>J. Bischofberger, J. Exel, B. Travassos, J. Sampaio, A. Baca</i> 4:06pm - 4:18pm APPLYING PRINCIPAL COMPONENT ANALYSIS TO CHARACTERIZE THE BALANCING ABILITY OF ELITE SYNCHRONIZED ICE SKATERS <i>Z. Palya, B. Petro, R. M Kiss</i> 4:18pm - 4:30pm THE INFLUENCE OF SEX, AGE AND PEAK KNEE ISOKINETIC TORQUE ON SINGLE LEG HOP DISTANCE <i>S. Herger, L. Bühl, C. Nüesch, S. Müller, C. Egloff, A. Mündermann</i>	TR06.12 IMPACT / INJURY BIOMECHANICS III <i>Chair: David Mitton</i> 3:30pm - 3:42pm BIOMECHANICAL STUDY OF ELECTRIC SCOOTER FALLS <i>M. Fournier, N. Bailly, A. Schäuble, Y. Petit</i> 3:42pm - 3:54pm E-SCOOTER CRASH SCENARIO AND KINEMATICS: ANALYSIS OF 112 CRASH VIDEOS <i>N. Bailly, S. Honore, Y. Petit, A. Naaim, A. Muller, W. Wei</i> 3:54pm - 4:06pm PELVIC SUBCUTANEOUS ADIPOSE TISSUE THICKNESS AND OUTER SHAPE CHANGE WITH POSITION FOR NUMERICAL MODELING <i>D. Hanesch, J. Muehlbauer, E. C. Sattler, N. Moellhoff, R. E. Giunta, S. Peldschus, S. Schick</i> 4:06pm - 4:18pm BIOMECHANICAL EVALUATION OF THE SPATIAL CONFIGURATIONS OF STABILIZER USED IN DISTAL HUMERUS FRACTURE TREATMENT <i>A. Kruszewski, P. Piekarczyk, S. Piszczatowski</i> 4:18pm - 4:30pm CHANGES IN LOADING DURING FRACTURE HEALING DO NOT IMPACT BONE MICROARCHITECTURE OF THE CONTRALATERAL RADIUS <i>D. Whittier, M. Walle, P. Christen, P. Atkins, C. Collins, M. Blauth, K. Lippuner, R. Müller</i> 4:30pm - 4:42pm DEVELOPMENT OF A SIMPLIFIED HUMAN THORACIC FE MODEL FOR BLUNT IMPACT AND RELATED TRAUMA <i>M. Chaufer, R. Delille, B. Bourel, C. Marechal, F. Lauro, O. Mauzac, S. Roth</i>	TR07.12 ERGONOMICS / OCCUPATIONAL BIOMECHANICS / REHABILITATION II <i>Chairs: Margit Gföhler, Xuguang Wang</i> 3:30pm - 3:55pm INDIVIDUALIZED VS. POPULATION-BASED MUSCULOSKELETAL SIMULATION FOR MEDICAL AND PRODUCT ENGINEERING <i>J. Miehling</i> 3:55pm - 4:07pm TOWARDS THE LEARNING OF HUMAN-SEAT INTERACTIONS FOR RUNTIME-EFFICIENT HUMAN MODELS BASED ON PRESSURE DISTRIBUTION <i>D. N. Fahse, M. Roller, F. Kempter, J. Fehr</i> 4:07pm - 4:19pm FE MODELING AND SIMULATION OF THE CUPULA DEFORMATION OF A SEMICIRCULAR CANAL IN A CLINICAL ROUTINE <i>M. Blaise, D. Baumgartner, A. Charpiot</i>	TR08.12 BIOFLUID AND TRANSPORT II <i>Chairs: Frans van de Vosse, Junfeng Zhang</i> 3:30pm - 3:42pm THROMBUS FORMATION IN A STENOTIC CHANNEL; A VISCOELASTIC MATERIAL MODEL <i>M. Rezaeimoghaddam, O. Dhaenens, A. Germain, F. N van de Vosse</i> 3:42pm - 3:54pm STUDY OF THE FLUID BEHAVIOUR IN 3D PRINTED MACROSCAFFOLDS USING CFD ANALYSIS AND PIV <i>T. Baumgartner, T. Yarov, M. Bösenhofer, O. Guillaume, A. Ovsianikov, M. Harasek, M. Gföhler</i> 3:54pm - 4:06pm HIGH DENSITY MICROFLUIDIC TRAP ARRAY GEOMETRIC OPTIMIZATION VIA COMPUTATIONAL FLUID DYNAMICS STUDY <i>N. Ruyssen, J. Fattaccioli, M.-C. Jullien, R. Allena</i>	15:30 – 16:45
				16:45 – 17:15

INTERNATIONAL SYMPOSIUM ON RESEARCH AND ENTREPRENEURSHIP



The symposium is focused on stimulating innovation and entrepreneurship among Biomechanics researchers, and offers them opportunities to start, to grow and to scale up their ideas for businesses. The ultimate goal is to contribute to the development of a Biomechanics ecosystem and to foster a culture of entrepreneurship in the academic Biomechanics community.

Pre-course “Ideation”

Sunday | 26th June 2022 | 10:00 – 12:00
D. Maria Hall

This course aims to increase the impact of biomechanics on society, stimulating entrepreneurship and raising awareness of the processes of creativity, generation of ideas and value propositions. During this course societal challenges related with biomechanics, such as ageing, chronic diseases, physical activity, and sports, will be discussed. This session will be held by Everythink (www.everythink.com), a design studio from Porto.

Round Table on Technology Transfer in Biomechanics

Monday | 27th June | 17:00 – 18:00
Arrabida Hall

This round table will bring together representatives from a technology transfer office, from academia, from industry and from a research foundation. They will share their views and experiences on transfer of outcomes of biomechanics studies which will serve as a source of inspiration for the delegates.

Organizer and moderator:
Jos Vander Sloten, KU Leuven

Speakers:
Tine Van Lommel, Leuven Research and Development
Maria Oliveira, Start-up from Porto area
Patricia Lopes, Materialise NV
Markus Windolf, AO Foundation
Wafa Skalli, ParisTech

Start-up competition

Researchers developing biomechanics solutions will present their ideas to the general public, experts and prospective investors in a dedicated space for pitches. The aim of this initiative is to promote innovative ideas among the wider public, raise awareness about innovation among professionals and link the different Technology Readiness Level in solutions with their deployment.

Inspirational Keynote Lecture “How to Communicate Science”

Wednesday | 29th June | 8:30 – 9:30
S. Joao Hall

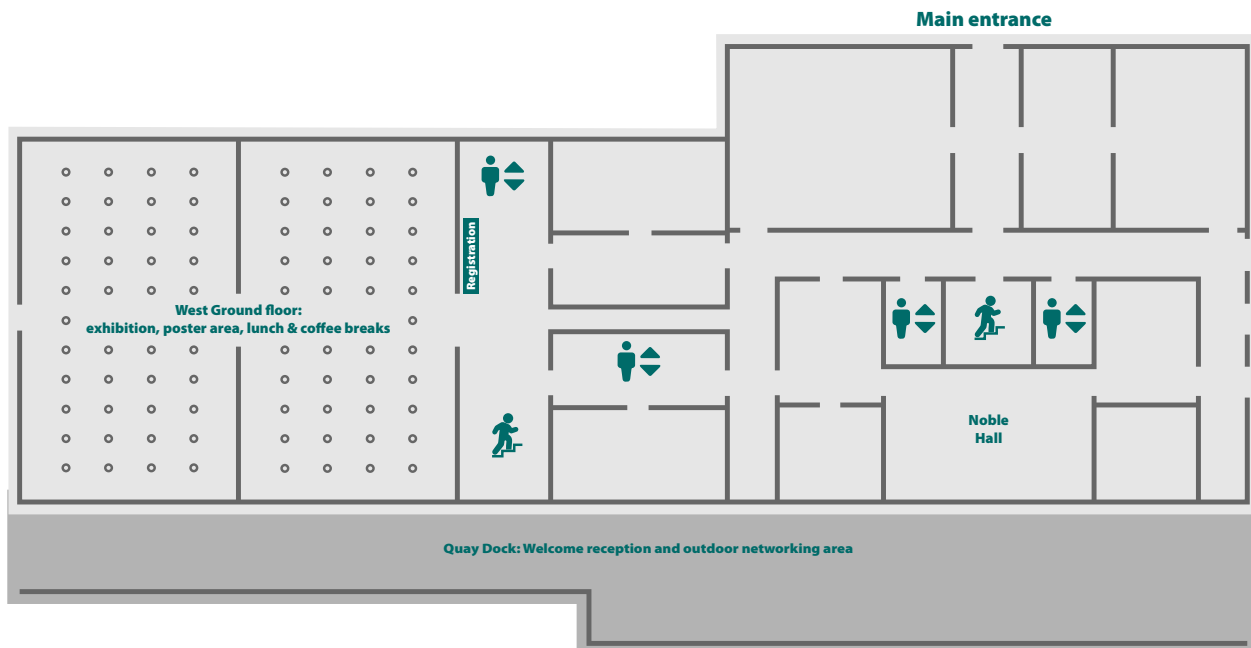
A plenary session will be provided on “how to communicate science” with an expert in the field: Prof. Joana Lobo Antunes, Universidade Nova de Lisboa. The main aim is to inspire participants to engage in science communication and increase the effectiveness of those who already work in it, encouraging them to share their experiences with others.



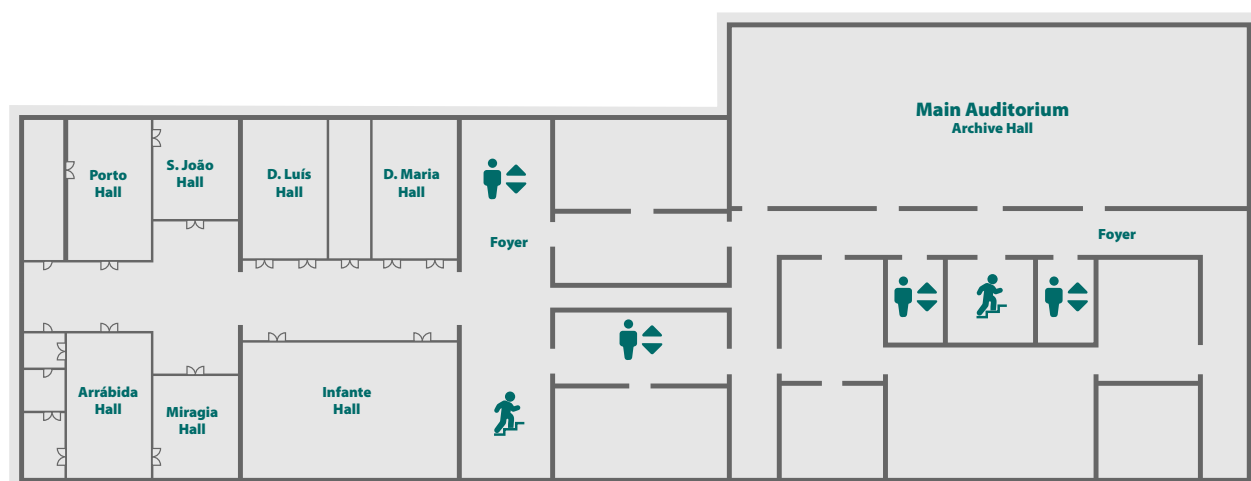
VENUE PLANS



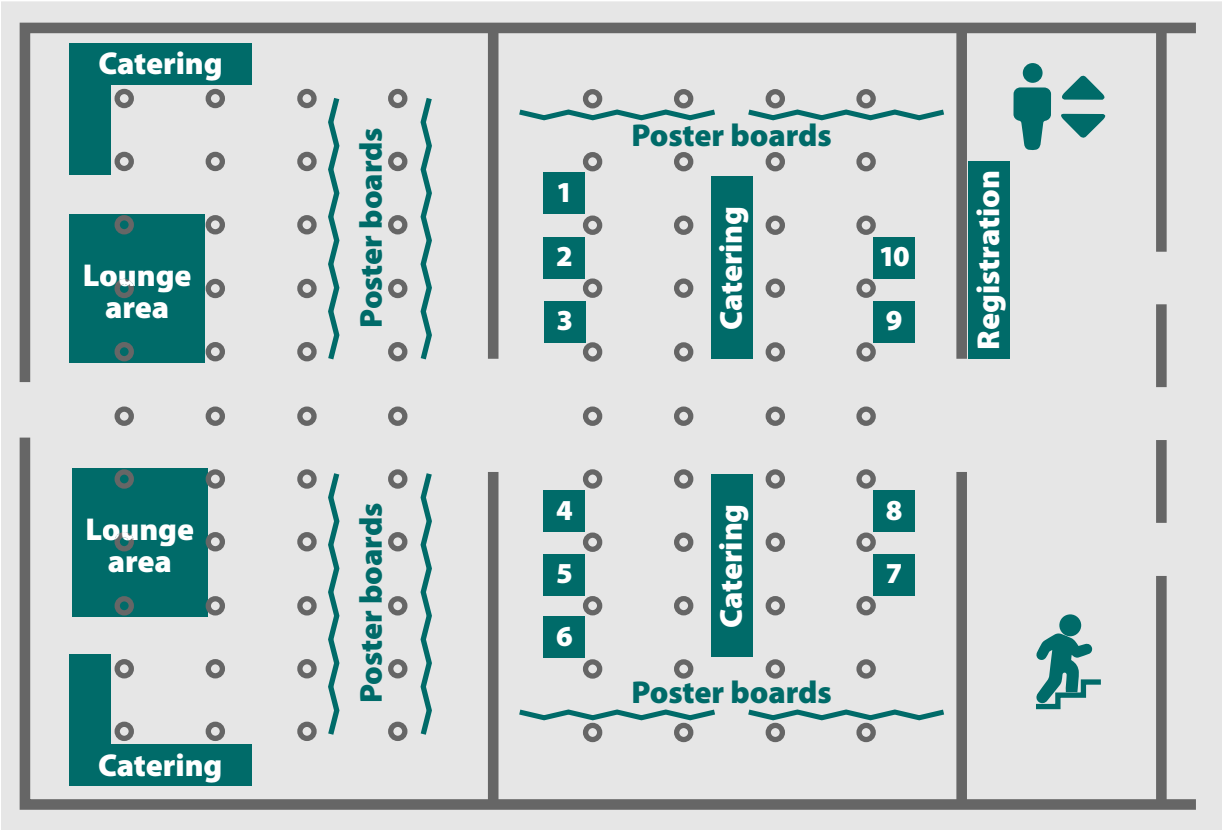
Alfandega - Ground floor



Alfandega - 2nd floor



EXHIBITION PLAN



Company	Stand #
AMTI Europe	#5
AnyBody Technology & Movella, Xsens Technologies B.V.	#1
Bertec	#10
BETA CAE Systems	#4
Biomomentum Inc.	#8
BoB Biomechanics	#3
Delsys Europe	#9
ESB Society	#6
Materialise	#2
Qualisys AB	#7

EXHIBITORS LIST



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BoB Biomechanics

www.bob-biomechanics.com

BoB (Biomechanics of Bodies) is a biomechanical modelling software package combining a human musculo-skeletal model with easy to use, intuitive interface and powerful analysis functionality resulting in quantitative, objective information. There are four variants – BoB/Research, BoB/EMG, BoB/Ergo and BoB/Teaching making it ideal for commercial applications, academic research and teaching.



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Qualisys is a leading provider of motion capture technology and has a long history of supplying research, engineering, entertainment, and sports facilities with high-end camera systems and expertise in capturing and analyzing movements. Qualisys offers a wide range of products and services and has offices in Gothenburg, Chicago and Shanghai.



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AnyBody Technology is a leading provider of musculoskeletal modeling. The all-dominating area of application is the human body, but our technology applies to analysis of any creature – living, pre-historic, or imaginary.

Our base technology is the AnyBody Modeling System and the AnyBody Managed Model Repository containing a comprehensive full-body model.



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THINGS TO DO IN PORTO



Enjoy a cruise on the Douro river close to its mouth into the Atlantic ocean. In the Ribeira area, you can purchase a ticket for an affordable rate which will take you on a beautiful cruise under the 6 Porto bridges. Enjoy the the picturesque surroundings and look for the ESB 2022 venue Alfandega which can be spotted from the boat as well! You might even get a free ticket for some Port wine tasting afterwards!

Tasting the Port wine is a must for any visitor. This sweet and fruity liquor will charm your taste buds in a way that no other liquor can. Port wine comes from only one region in the world – the Duoro valley in northern Portugal which is highly controlled and maintained to fulfill the highest standards.

There are several types of Port wine: red, white, rosé, and an aged style called Tawny Port



One of the most important places to see when visiting Porto is definitely Ribeira. Being located on the bank of the Duoro river makes it a wonderful spot for spending an evening, while enjoying live music and traditional Portuguese cuisine. While being at the most vibrant place of Porto, you can also cross the Dom Luís I bridge and visit wine cellars on the other side in Vila Nova de Gaia!

Restaurants in Porto

Dining:

- Cantinho do Avillez – contemporary Portuguese gastronomy
- KUG Porto – garden restaurant
- Mistu – Asian and South American gastronomy
- O Comercial – in the historic Palacio da Bolsa
- Okra – pizza restaurant
- Almeja – traditional Portuguese fine restaurant

Tabernas:

- Taberna de Santo Antonio – local
- Taberna dos Mercadores – local
- Mercado Bom Sucesso - market place with restaurants

Wine and Tapas:

- Sagardi (Ribeira)
- Quevedo (Vila Nova de Gaia)

Where to watch the sunset in Porto Beach bars on the Ocean:

- Brasao Salgueiros
- Praia da Luz restaurant

Student places:

- Base porto (outside place with drinks)
- Armazem (vintage bar close to Alfandega)
- Aliados area

PRACTICAL INFO



METRO

www.metrodoporto.pt
Daily > 06:00 – 01:00

- Line A – Blue > Estádio do Dragão - Senhor de Matosinhos
- Line B – Red > Estádio do Dragão - Póvoa de Varzim
- Line C – Green > Estádio do Dragão - ISMAI
- Line D – Yellow > Hospital São João - Santo Ovídio
- Line E – Violet > Trindade – Aeroporto
- Line F – Orange > Senhora da Hora - Fânzeres

The Andante ticket can be purchased from ticket vending machines inside Metro stations, from Andante Shops and from the Tourism Office Centre. For the occasional ticket (Z2 to Z12) depending on your route, one-hour minimum validity, and is rechargeable. Andante Tour tickets for 1 or 3 days (offer unlimited travel on buses, metro, and urban trains between Trofa and Espinho)

To get to the city centre...

...from the airport

www.ana.pt/portal/page/portal/ANA/AEROPORTO_PORTO
Metro: Line E - Trindade
Bus: Lines 601 e 602 and 3M (01:00 – 05:00)
Taxi: Approximate cost of trip > 25€ (reference value)
Car Rental: Cars may be rented at the airport

...from the Campanhã railway station

Train: S. Bento railway station (city center) - trip included in the cost of an Alfa ticket
Metro: Lines A, B, C and F.
Bus: Line 207
Taxi: Approximate cost of trip > 8€ (reference value)

...from the international bus stations

Campo 24 de Agosto
Metro: Lines A, B, C and F.
Bus: Line 300
Taxi: 4€ (reference value)
On foot: 1 km (approximate distance) - 15 minutes





ESSENTIAL

LOCATION

Southwest Europe
bathed by the Atlantic Ocean

GEOGRAPHIC COORDINATES

41.08N, 08.40W

CLIMATE

Temperate oceanic.
Average temperature
Summer, 14°C - 30°C / Winter, 5°C - 14°C

TIME ZONE

GMT/UTC + 1 hour in the summer
AREA
45 km²

POPULATION

240.000 approximately
(Source: INE – Instituto Nacional de Estatística [Statistics Portugal])

DIALLING CODE

Portugal + 351

CURRENCY

€ (euro)

POWER SUPPLY

230/400 volts and frequency of 50 hertz.
European standard electrical sockets.

PORTO AIRPORT

Francisco Sá Carneiro,
11 km away

OPENING HOURS

BANKS

Monday to Friday > 08:30 – 15:00

SHOPS

Monday to Friday > 09:00 or 10:00 – 19:00
Some shops are open all day Saturday.

SHOPPING CENTRES

Daily > 10:00 – 23:00

RESTAURANTS

Lunch > 12:00 – 15:00
Dinner > 19:00 – 22:00

PHARMACIES

Monday to Friday > 09:00 – 19:00
Saturday > 09:00 – 13:00
Rotas for 24-hour pharmacy service displayed at all pharmacies

CONTACTS

EMERGENCY SERVICES | 112
TOURISM POLICE | +351 222 092 006
TOURISM OFFICE | +351 935 557 024
PORTO AIRPORT
FRANCISCO SÁ CARNEIRO | +351 229 432 400

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PS18.9	343	THE FEASIBILITY OF BESPOKE REHABILITATION ROBOT HANDGRIPS TO MEET THE SPECIFIC NEEDS OF STROKE PATIENTS <i>Li, Lutong</i>
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October 2022
Call for
perspective talks
submission

November 2022
Perspective talks
submission
deadline

December 2022
Call for
abstract
submission

January 2023
Abstract
submission
deadline

March 2023
Abstract
review
notification

May 2023
Early
registration
deadline

KEY
DATES

ESB 2023 CONGRESS CHAIRS

Frans van de Vosse
Cardiovascular Biomechanics
Eindhoven University of Technology

Keita Ito
Orthopaedic Biomechanics
Eindhoven University of Technology

Liesbet Geris
Biomechanics and Computational Tissue Engineering
Liège University

Hans Van Oosterwyck
Mechanobiology
KU Leuven

ESB 2023 PROGRAMME

The programme will be composed on the basis of the theme of the congress:
'Combining data- and knowledge-driven modeling: from measurements, through insights to decisions.'
You are all welcome to join us for interesting pre-courses, plenary lectures, perspective talks,
poster sessions, and more!

SOCIAL EVENTS

9 July Students night
10 July Welcome reception
11 July Conference dinner

ESB 2023 LOCAL ORGANISING COMMITTEE

Frans van de Vosse - TU/e
Keita Ito - TU/e
Liesbet Geris - Liège University
Hans Van Oosterwyck - KU Leuven

Alice van Litsenburg - TU/e
Yvon Biemans - TU/e
Evelien Arts - TU/e

ESB 2023 CONGRESS SECRETARIAT

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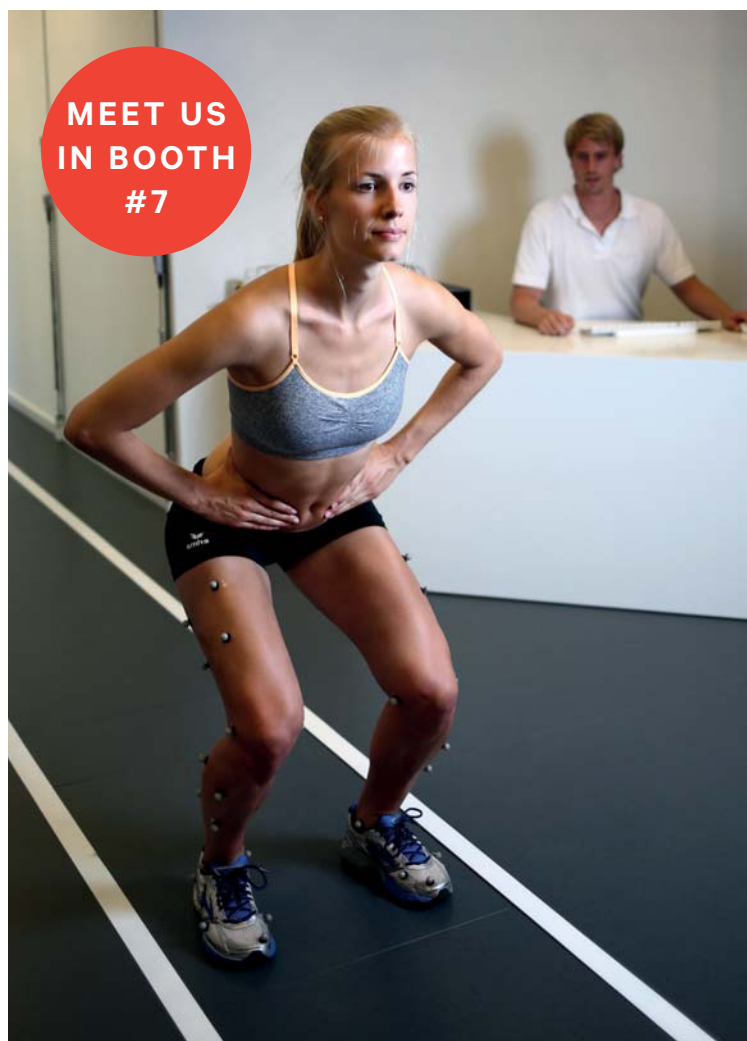
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