



ESB 2023

28th Congress of the European Society of Biomechanics
9- 12 July 2023, Maastricht, The Netherlands

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

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WELCOME



Dear colleagues,

It is a great pleasure to welcome you to the ESB2023 Congress of the European Society of Biomechanics, this time in Maastricht. It is a beautiful city, distinguished by its medieval architecture inner city and vibrant cultural scene, lying on the bank of the Maas River and situated in the triangle Liege-Leuven-Eindhoven.

With 3 keynote lectures, 8 parallel sessions comprising more than 480 oral presentations and more than 300 poster presentations, we are convinced we will be hosting an exciting and relevant program. With the theme of the congress “Combining data- and knowledge-driven modelling: from measurements, through insights to decisions,” we hope to support the importance of mechanistic experimental and computational biomechanics and the upcoming data-driven modelling, and of course most importantly their integration. As you scan through the program, you will see that this is not only visible in the presentations but also in the pre-courses and special award sessions during the meeting.

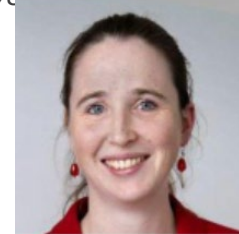
We also welcome the sponsors of the program who contribute content wise through their exhibitions but who also made possible for us to arrange an enjoyable social program. We also would like to take the opportunity to thank all the members of the International Scientific Committee, the ESB Council, and the track/session chairs who have provided us fantastic support to build the program for this meeting.

On behalf of the organizing committee, we wish you all a fruitful but also joyful time with your colleagues and the ESB community here in Maastricht.



Frans van de Vosse

*Department of Biomedical
Engineering
Eindhoven University of Technology*



Liesbet Geris

*Department of Mechanical Engineering
University of Liège*



Hans Van Oosterwyck

*Department of Mechanical Engineering
KU Leuven*



Keita Ito

*Department of Biomedical
Engineering
Eindhoven University of Technology*

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Maastricht University, The Netherlands

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International Center for Numerical Methods in Engineering, Spain

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IST Lisbon, Portugal

Benedikt Sagl

Medical University of Vienna, Austria

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ENS des Mines de Saint-Étienne, France

Marie-Christine Ho Ba Tho

University of Technology of Compiègne, France

Philipp Thurner

TU Wien, Austria

Antonio Veloso

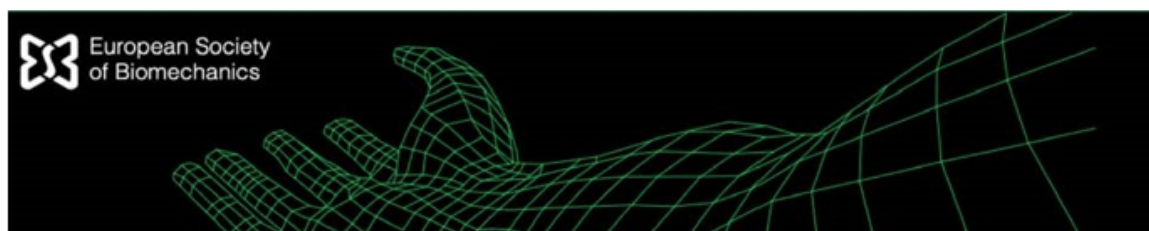
University of Lisbon, Portugal

Marco Viceconti

University of Bologna, Italy

Jean-Marc Allain

École Polytechnique, Palaiseau, France



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 private ESB LinkedIn site
- Job posting through the ESB media (website, LinkedIn, Twitter)
- Eligibility to large pool of ESB Awards
- Access to mentoring programme
- Eligibility to candidate your Institution for organizing the annual ESB congress

Additional Student Benefits

- Job opportunities in biomechanics (offer, demand, and information) in industry & academia • Student events at the ESB Congress
- Student events at the ESB Congress
- 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 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 (only for Corporates taking a booth)
- 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 or Lower-middle Income Countries can get a 80% fee reduction

Corporate members of the ESB:



Join as a member now!



GENERAL INFORMATION



Conference venue

The Venue - MECC

Address: Forum 100, 6229 GS Maastricht The Netherlands

The MECC is situated right on the edge of the historical city center, which makes it easy for ESB congress delegates to reach by foot, bike or public transport. The MECC is a compact, three level conference centre, including two large auditoria, a multifunctional foyer, over 30 break out rooms and a 30,000 square meter exhibition area.

There are ample parking facilities on site (capacity: 2200 cars). Local public transportation is available. The MECC is a green key certified conference centre (gold).

How to get to the venue

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



From Maastricht city centre:

 Bus 15 or 10, every 30 min.



From Amsterdam Schiphol Airport:



Flixbus operates a bus from the airport to Maastricht once daily. It takes 3h 55m.



NS operates a train, several times in an hour. The journey takes 2h 19m.



Coffee breaks & lunches

Coffee and lunch will be served in the exhibition and poster area at the times mentioned in the program.

Conference app

The Conference4me smartphone app provides you with the most comfortable tool for planning your participation at ESB 2023. Browse the complete program 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. To access it, first download the Conference4me app on your mobile device, then search for ESBiomech2023: Maastricht.



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.psnk.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.esbiomech2023.org). Individual abstracts can be downloaded from the Conference agenda in Conftool (make sure you are in List View to see the individual download links) and the Conference4me app (click on a contribution and subsequent "External resource A" download link).

Printing companies

De Kopieerder

Address: Onze Lieve Vrouweplein 16,
6211 HE Maastricht

Postmasters

Address: Wilhelminasingel 36
6211 BK Maastricht

EBS2023 Congress secretariat:

Our team will be available for all your questions and help during all days of the conference. So, feel free to stop by the registration desk in case you need assistance.

You can find us at the registration desk, located at the Trajectum on level 1

Exhibition

The exhibition opening hours are:

- Monday, 10th July 09:00 – 18:00
- Tuesday, 11th July 09:00 – 18:00
- Wednesday, 12th July 09:00 – 18:00

Internet access

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

Network: MECC free Wi-Fi

Password: None needed

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, 09th July 07:30 – 19:00
- Monday, 10th July 07:30 – 18:00
- Tuesday, 11th July 08:00 – 18:00
- Wednesday, 12th July 08:00 – 18:00

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.

Taxi companies

Jacobs Travel

www.gotomaastricht.eu
+31 43 6013877

Taxicentrale Maastricht

www.taxicentralemaastricht.nl
+31 43 204 10 20

ESB2023 SOCIAL AND NETWORKING EVENTS



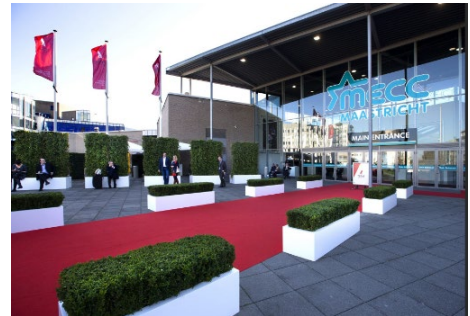
Welcome reception

9th July 2023 | 18:15



Venue: the expo area of the MECC at Trajectum on level 1, Maastricht

Warm welcome to all participants and occasion to catch up with colleagues!



Student Night

10th July 2023 | 19:30

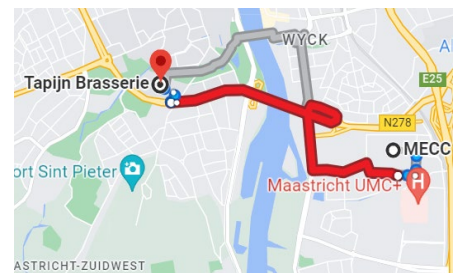


Event open to students exclusively!

**Venue: Brasserie Tapijn
Tapijnkazerne 20
6211 ME Maastricht**

Walk-in starts at 19:30. After that, there will be the student night at 20:00. This is a relaxed networking event with music, Dutch food ... and a speed dating student icebreaker game!
Organized in part by the ESB Education and Student Committee: Filippo Bertozzi, Chiara Dazzi, Ingmar Fleps, Aurélie Levillain, Laura Lafuente Gracia, Andrada Pica, Gianluca Santesarti, Sangita Swapnasrita, and Alexandra Tits.

How to get to the Student night venue



Congress dinner

11th July 2023 | 20:00

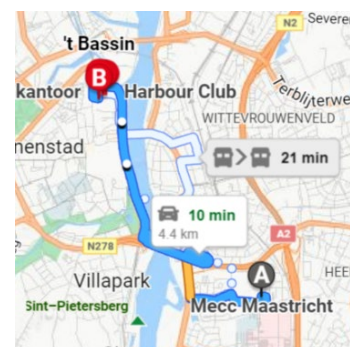


Venue: The Bassin

Enjoy a networking evening with colleagues and friends.

When you enter the inner harbor of The Bassin, you are in the middle of an historic part of Maastricht. You enter the port via the river Maas or the Zuid-Willemsvaart via authentic locks. A port with a rich history.

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.

If you have registered for the student night, you will receive a ticket for the student night. Please make sure to bring it to the student night.

NETWORKING AND MENTORING EVENTS

Meet an Expert

Tuesday | 11th July 2023 | 12:15 – 13:15
Room 0.10 Sydney

The “Meet an Expert” session will be held on Tuesday 11th of July during lunch time. Registered participants will have the opportunity to ask advice to a research or industrial expert of our field on how to succeed in becoming an independent scientist or how to manage work-life balance! Experts will also share about what they are currently working on, or what their next scientific challenges in research or industry are.



Women in Biomechanics

Monday | 10th July 2023 | 12:15 - 13:15
Room 0.10 Sydney

The *Women in Biomechanics* session will provide a space for discussion on diversity and inclusion in biomechanics and in the ESB in particular. The session will see a panel of women at diverse stages of their career who will share thoughts and reflexions on two themes: benefits of mentoring and overcoming systemic barriers and biases. The panel will be composed of Prof. M. Angeles Perez Anson of Zaragoza, Dr. Sandra Loerakker of Eindhoven, Dr. Sara Checa of Ch rity Berlin and Dr. Vee San Cheong of Singapore-ETH centre. The session will be led by Dr. Marl ne Mengoni of Leeds and Dr. Alexandra Tits of Li ge. The audience will have the opportunity to contribute to the discussion and to let their voices be heard. The aim of the session is to identify areas of growth for the ESB and develop an action plan for the Diversity, Inclusion and Membership Committee.

ESB2023 PRE COURSES

Statistical Shape Modeling

Sunday | 9th July 2023 | 08:30 – 10:30
Christophe Vab Dijck, Arsham makaryan | Sydney 0.10

Participants will learn the basic principles and examples of applications will be shown. A short introduction of the Mimics innovation suite will be presented by Arsham Makaryan.

In silico clinical trials and virtual cohorts

Sunday | 9th July 2023 | 13:45 – 15:45
Wouter Huberts, Sabine Verstraeten, Jan Bruning, Joeri Kok | Sydney 0.10

A multi-level methodology for virtual cohort generation and validation will be presented. Moreover, a virtual cohort of aortic stenosis will be shown. We will see examples for application of virtual cohort generation, validation and application.



AI basics and hybrid modelling: an introduction

Sunday | 9th July 2023 | 11:00 – 13:00
VPHi partners: Francesco Regazzoni, Raji Ganesan, Jan Bruning, Teodor Matei | Sydney 0.10

The AI basics and hybrid modelling will be explored. Moreover, some examples for application of AI in in-silico medicine will be shown.

From patient-based to in silico trials: status quo & future perspective

Sunday | 9th July 2023 | 16:45 – 18:15
Pablo Verde, Andreas Arndt, Liesbet Geris | Sydney 0.10

This course aims to show patient-based clinical trials from engineering metrics to clinical endpoints. A round table discussion will be carried out.

ESB2023 AWARDS SESSIONS



ESB Huiskes Medal for Biomechanics

Monday | 10th July 2023 | 14:15-15.15
Auditorium 1



The Huiskes Medal for Biomechanics is the most prestigious ESB award. In honour of Prof. Rik Huiskes, it is given to senior researchers who have contributed significantly to biomechanics throughout their careers. The winner of the 2023 Huiskes Medal for Biomechanics is **Prof. Frank Baaijens** from TU Eindhoven, The Netherlands.

Frank Baaijens received his PhD from TU/e in 1987. In 1985 he joined Philips Research Laboratories in Eindhoven to work on Computational Mechanics. Since 1990, he has been a part-time professor of Computational Rheology at the Eindhoven University of Technology. In July 1995 he was appointed full professor in the Department of Mechanical Engineering. In October 2002 he was appointed full professor in the Department of BioMedical Engineering (Soft Tissue Biomechanics and Tissue Engineering). From 2003 to 2007, he was Dean of the Department of Biomedical Engineering, and from 2007 to 2014, he was Scientific Director of the national research program on BioMedical Materials (BMM). From 2015-2023 he served as Rector Magnificus of the Eindhoven University of Technology.

ESB Early Career Research Award

Monday | 10th July 2023 | 18:00-19:00
Auditorium 1

The ESB Early Career Research Award recognizes the development of an outstanding young researcher who contributes to the advancement of the theory and/or applications of biomechanics. The 2023 award winner is **Prof. Hans Kainz** from the University of Vienna, Austria. The title of his award talk is "*Internal loads and bone growth*".

Hans Kainz obtained a PhD in Biomechanics at Griffith University (Australia) in 2016. From 2014 to 2016 Hans worked part-time as a rehabilitation engineer at the Gait Laboratory of the Queensland Children's Hospital (Australia). Afterwards, from 2017 to 2020, he was a Postdoctoral Research Fellow at KU Leuven (Belgium). Since March 2020 Hans is an Assistant-Professor at the University of Vienna (Austria), where he established the Neuromechanics Research Group. His research group employs medical images, three-dimensional motion capture data and neuro-musculoskeletal simulations to enhance our understanding of typical and pathological movements, internal loading and bone growth.



ESB Student Award

The student award session will take place on **Tuesday, 11th July from 14:15 – 15:15**, in **Auditorium 1**. One prize and three runner-up awards will be given to the four finalists. Each finalist will present his/her work, after which the audience will vote to decide on the winner. Make sure you are in time and stay for the entire session, in order to take part in the voting.

- Mechanics underlies impaired angiogenesis and endothelial mosaicism in cerebral cavernous malformations
Apeksha Shapeti, KU Leuven, Belgium
- A multiscale approach to study chondrocyte mechanobiology using a cartilage on chip setup
Satanik Mukherjee, KU Leuven, Belgium
- A correlative multimodal imaging approach for spatial transcriptomics mechanoregulation analysis
Francisco Correia Marques, ETH Zürich, Switzerland
- Osteoarthritis patients classification based on support vector machines and regulatory network models
Maria Segarra-Queralt, Universitat Pompeu Fabra, Spain

ESB Poster Award

The ESB Poster Award recognizes the best poster presented at the congress. Apart from the poster presentation, the quality of the abstract (used to preselect candidates) and the poster pitch video (new as of this year) are considered as well. The winner will be announced during the closing ceremony.

ESB Travel Awards

The ESB Council awards Travel Awards to financially help young, promising researchers to participate at the ESB congress. The awards will be presented during the congress dinner.

2023 ESB Best Doctoral Thesis Award

Wednesday | 12th July 2023 | 14:15 – 15:15
Auditorium 1

The Best Doctoral Thesis in Biomechanics recognizes the development of an outstanding doctoral thesis that has contributed to the advancement of the theory and/or



applications of biomechanics. The 2023 award winner is dr. Anna Corti for her thesis entitled “Multiscale modeling of vascular adaptation” conducted at the Politecnico di Milano (Milan, Italy) under supervision of Profs. José Felix Rodriguez Matas, Claudio Chiastra and Francesco Migliavacca. In the PhD thesis, multiscale agent-based modeling frameworks of vascular adaptation processes were developed, integrating continuum and agent-based methods, to investigate the mechanobiological mechanisms governing arterial wall remodeling in atherosclerosis and restenosis following endovascular procedures. The multiscale frameworks enabled the analysis of interactions, feedback mechanisms and cascade signaling pathways across different spatiotemporal scales. In particular, the validated patient-specific framework of in-stent restenosis was able to predict the short- and long-term arterial response to the endovascular intervention in patient-specific stented femoral arteries.

Anna Corti is a Post-Doctoral Researcher at Politecnico di Milano (Italy). She obtained the PhD in Bioengineering at Politecnico di Milano in July 2022 with a thesis entitled “Multiscale modeling of vascular adaptation”. Dr. Corti has authored 13 scientific papers on international peer-reviewed journals, 2 book chapters, 6 conference proceedings and 25 contributions to national and international conferences. She presented her research national and international conferences with 4 invited talks, 13 podium presentations and 3 poster presentations. She is also a Review Editor of Frontiers in Medical Technology, section Cardiovascular MedTech. Her research was awarded with numerous prestigious national and international awards, such as the Best VPHi Student Award 2020, ESB Student Award 2021, the ESB Best Doctoral Thesis Award in Biomechanics 2023, the GBMA-AIMETA Best Doctoral Thesis in Theoretical and Applied Biomechanics, and the VPHi Best Thesis Award in In Silico Medicine.

INVITED KEYNOTE SPEAKERS



Grace O'Connell

*Associate Professor of Mechanical Engineering
Associate Dean for Inclusive Excellence, College of Engineering
University of California, Berkeley, USA*

**Lecture: 3D Modeling of the Intervertebral Disc:
direct relationship between tissue composition
and model parameters Enabling in silico trials based on
modelling, simulations, and big data**

**Monday | 11th July 2023 | 08:30 – 09:30
Auditorium 1**

Grace O'Connell is an Associate Professor in the Department of Mechanical Engineering at the University of California, Berkeley. She is the co-director of the Berkeley Biomechanics Laboratory, and her research interests are in soft tissue mechanobiology and tissue engineering. O'Connell received PhD in Bioengineering from the University of Pennsylvania in 2009, where her research focused on intervertebral disc biomechanics with age, degeneration, and injury. O'Connell's research group employs computational modeling and experimental approaches to study the effect of aging and disease on tissue- and joint-level mechanobiology. She has received many awards including the 2019 YC Fung Young Investigator Award and NSF CAREER Award and was inducted into the AIMBE College of Fellows in 2021. She is also the Associate Dean for Inclusive Excellence for the College of Engineering.



Blanca Rodriguez

*Walter B. Professor of Computational Medicine
Wellcome Trust Senior Research Fellow
Fellow at St Cross College,
Department of Computer Science, University of Oxford, UK*

**Lecture: Enabling in silico trials based on modelling,
simulations, and big data**

**Tuesday | 10th July 2023 | 08:30 – 09:30
Auditorium 1**

Professor Blanca Rodriguez is Professor of Computational Medicine, Wellcome Trust Senior Research Fellow and Head of the Computational Biology and Health Informatics Theme at the Department of Computer Science, University of Oxford. She leads the Computational Cardiovascular Science team (www.cs.ox.ac.uk/ccs), with a key focus on career development, and interdisciplinary, intersectoral collaborations. She is interested in novel, interdisciplinary approaches to accelerate therapy development, and replace animal testing. Blanca is from Valencia, Spain, where she trained in Engineering, and later as a postdoc in the USA. She then joined Oxford, holding personal research fellowships since 2007 and a professorship since 2014. She has three children and loves swimming, yoga, food and travelling amongst many other things.



Marino Arroyo

*Professor of Computational Mechanics
Universitat Politècnica de Catalunya, Barcelona, Spain*

**Lecture: Invasion in cancer organoids as the result
of a mechanobiological instability**

**Wednesday | 12th July 2023 | 08:30 – 09:30
Auditorium 1**

Marino Arroyo obtained a PhD in Mechanical Engineering from Northwestern University in 2003. After a postdoctoral stay at Caltech, he joined the UPC in 2005, where he is full professor since 2017. He is also an Associated Researcher at the Institute of Bioengineering of Catalunya (IBEC) and at the International Center for Numerical Methods in Engineering (CIMNE). His current work is at the interface between mathematical and computational modeling, engineering and mechanobiology. He has received the Zienkiewicz Young Scientist Award by ECCOMAS and is a fellow of IACM (2020). He obtained an ERC Starting grant in 2009 and a Consolidator grant in 2016. He has advised 11 completed PhD theses and 12 postdoctoral researchers.



PERSPECTIVE TALKS OVERVIEW



HOW BIOMECHANICS IS CHANGING WOUND CARE: CURRENT ACHIEVEMENTS AND FUTURE PROSPECTS

Amit Gefen; Tel Aviv University, Israel

Session 23.1

Room Paris 2, 12 July, 11.00-11.25

STICKING TOGETHER: COMPUTATIONAL MODELLING OF CELL-CELL AND CELL-MATRIX INTERACTIONS

Aurélie Carlier; Maastricht University, The Netherlands

Session 11.2

Room Copenhagen 8, 12 July, 15.45-16.10

MECHANOBIOLOGY FOR CLINICAL CANCER PROGNOSIS: CONTEMPORARY SCIENCE AND FUTURE APPLICATIVE PROSPECTS

Daphne Weihs; Technion-Israel Institute of Technology

Session 9.5

Room Athens 7, 12 July, 15.45-16.10

MODERN AI MEETS BIOMECHANICS: A NEW PARADIGM FOR IN SILICO MEDICINE

Tien-Tuan Dao; Centrale Lille Institut, France

Session 3.1

Room Copenhagen 8, 12 July, 15.45-16.10

MULTISCALE MODELING OF VASCULAR ADAPTATION PROCESSES: ACHIEVEMENTS AND FUTURE PERSPECTIVES

Claudio Chiastra; Politecnico di Torino, Italy

Session 8.3

Auditorium 1, 12 July, 15.45-16.10

TOWARDS PERSONALIZED SIMULATIONS AS PRE- PLANNING TOOL FOR CARDIOVASCULAR PROCEDURES

Giulia Luraghi; Politecnico di Milano, Italy

Session 21.3

Room Rome 6, 12 July, 15.45-16.10

CELL-BASED MODELING OF BIOMECHANICS IN BIOLOGICAL DEVELOPMENT

Roeland M. H. Merks; Leiden University, The Netherlands

Session 11.1

Room Copenhagen 8, 12 July, 11.00-11.25

NEWS FROM THE DEEP: MULTISCALE TISSUE MECHANICS OF COLD-WATER CORALS IN A CHANGING OCEAN

Uwe Wolfram; Heriot-Watt University, United Kingdom

Session 16.1

Room Sydney 5, 12 July, 11.00-11.25

MODELING MECHANICS OF 3D PRINTED CERAMIC BONE SUBSTITUTE IMPLANTS TOWARDS PERSONALIZED DEVICES

Pasquale Vena; Politecnico di Milano, Italy

Session 1.2

Room Berlin 4, 10 July, 11.00-11.25

ACTIVE MATTER MEETS BIOENGINEERING: HOW MODELS OF ACTIVE TISSUE MECHANICS CAN IMPROVE BIOFABRICATION

Bart Smeets; KU Leuven, Belgium

Session 27.1

Room Berlin 4, 10 July, 15:45-16:10

MULTISCALE MODELLING OF BONE BIOMECHANICS – THE STRUCTURAL ROLES OF MINERAL AND ORGANIC CONSTITUENTS

Ted Vaughan; University of Galway, Ireland

Session 16.3

Room Sydney 5, 12 July, 11:00 – 11:25

MECHANOBIOLOGY OF CANCER PROGRESSION

Manuela Teresa Raimondi; Politecnico di Milano, Italy

Session 9.4

Room Athens 7, 12 July, 11:00– 11:25

COLLAGEN FIBRIL NANOMECHANICS

Orestis G. Andriotis; TU Wien, Austria

Session 24.2

Room Paris 2, 10 July, 11:00 – 11:25

POPULATION-BASED MODELING INSIGHTS IN JOINT FUNCTION AND LOADING IN KNEE OSTEOARTHRITIS SUBJECTS

Ilse Jonkers; KU Leuven, Belgium

Session 19.2

Room Sydney 5, 10 July, 11:00 – 11:25

OPTIMALITY OF TRABECULAR BONE AT THE CONTINUUM LEVEL

Philippe Zysset; University of Bern, Switzerland

Session 16.2

Room Sydney 5, 11 July, 15.45-16.10

3D BIOPRINTED SCAFFOLD WITH CONTROLLED RELEASE OF MESENCHYMAL STEM SECRETOME FOR BONE REGENERATION

Michele Conti; University of Pavia, Italy

Session 27.2

Room Berlin 4, 11 July, 11.00-11.25

NOVEL APPROACHES IN COMPUTER-AIDED SCAFFOLD DESIGN FOR BONE REGENERATION

Sara Checa; Charite Universitaetsmedizin Berlin, Germany

Session 27.3

Room Berlin 4, 11 July, 15.45-16.10

X-RAY CT ASSESSMENT OF LUNG FUNCTION AND BIOMECHANICS

Sam Bayat; University of Grenoble Alpes, France

Session 22.1

Room Copenhagen 8, 10 July, 09.30-09.55

FROM MECHANOBIOLOGY OF AORTIC SMOOTH MUSCLE CELLS TO IMPROVED PROGNOSIS OF THORACIC AORTIC ANEURYSMS

Stéphane Avril; Mines Saint Etienne, France

Session 8.6

Auditorium 1, 11 July, 11:00 – 11:25

WHAT MECHANICAL QUANTITY DO CELLS REGULATE IN SOFT TISSUES?

Christian J. Cyron; Hamburg University of Technology, Germany

Session 24.3

Room Athens 7, 11 July, 11:00 – 11:25

TO ASSESS THE RISK FOR A SURGICAL INTERVENTION: THROUGH FLOW BIOPHYSICAL MODELING OR MACHINE LEARNING?

Irene Vignon-Clementel; INRIA, France

Session 21.2

Room Rome 6, 11 July, 11:00 – 11:25

THROMBUS MECHANICS: FROM MICROSTRUCTURE TO IMAGING AND DEVICE DESIGN

Frank Gijzen; Erasmus Medical Center, The Netherlands

Session 8.2

Auditorium 1, 10 July, 11:00-11:25

BUILDING AN ECOSYSTEM FOR DIGITAL TWINS IN HEALTHCARE

Liesbet Geris; KU Leuven, Belgium

Session 10.1

Room Rome 6, 12 July, 15:45- 16:10

CHEMO-MECHANICAL MODELS OF ACTIVE CELL FORCES IN GROWTH AND REMODELLING

Eoin McEvoy; University of Galway, Ireland

Session 9.1

Room Paris 2, 11 July, 15:45- 16:10

GUIDELINE FOR PRESENTERS AND CHAIRS



Guidelines for podium presenters

Please check the time and room of your presentation in the daily program 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 a back-up solution)
- the use of personal laptops for presentation is not allowed

Uploading Presentations:

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 sticks 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 July 10, you should come to upload your presentation on the day before (July 9) in the afternoon OR directly on July 10 at 7:30 am, if you are already in Maastricht. No presentations can be uploaded directly in the meeting rooms.

Make sure to **be present in the meeting room at least 5 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 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

During the conference your poster will be displayed for one entire conference day. The date depends on the track to which your poster is assigned. The **poster sessions** are scheduled as follows:

- Poster session 1 Monday, 10th July, 13:15 – 14:15
- Poster session 2 Tuesday, 11th July, 13:15 – 14:15
- Poster session 3 Wednesday, 12th July, 13:15 – 14:15

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 must 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.
- 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 their assigned days, between 08:00 and 08:30.
- Posters should be removed at the end of each day, between 18:00 and 19:00.

Poster pitch videos

All poster presenters were invited to complement their poster presentation with a short pitch video to accompany their work. Please check them out on our website (<https://esbiomech.org/conference/esb2023/poster-pitch-videos/>). Alternatively, you can download them from the Conftool agenda (make sure the agenda is in List View to have a download link) or within the Conference4Me app (click on a contribution and the subsequent “External resource A” download link). Finally, posters with a pitch video will have a QR code displayed on the poster (at the congress) that you can just scan in order to view them on your smartphone.

ESB2023 Chairs’ Guidelines

The chair of a session holds a key position in making the program 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.
- 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.
- The chair and co-chair **lead the session, but also the discussion**. Please ensure that the microphone is passed around in the audience. Recognize questions from the audience and allow each person who would like to do so to participate in the discussion.
- 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 do not exceed the time assigned for the session. The program is very tight, and it is important to avoid delays.
- If a presentation cannot be given or if a presenter does not appear (no-show), please stick to the original program and fill out the remaining time with questions or start a discussion.
- Once more, thank you for your contribution to the ESB2023 Congress.

If you have any questions before, during or after the conference, please contact the ESB2023 conference secretariat (at the registration desks)

ESB2023 PROGRAMME OVERVIEW



Sunday, 9th July 2023

Time	Location	Event
08:30 – 10:30	Sydney	Pre-course 1: Statistical Shape Modeling
11:00 – 13:00	Sydney	Pre-course 2: AI basics and hybrid modelling: an introduction
13:45 – 15:45	Sydney	Pre-course 3: In-silico clinical trials and virtual cohorts
16:45 – 18:15	Sydney	Pre-course 4: From patient-based to in-silico trials: status quo and future perspective
18:15 – 20:30	Expo Hall	Welcome reception

The Oral Session on Monday, Tuesday and Wednesday are split in tracks. One track can have several sessions. The tracks are color-coded as shown below.

Track	Session Name
1	3D printing in biomedicine
2	Advanced computing for biomechanics
3	AI / Data-driven modelling in biomechanics
4	Biofluids and transport
5	Biomaterials
6	Biomechanics of movement and posture
7	Biomedical imaging
8	Cardiovascular biomechanics
9	Cellular and molecular biomechanics / mechanobiology
10	Clinical and translational biomechanics / in silico clinical trials
11	Computational biology
12	Computer aided diagnosis, planning, and surgery
13	Dental biomechanics
14	Ergonomics / occupational biomechanics / rehabilitation
15	Experimental biomechanics
16	Hard tissue biomechanics
17	Impact / injury biomechanics
18	Implants / orthotics / prosthetics / devices
19	Musculoskeletal / joint biomechanics
20	Ocular biomechanics
21	Patient-specific modelling
22	Respiratory biomechanics
23	Skin biomechanics
24	Soft tissue biomechanics
25	Spine biomechanics
26	Sports biomechanics
27	Tissue engineering

Monday, 10th July 2023

	Auditorium 1	Paris	Brussels	Berlin
All day	Registration Open			
8:30–9:30	Opening + Keynote Grace O'Connell , Chair: Keita Ito, Location: Auditorium 1 Title: 3D Modelling of the intervertebral disc: direct relationships between tissue composition and model parameters			
9:30–10:30	Session 8.1 Cardiovascular biomechanics I: CFD/FSI 1 Chairs: Sandra Loerakker & Stéphane Avril	Session 24.1 Soft tissue biomechanics I: Soft tissue mechanical characterization I Chairs: Nele Famaey & Mathias Peirlinck	Session 15.1 Experimental biomechanics I: Nano- and micro- tissue biomechanics Chairs: Philipp Thurner & David Mitton	Session 1.1 3D printing in biomedicine I Chairs: Miguel Dias Castilho & Cecilia Persson
10:30–11:00	Coffee Break			
11:00–12:15	Session 8.2 Cardiovascular biomechanics II: Thrombi and plaques Chairs: Sandra Loerakker & Stéphane Avril	Session 24.2 Soft tissue biomechanics II: Fibril & tendon mechanics Chairs: Hanna Isaksson & Dulce Oliveira	Session 15.2 Experimental biomechanics II: tissue mechanics and novel methods Chairs: Philipp Thurner & Jean-Marc Allain	Session 1.2 3D printing in biomedicine II Chairs: Miguel Dias Castilho & Cecilia Persson
12:15–13:15	Lunch break and Women in Biomechanics			
13:15–14:15	Poster Session I, Location: Expo hall			
14:15–15:15	Huiskes Medal Award, Frank Baaijens , Chairs: David Mitton & Frans van de Vosse, Location: Auditorium 1			
15:15–15:45	Tea			
15:45–17:00	Session 8.3 Cardiovascular biomechanics III: Growth and remodeling Chairs: Patrick Segers & Gerhard Sommer	Session 20.1 Ocular biomechanics Chairs: Philippe Büchler & Jean-Marc Allain	Session 15.3 Experimental biomechanics III: Biomaterials, implants and surgical tools Chairs: Jérôme Molimard & mara Terzini	Session 27.1 Tissue engineering I: Computational tissue engineering Chairs: Ioannis Papantoniou & Michele Conti
17:00–18:00	Session 8.4 Cardiovascular biomechanics IV: Heart valves Chairs: Alberto Redaelli & Frank Gijssen	Session 8.11 Cardiovascular biomechanics XI: Vascular models Chairs: Carine Guivier-Curien & Wouter Huberts	Session 15.4 Experimental biomechanics IV: Mechanics of the knee joint & tissues Chairs: Dennis Janssen & Thomas Grupp	Session 4.4 Respiratory biomechanics II: Monitoring and care Chairs: Sam Bayat & Francesca Pennati
18:00–19:00	Early Career Research Award, Hans Kainz , Chairs: Michele Conti & Enrico Dall'Ara, Location: Auditorium 1 Title: Internal loads and bone growth			
19:00–20:00	Free time			
20:00–22:30	Student Night, Location: Brasserie Tapijn (Tapijnkazerne 20)			

Sydney	Rome	Athens	Copenhagen	
Registration Open				All day
Opening + Keynote Grace O'Connell , Chair: Keita Ito, Location: Auditorium 1 Title: 3D Modelling of the intervertebral disc: direct relationships between tissue composition and model parameters				8:30–9:30
Session 19.1 Musculoskeletal / joint biomechanics I: Cartilage and contact mechanics Chairs: Ruth Wilcox & Rami Korhonen	Session 7.1 Biomedical imaging I Chairs: Greet Kerckhofs & Ralph Müller	Session 8.10 Cardiovascular biomechanics X: Material characterization Chairs: Claudio Chiastra & Michele Conti	Session 22.1 Respiratory biomechanics I: CT imaging and in silico modelling Chair: Sam Bayat & Francesca Pennati	9:30 – 10:30
Coffee Break				10:30–11:00
Session 19.2 Musculoskeletal / joint biomechanics II: Subject-specific and population modelling Chairs: Ruth Wilcox & Rami Korhonen	Session 5.1 Biomaterials I: Polymers Chairs: Gwen Reilly & Bregje de Wildt	Session 6.1 Biomechanics of movement and posture I: Neuro-mechanics and motor control Chairs: William Taylor & Arielle Fischer	Session 26.1 Sports biomechanics I Chairs: Floren Colloud & Cédric Schwartz	11:00–12:15
Lunch break and Women in Biomechanics				12:15–13:15
Poster Session I, Location: Expo hall				13:15–14:15
Huiskes Medal Award, Frank Baaijens , Chairs: David Mitton & Frans van de Vosse, Location: Auditorium 1				14:15–15:15
Tea				15:15–15:45
Session 19.3 Musculoskeletal / joint biomechanics III: Bone and tendon Chairs: Harry Van Lenthe & Pasquale Vena	Session 5.2 Biomaterials II: Mechanical characterization Chairs: Gwen Reilly & Bregje de Wildt	Session 6.2 Biomechanics of movement and posture II: Clinical Biomechanics – Knee Chairs: Ilse Jonkers & William Taylor	Session 26.2 Sports biomechanics II Chairs: Floren Colloud & Cédric Schwartz	15:45–17:00
Session 19.4 Musculoskeletal / joint biomechanics IV: Knee biomechanics Chairs: Petri Tanska & Luca Modenese	Track 6.4 Biomedical imaging II Chairs: Greet Kerckhofs & Ralph Müller	Session 13.1 Dental biomechanics Chair: Chris Bourauel & Maria Perez Anson	Session 2.1 Advanced computing for biomechanics I Chair: Paulo Fernandes & Esther Reina-Romo	17:00–18:00
Early Career Research Award, Hans Kainz , Chairs: Michele Conti & Enrico Dall'Ara, Location: Auditorium 1 Title: Internal loads and bone growth				18:00–19:00
Free time				19:00–20:00
Student Night, Location: Brasserie Tapijn (Tapijnkazerne 20)				20:00–22:30

Tuesday, 11th July 2023

	Auditorium 1	Paris	Brussels	Berlin
8:30–9:30	Keynote Blanca Rodriguez , <i>Chair: Liesbet Geris, Location: Auditorium 1</i> <i>Title: Enabling in silico trials based on modelling, simulation and big data</i>			
9:30–10:30	Session 8.5 Cardiovascular biomechanics V: Medical devices and Treatments 1 <i>Chairs: Claudio Chiastra & Carine Guivier-Curien</i>	Session 8.7 Cardiovascular biomechanics XII: Image-based biomechanics <i>Chairs: Richard Lopata & Michal Neidlin</i>	Session 17.1 Impact / injury biomechanics <i>Chairs: Spyros Masouros & Sebastian Laporte</i>	Session 25.1 Spine biomechanics I: Devices <i>Chairs: Marlène Mengoni & Stephen Ferguson</i>
10:30–11:00	Coffee Break, <i>Location: Expo Hall</i>			
11:00–12:15	Session 8.6 Cardiovascular biomechanics VI: Aneurysms <i>Chairs: Sandra Loerakker & Gil Marom</i>	Session 25.2 Spine biomechanics II: Disorders <i>Chairs: Enrico Dall'Ara & David Mitton</i>	Session 18.1 Implants / orthotics / prosthetics / devices I: Fracture treatment <i>Chairs: Peter Varga & Dieter Pahr</i>	Session 27.2 Tissue engineering II: Applied tissue engineering <i>Chairs: Ioannis Papantoniou & Diana Massai</i>
12:15–13:15	Lunch break and Meet the Expert, <i>Location: Expo Hall</i>			
13:15–14:15	Poster Session II, <i>Location: Expo hall</i>			
14:15–15:15	ESB Student Award , <i>Chairs: Peter Varga & Aurelie Carlier, Location: Auditorium 1</i>			
15:15–15:45	Tea, <i>Location: Expo Hall</i>			
15:45–17:00	Session 24.4 Soft tissue biomechanics IV: Articular soft tissue mechanics <i>Chairs: Diana Massai & Dana Solav</i>	Session 9.1 Cellular and molecular biomechanics / mechanobiology I: Mechanobiology 1 <i>Chairs: Laoise McNamara & Manuela Teresa Raimondi</i>	Session 18.2 Implants / orthotics / prosthetics / devices II: Joint prosthetics: hip <i>Chairs: Luca Modenese & Mara Terzini</i>	Session 27.3 Tissue engineering III: Mechanics and tissue engineering <i>Chair: Alberto Sensini & Bart Smeets</i>
17:00–18:00	Session 8.7 Cardiovascular biomechanics VII: Cardiac mechanics <i>Chairs: Stéphane Avril & Choon Hwai Yap</i>	Session 4.1 Biofluids and transport I: Thrombosis and valves <i>Chairs: Xian Yun Xu & Diego Gallo</i>	Session 18.3 Implants / orthotics / prosthetics / devices III: Joint prosthetics: knee and shoulder <i>Chairs: Dennis Jansen & Ronja Schierjott-Hermle</i>	Session 25.3 Spine biomechanics III: Mechanobiology and biomechanics <i>Chairs: Marlène Mengoni & Stephen Ferguson</i>
18:00–19:00	ESB General Assembly, <i>Location: Auditorium 1</i>			
19:00–20:00	Free time			
20:00–22:30	ESB Congress Dinner, <i>Location: The Bassin (Bassinkade, Maastricht)</i>			

Sydney	Rome	Athens	Copenhagen	
Keynote Blanca Rodriguez , <i>Chair: Liesbet Geris, Location: Auditorium 1</i> <i>Title: Enabling in silico trials based on modelling, simulation and big data</i>				8:30–9:30
Session 19.5	Session 21.5	Session 6.5	Session 2.5	9:30 – 10:30
Musculoskeletal / joint biomechanics V: Ligamentous effects <i>Chairs: Esther Tanck & Ronja Schiejoft-Hermle</i>	Patient-specific modelling I: Biomechanical tissue patient-specific modelling <i>Chairs: Irene Vignon-Clementel & Giulia Luraghi</i>	Biomechanics of movement and posture III: Movement Biomechanics Methodology 1 <i>Chairs: Annegret Muendermann & Hans Kainz</i>	Advanced computing for biomechanics II <i>Chairs: Paulo Fernandes & Maria Perez Anson</i>	
Coffee Break				10:30–11:00
Session 19.6	Session 21.6	Session 24.6	Session 2.6	11:00–12:15
Hard tissue biomechanics I: Multiscale Tissue Mechanics <i>Chairs: Sara Checa & Philippe Zysset</i>	Patient-specific modelling II: Cardiovascular patient-specific modelling <i>Chairs: Simona Celi & Wouter Huberts</i>	Soft tissue biomechanics III: Soft tissue growth & remodelling <i>Chairs: Nele Famaey & Mathias Peirlinck</i>	Advanced computing for biomechanics III: Bone fracture and repair <i>Chairs: Esther Reina-Romo & Pankaj Pankaj</i>	
Lunch break and Meet the Expert				12:15–13:15
Poster Session II, <i>Location: Expo hall</i>				13:15–14:15
ESB Student Award , <i>Chairs: Peter Varga & Aurelie Carlier, Location: Auditorium 1</i>				14:15–15:15
Tea				15:15–15:45
Session 19.7	Session 21.7	Session 6.7	Session 3.7	15:45–17:00
Hard tissue biomechanics II: Bone Tissue Scale <i>Chairs: Pankaj Pankaj & Uwe Wolfram</i>	Patient-specific modelling III: Patient-specific modelling <i>Chair: Irene Vignon-Clementel & William Taylor</i>	Biomechanics of movement and posture IV: Movement Biomechanics Methodology 2 <i>Chairs: Annegret Muendermann & Peter Varga</i>	AI / Data-driven modelling in biomechanics I: Decision Support <i>Chairs: Christian J. Cyron & Tien-Tuan Dao</i>	
Session 19.8	Session 21.8	Session 9.8	Session 3.8	17:00–18:00
Musculoskeletal / joint biomechanics VI: Upper limb biomechanics <i>Chairs: Daniel Baumgartner & Annegret Muendermann</i>	Patient-specific modelling IV: Bone patient-specific modelling <i>Chairs: Harry van Lenthe & Benedikt Helgason</i>	Cellular and molecular biomechanics / mechanobiology II: Mechanobiology 2 <i>Chairs: Daphne Weihs & Manuela Teresa Raimondi</i>	AI / Data-driven modelling in biomechanics II: Gait <i>Chairs: Christian J. Cyron & Tien-Tuan Dao</i>	
ESB General Assembly, <i>Location: Auditorium 1</i>				18:00–19:00
Free time				19:00–20:00
ESB Congress Dinner, <i>Location: The Bassin (Bassinkade, Maastricht)</i>				20:00–22:30

Wednesday, 12th July 2023

	Auditorium 1	Paris	Brussels	Berlin
8:30–9:30	Keynote Marino Arroyo , Chair: Hans Van Oosterwyck, Location: Auditorium 1 Title: <i>Invasion in cancer organoids as the result of a mechanobiological instability</i>			
9:30–10:30	Session 8.8 Cardiovascular biomechanics VIII: CFD/FSI 2 Chairs: Monika Colombo & Umberto Morbiducci	Session 4.2 Biofluids and transport II: Emerging topics 1 Chairs: Xian Yun Xu & Diego Gallo	Session 18.4 Implants / orthotics / prosthetics / devices IV: Lower limb prostheses and orthoses Chairs: Jörg Miehling & Ronja Schierjott-Hermle	Session 25.4 Spine biomechanics IV: Biomechanics Chairs: Claudio Vergari & Marco Palanca
10:30–11:00	Coffee Break			
11:00–12:15	Session 24.5 Soft tissue biomechanics V: Soft tissue mechanical characterization II Chairs: Dulce Oliveira & Alex Vadati	Session 23.1 Skin biomechanics Chair: Amit Gefen & Edoardo Mazza	Session 18.5 Implants / orthotics / prosthetics / devices V: Joint prosthetics: knee Chairs: Thomas M. Grupp & Bernardo Innocenti	Session 12.1 Computer aided diagnosis, planning, and surgery I: Bone surgeries Chairs: María Angeles Pérez & Bert van Rietbergen
12:15–13:15	Lunch break, Location: Expo hall			
13:15–14:15	Poster Session III, Location: Expo hall			
14:15–15:15	Best Doctoral Thesis, Anna Corti , Chairs: Dieter Pahr & Peter Varga, Location: Auditorium 1 Title: <i>Multiscale modelling of vascular adaptation</i>			
15:15–15:45	Tea, Location: Expo hall			
15:45–17:00	Session 24.6 Soft tissue biomechanics VI: Soft tissue mechanical characterization III Chairs: Ilse Jonkers & Hanna Isaksson	Session 14.1 Ergonomics / occupational biomechanics / rehabilitation I Chairs: Xuguang Wang & Laurent Gajny	Session 18.6 Implants / orthotics / prosthetics / devices VI: Prosthetics and orthotics: Miscellaneous Chairs: Jérôme Molimard & Frank Jourdan	Session 12.2 Computer aided diagnosis, planning, and surgery II: Cardiac and other surgeries Chairs: María Angeles Pérez & Alberto Radaelli
17:00–18:15	Session 8.9 Cardiovascular biomechanics IX: Medical devices and treatments 2 Chairs: Francesca Pennati & Ted Vaughan	Session 14.2 Ergonomics / occupational biomechanics / rehabilitation II Chair: Xuguang Wang & Dana Solav	Session 4.3 Biofluids and transport III: Emerging topics 2 Chairs: Irene Vignon-Clementel & Patrick Segers	Session 16.5 Hard tissue biomechanics V: Bone remodeling and diseases Chairs: Dieter Pahr & Enrico Dall'Ara
18:15–18:45	ESB Closing Ceremony, Location: Auditorium 1			

Sydney	Rome	Athens	Copenhagen	
Keynote Marino Arroyo , Chair: Hans Van Oosterwyck, Location: Auditorium 1 Title: <i>Invasion in cancer organoids as the result of a mechanobiological instability</i>				8:30–9:30
Session 19.7 Musculoskeletal / joint biomechanics VII: Biomechanical measurement and modelling Chairs: Ruth Wilcox & William Taylor	Session 21.5 Patient-specific modelling V: Musculoskeletal patient-specific modelling Chairs: David Mitton & Richie Gill	Session 9.3 Cellular and molecular biomechanics / mechanobiology III: Mechanobiology 3 Chairs: Laoise McNamara & Maria Jose Gomez-Benito	Session 3.3 AI / Data-driven modelling in biomechanics III: Musculoskeletal System Chairs: Marie-Christine Ho Ba Tho & Bernardo Innocenti	9:30 – 10:30
Coffee Break				10:30–11:00
Session 16.3 Hard tissue biomechanics III: Bone Microstructure Chairs: Sara Checa & Pankaj Pankaj	Session 6.5 Biomechanics of movement and posture V: Clinical Biomechanics - Upper limb & Methods Chairs: Lennart Scheys & Hans Kainz	Session 9.4 Cellular and molecular biomechanics / mechanobiology IV: Mechanobiology 4 Chairs: Eoin Mcevoy & Diana Massai	Session 11.1 Computational biology I: Cell biomechanics Chairs: Aurélie Cartier & Stéphane Avril	11:00–12:15
Lunch break, Location: Expo Hall				12:15–13:15
Poster Session III, Location: Expo hall				13:15–14:15
Best Doctoral Thesis, Anna Corti , Chairs: Dieter Pahr & Peter Varga, Location: Auditorium 1 Title: <i>Multiscale modelling of vascular adaptation</i>				14:15–15:15
Tea, Location: Expo Hall				15:15–15:45
Session 16.4 Hard tissue biomechanics IV: Bone Strength Chairs: Bert van Rietbergen & Uwe Wolfram	Session 10.1 Clinical and translational biomechanics / in silico clinical trials I: Digital Twins Chairs: Marco Viceconti & Christine Mueri	Session 9.5 Cellular and molecular biomechanics / mechanobiology V: Mechanobiology 5 Chairs: Manuela Raimondi & Laoise McNamara	Session 11.2 Computational biology II: Computational biomechanics Chairs: Roeland Merks & Mariam Gomez-Benito	15:45–17:00
Session 19.8 Musculoskeletal / joint biomechanics VIII: Muscle, modelling, in vivo measurement Chairs: Zimi Sawacha & Sitikantha Roy	Session 10.2 Clinical and translational biomechanics / in silico clinical trials II: In Silico Trials Chairs: Marco Viceconti & Christine Mueri	Session 11.3 Computational biology III: Bone and cartilage modelling Chairs: Aurélie Cartier & Roeland Merks	Session 3.4 AI / Data-driven modelling in biomechanics IV: Cardiovascular System Chairs: Richard Lopata & Simona Celi	17:00–18:00
ESB Closing Ceremony, Location: Auditorium 1				18:00–19:00

ESB2023 DETAILED PROGRAMME

Monday, 10th July 2023

	Auditorium 1	Paris	Brussels	Berlin
All day	Registration Open			
8:30–9:30	Opening + Keynote Grace O'Connell, Chair: Keita Ito, Location: Auditorium 1 <i>Title: 3D Modelling of the intervertebral disc: direct relationships between tissue composition and model parameters</i>			
9:30–10:30	Session 8.1 Cardiovascular biomechanics I: CFD/FSI 1 <i>Chairs: Sandra Loerakker & Stéphane Avril</i>	Session 24.1 Soft tissue biomechanics I: Soft tissue mechanical characterization I <i>Chairs: Nele Famaey & Mathias Peirlinck</i>	Session 15.1 Experimental biomechanics I: Nano- and micro- tissue biomechanics <i>Chairs: Philipp Thurner & David Mitton</i>	Session 1.1 3D printing in biomedicine I <i>Chairs: Miguel Dias Castilho & Cecilia Persson</i>
	9:30 - 9:42 Haemodynamic analysis of different surgical strategies of a type-b aortic dissection via virtual grafting L. Girardin	9:30 - 9:42 Characterization of viscoelasticity and damage on arteries from hypoxic guinea pigs A. Bezmalinovic	9:30 - 9:42 Tomosaxs: multimodal volumetric analysis of collagen nano-to-microstructure E. Newham	9:30 - 9:42 Biomimetic 3D printed interfaces M. J. Mirzaali
	9:42 - 9:54 FSI computational model of a patient specific AAA validated by led illuminated piv F. Bardi	9:42 - 9:54 Impact of supercritical carbon dioxide as a decellularization agent for aortic tissue I. V. Silva	9:42 - 9:54 An integrated framework for evaluating mechanical properties and structure of articular cartilage M. Berni	9:42 - 9:54 Osteoinductive scaffold design: digital optimisation and prevention of over-specialisation C. Villette
	9:54 - 10:06 Modelling aortic flows: impact of wall displacements on large-scale hemodynamic coherence in ascending aorta A. Berardo	9:54 - 10:06 Thickness measurement in mechanical soft tissue testing: validation and uncertainty quantification H. Fehervary	9:54 - 10:06 Cyclic loading of healthy and degraded cartilage and the 3D collagen fibrillar response S. R. Inamda	9:54 - 10:06 Using melt-electrowritten fibrous mesh to elevate fluid pressurisation in hydrogels M. Castilho
	10:06 - 10:18 In silico hemodynamical simulations show secondary benefits of antihypertensive drugs J. Jagos	10:06 - 10:18 Multi-modal numerical-experimental setup to improve the identifiability of the material parameters of soft tissues A. Ashkenazi	10:06 - 10:18 Mechanical characterisation of lower limb vasculature in determining autograft suitability for peripheral arterial disease bypass surgeries C. McCarthy	10:06 - 10:18 Biomechanical characterization of a silk fibroin-based bioink for 3D printing in tissue regeneration G. M. Di Gravina
	10:18 - 10:30 A combined CFD and mesh mophing technique to investigate thoracic aorta hemodynamics F. Dell'Agnello	10:18 - 10:30 A methodological approach to interpret and compare the viscoelastic behaviour of biological tissues and hydrogels G. Serino	10:18 - 10:30 Nanoscale structural changes in bone cartilage unit subjected to compressive loads W. Badar	10:18 - 10:30 Nature-inspired toughening mechanism of 3D printed hydroxyapatite scaffolds for bone tissue engineering L. D'Andrea
	10:30–11:00	Coffee Break, <i>Location: Expo hall</i>		

Sydney	Rome	Athens	Copenhagen	
Registration Open				All day
Opening + Keynote Grace O'Connell , Chair: Keita Ito, Location: Auditorium 1 Title: 3D Modelling of the intervertebral disc: direct relationships between tissue composition and model parameters				8:30–9:30
Session 19.1	Session 7.1	Session 8.10	Session 22.1	
Musculoskeletal / joint biomechanics I: Cartilage and contact mechanics Chairs: Ruth Wilcox & Rami Korhonen	Biomedical imaging I Chairs: Greet Kerckhofs & Ralph Müller	Cardiovascular biomechanics X: Material characterization Chairs: Claudio Chiastra & Michele Conti	Respiratory biomechanics I: CT imaging and in silico modelling Chair: Sam Bayat & Francesca Pennati	
9:30 - 9:42 Contact-pressure based, multi-scale knee model to predict cartilage degeneration Y. Zhang	9:30 - 9:42 Contrast-enhanced MRA with grasp outperforms the conventional twist in aortic diseases patients cohort C. G. Calastra	9:30 - 9:42 Biomechanical properties of 3D printable material usable for synthetic personalized healthy human aorta S. Lin	9:30 - 9:55 X-ray CT assessment of lung function and biomechanics S. Bayat	
9:42 - 9:54 Using an equivalent surface to quantify congruence and contact variability in joints C. B. Burson-Thomas	9:42 - 9:54 A multi source statistical shape analysis framework for complex cardiovascular structures M. Mazzoli	9:42 - 9:54 Towards the development of a zebrafish action potential model L. Cestariolo	9:55 - 10:07 A multi-scale physics-based computational model of mechanical ventilation in covid-19 patients A. Vadati	
9:54 - 10:06 Parametric analysis of osteochondral grafts in human tibiofemoral joints G. A. Day	9:54 - 10:06 Measurement of pressure drop in arterial stenosis with color doppler imaging S. Choupani	9:54 - 10:06 Anisotropic property characterization of human carotid plaques by using inverse finite element modeling A. C. Akyildiz	10:07 - 10:19 A realistic alveolar duct model for use in whole-lung respiratory simulations of mechanical ventilation S. Quicken	9:30 – 10:30
10:06 - 10:18 Knee cartilage mechanics in finite element analysis using inputs from different musculoskeletal software J. P. J. Peitola	10:06 - 10:18 Contrast-enhanced µCT for ex-vivo digital reconstruction of whole heart and mitral valve in an aged population H. Mehari Abraha	10:06 - 10:18 Aortic calcifications locally affect dissection behavior C. L. Donahue		
10:18 - 10:30 Quantifying cell forces exerted by chondrocytes in the context of osteoarthritis M. Vovchenko	10:18 - 10:30 Inter and intramuscular variability of rigidity in healthy and paretic muscles: ultrasound imaging K. Belghith	10:18 - 10:30 Measurement of high strain tensile failure properties of carotid plaque embolus analogs K. Manning		
Coffee Break, Location: Expo hall				10:30–11:00

Monday, 10th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 8.2 Cardiovascular biomechanics II: Thrombi and plaques <i>Chairs: Sandra Loerakker & Stéphane Avril</i>	Session 24.2 Soft tissue biomechanics II: Fibril & tendon mechanics <i>Chairs: Hanna Isaksson & Dulce Oliveira</i>	Session 15.2 Experimental biomechanics II: tissue mechanics and novel methods <i>Chairs: Philipp Thurner & Jean-Marc Allain</i>	Session 1.2 3D printing in biomedicine II <i>Chairs: Miguel Dias Castilho & Cecilia Persson</i>
11:00–12:15	11:00 - 11:25 Thrombus mechanics: from microstructure to imaging and device design F. Gijzen	11:00 - 11:25 Collagen fibril nanomechanics O. G. Andriotis	11:00 - 11:12 Dynamic tensile characterization of porcine bronchi P. Yeswanth	11:00 - 11:25 Modelling mechanics of 3D printed ceramic bone substitute implants towards personalized devices P. Vena
	11:25 - 11:37 Investigating rupture characteristics of tissue-engineered atherosclerotic plaque caps H. Crielaard	11:25 - 11:37 Tensile testing of single collagen fibrils from Achilles tendons from an osteogenesis imperfecta mouse model M. Fuchs	11:12 - 11:24 Measurements of the mechanical properties of skeletal muscle by ultrasonic elastography and shearing tests P. Lubin	11:25 - 11:37 Bi-layered electrospun and melt electrowritten PCL construct aiming towards a prosthetic vascular graft J. Pižorn
	11:37 - 11:49 INFLUENCE OF WALL shear and mechanical stress on atherosclerotic artery disease in human coronaries A. Tziotziou	11:37 - 11:49 Enzymatic digestion of tendonous collagen shows high specificity at the level of the individual fibril M. Rufin	11:24 - 11:36 In-situ determination of spatial strain maps in porcine growth plates based on MRI loading experiments J. Schwer	11:37 - 11:49 3D printed microfibre architectures with nonlinear elastic behaviour for tunable myocardial constructs G. Cedillo-Servin
	11:49 - 12:01 Elucidating the longitudinal impact of solid mechanics on atherosclerotic plaque in real coronary arteries J. L. Warren	1:49 - 12:01 Reduced in vivo loading leads to less regeneration and an altered collagen organization during healing of rat Achilles tendons I. Silva Barreto	11:36 - 11:48 Effect of humeral rotation on rotator cuff strain, loading and kinematics: an in-vitro study I. Santos	11:49 - 12:01 Coronary microvascular disease: how to assess the local hemodynamic changes M. Colombo
	12:01 - 12:13 3D modelling of carotid artery and plaque progression using coupled agent based and finite element methods S. Tomasevic	12:01 - 12:13 Development and mechanical evaluation of an innovative device for soft tissue repair M. Rodriguez Reinoso	11:48 - 12:00 Multidic and duodic: open-source software for 3D digital image correlation and their applications in biomechanics D. Solav	12:01 - 12:13 Rational design of tubular fiber scaffolds for a small diameter vascular graft J. Iamsamang
			12:00 - 12:12 In vitro characterization of load transfer in cervical disc replacement arthroplasty A. Ramos	
	12:15–13:15	Lunch break and Women in Biomechanics, <i>Location: Expo hall</i>		
13:15–14:15	Poster Session I, <i>Location: Expo hall</i>			
14:15–15:15	Huiskes Medal Award, Frank Baaijens , <i>Chairs: David Mitton & Frans van de Vosse, Location: Auditorium 1</i>			
15:15–15:45	Tea, <i>Location: Expo hall</i>			

Sydney	Rome	Athens	Copenhagen	
Session 19.2	Session 5.1	Session 6.1	Session 26.1	
Musculoskeletal / joint biomechanics II: Subject-specific and population modelling <i>Chairs: Ruth Wilcox & Rami Korhonen</i>	Biomaterials I: Polymers <i>Chairs: Gwen Reilly & Bregje de Wildt</i>	Biomechanics of movement and posture I: Neuro-mechanics and motor control <i>Chairs: William Taylor & Arielle Fischer</i>	Sports biomechanics I <i>Chairs: Floren Colloud & Cédric Schwartz</i>	
11:00 - 11:25 Population-based modelling insights in joint function and loading in knee osteoarthritis subjects I. Jonkers	11:00 - 11:12 Influence of NaOH treatment and fiber orientation on PCL electrospun scaffold frictional properties E. G. Bissacco	11:00 - 11:12 Modular controller for predictive simulations of human stance and gait D. Muñoz	11:00 - 11:12 Windsurfing biomechanics: from a single gopro to markerless motion tracking and performance assessment S. Gavras	
11:25 - 11:37 Effect of geometry features on knee joint mechanics: subject-specific vs generic models based on 39 patients L. P. Li	11:12 - 11:24 Engineering curved membranes for drug absorption tests in the presence of artificial mucus L. Cacopardo	11:12 - 11:24 Unravelling adaptation strategies in sit-to-walk using predictive neuromuscular simulations E. van der Kruk	11:12 - 11:24 Lifters and jumper contributions to rugby lift performance - a preliminary study on elite players M. Bourgain	
11:37 - 11:49 The effect of variation in anatomical features on knee joint loading: a population-based modelling approach M. Willems	11:24 - 11:36 3D strain distribution via dvc in electrospun hierarchical scaffolds for tendon/ligament regeneration A. Sensini	11:24 - 11:36 Effect of vision and surface slope on postural sway in healthy adults M. Aghapour	11:24 - 11:36 Comparison of foot-ankle mechanics and muscular activation between running drills and running across different speeds. G. Abran	11:00–12:15
11:49 - 12:01 Open hands: an open source statistical finger model T. Munyebvu	11:36 - 11:48 A comprehensive study of the accelerated and real-time degradation behaviour of bioresorbable braided stents A. Lucchetti	11:36 - 11:48 Can altered motor control decrease joint loads in people with typical and increased anteversion angles? H. Kainz	11:36 - 11:48 Lower limb muscle forces in table tennis footwork during topspin forehand based on musculoskeletal Y. He	
12:01 - 12:13 Automated shoulder morphing to assess subject specific biomechanics of rotator cuff tear and osteoarthritis A. Oswald		11:48 - 12:00 Dynamic stability during virtual height exposure in children with cerebral palsy – a case-control pilot study R. Lohss	11:48 - 12:00 Sonification analysis of midfoot plantar pressure in pronated and not pronated runners V. Tessutti	
Lunch break and Women in Biomechanics, <i>Location: Expo hall</i>				12:15–13:15
Poster Session I, <i>Location: Expo hall</i>				13:15–14:15
Huiskes Medal Award, Frank Baaijens, Chairs: David Mitton & Frans van de Vosse, Location: Auditorium 1				14:15–15:15
Tea, <i>Location: Expo hall</i>				15:15–15:45

Monday, 10th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 8.3	Session 20.1	Session 15.3	Session 27.1
	Cardiovascular biomechanics III: Growth and remodelling <i>Chairs: Patrick Segers & Gerhard Sommer</i>	Ocular biomechanics <i>Chairs: Philippe Büchler & Jean-Marc Allain</i>	Experimental biomechanics III: Biomaterials, implants and surgical tools <i>Chairs: Jérôme Molimard & Mara Terzini</i>	Tissue engineering I: Computational tissue engineering <i>Chairs: Ioannis Papantoniou & Michele Conti</i>
	15:45 - 16:10 Multiscale modelling of vascular adaptation processes: achievements and future perspectives C. Chiastra	15:45 - 15:57 Patient specific finite element analysis of human corneal lenticles: an experimental and numerical study M. H. Nambiar	15:45 - 15:57 Validation of osteoporotic synthetic femora – a more realistic alternative to epoxy bones? M. Hollensteiner	15:45 - 16:10 Active matter meets bioengineering: how models of active tissue mechanics can improve biofabrication B. Smeets
	16:10 - 16:22 Role of angiotensin 1b receptors in inducing regional disparities in hypertensive aortic remodelling C. Cavinato	15:57 - 16:09 Mechanical characterization of porcine corneas through digital image correlation analysis M. Frigelli	15:57 - 16:09 An exhaustive test protocol for the mechanical characterization of surgical meshes V. Civilini	16:10 - 16:22 Mechanobiological regulation of large bone defect regeneration within mew and fdm scaffolds C. Dazzi
15:45–17:00	16:22 - 16:34 Load-induced microstructural changes of collagen and elastin fibers in the human aortic wall are layer-specific A. Pukaluk	16:09 - 16:21 An energetic analysis of the non-contact tonometry: combining numerical simulations and clinical images E. Redaelli	16:09 - 16:21 What do surgeons hear and feel when breaching cortical walls and how do breaches effect screw purchase? T. Lange	16:22 - 16:34 Numerical investigation of the effect of shape modified stress environment on osteoblast bone remodelling. A. Alshammari
	16:34 - 16:46 Multiscale computational modeling of notch signaling in mechano-regulated growth and remodeling S. Loerakker	16:21 - 16:33 Patient-specific opto-mechanical modelling of photorefractive keratectomy B. Fantaci	16:21 - 16:33 Imaging and mechanical characterisation of human blood clot analogues with different compositions and degrees of contraction J. Cruys	16:34 - 16:46 Biomimetic bioreactor for air-liquid interface culture - skin tissue engineering application B. Masante
	16:46 - 16:58 In silico modelling of the multiscale and chemo-mechano-biological mechanisms behind vascular tone adaptation M. Marino	16:33 - 16:45 Modelling of eye lens function: optical and material properties B. Pierscionek	16:33 - 16:45 Characterizing poro-viscoelastic material properties of brain tissue-mimicking hydrogels M. P. Kainz	16:46 - 16:58 Development of a computational/experimental model of 3D vascularized tissues C. Martinelli

Sydney	Rome	Athens	Copenhagen	
Session 19.3	Session 5.2	Session 6.2	Session 26.2	
Musculoskeletal / joint biomechanics III: Bone and tendon <i>Chairs: Harry van Lenthe & Pasquale Vena</i>	Biomaterials II: Mechanical characterization <i>Chairs: Gwen Reilly & Bregje de Wildt</i>	Biomechanics of movement and posture II: Clinical Biomechanics – Knee <i>Chairs: Ilse Jonkers & William Taylor</i>	Sports biomechanics II <i>Chairs: Floren Colloud & Cédric Schwartz</i>	
15:45 - 15:57 Changes in subchondral bone microstructure and shape with age in tibial knee L. A. Muller	15:45 - 15:57 In silico – in vitro mechanical characterization of ti6al4v gyroid scaffolds F. Perez Boerema	15:45 - 15:57 The effect of implant design on support moment asymmetry in total knee arthroplasty patients during sit/stand tasks N. S. Ryan	15:45 - 15:57 Quadriceps and hamstrings force and rate-of-force development deficits in people before ACL surgery T. Yona	
15:57 - 16:09 Biomechanical assessment of bone graft stability using a femoral ovine model L. S Esquivel	15:57 - 16:09 Post-yield and failure in semi-crystalline plla: the role of plasticity in the amorphous phase A. R. Abaei	15:57 - 16:09 Knee joint pivot motion pattern during walking before and after unicompartmental arthroplasty R. Courteille	15:57 - 16:09 Upper limb cranking asymmetry during a wingate anaerobic test in wheelchair basketball players. F. Brassart	
16:09 - 16:21 Hyperelastic material properties of porcine growth plates vary by anatomical location L. Hucke	16:09 - 16:21 Multiscale computational models for predicting hydrogel viscoelastic properties N. Guazzelli	16:09 - 16:21 Muscle function after modified surgical treatment of complete hamstring avulsions in an elderly population M. Mauch	16:09 - 16:21 Predicting brain strain in rugby head impact simulations: identifying key features D. Stitt	15:45–17:00
16:21 - 16:33 Determining stress relaxation of trabecular bone to simulate press-fit conditions for cementless IMPLANTS T. Gersie	16:21 - 16:33 Porous titanium/brushite scaffolds for the treatment of large bone defects D. Abdulaziz	16:21 - 16:33 Similar knee mechanics but different muscle activity: time for augmented acl repair as alternative acl surgery L. Bühl	16:21 - 16:33 Running in children with hemiplegia using a new posterior leaf ankle foot orthosis F. Camuncoi	
16:33 - 16:45 3D strain measurement of the tendon-bone junction using in-situ xct mechanics and digital volume correlation A. Moayed	16:33 - 16:45 Tailored mechanical properties of polyvinyl alcohol hydrogels for articular cartilage repair S. Todros	16:33 - 16:45 Kinematic alterations induced by a subject-adapted fatiguing protocol suggests increased acl strain C. Alessandro	16:33 - 16:45 Muscle oxygen saturation as a biomarker to guide return to play after acute cruciate ligament reconstruction D. R. Seshadri	
16:45 - 16:57 A computational investigation of the tendon-to-bone insertion: the role of tissue anisotropy A. Malerba	16:45 - 16:57 Tuning the mechanical properties of alginate dialdehyde-gelatin (ada-gel) bioinks for bioprinting approaches by varying the oxidation degree J. Faber	16:45 - 16:57 Real world gait assessment in people before acl surgery using imu and statistical parametric mapping T. Yona		

Monday, 10th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 8.4	Session 8.11	Session 15.4	Session 22.2
	Cardiovascular biomechanics IV: Heart valves <i>Chairs: Alberto Redaelli & Frank Gijssen</i>	Cardiovascular biomechanics XI: Vascular models <i>Chairs: Carine Guivier-Curien & Wouter Huberts</i>	Experimental biomechanics IV: Mechanics of the knee joint & tissues <i>Chairs: Dennis Janssen & Thomas Grupp</i>	Respiratory biomechanics II: Monitoring and care <i>Chairs: Sam Bayat & Francesca Pennati</i>
	17:00 - 17:12 The effect of prestress in tavi procedure finite elements simulations on patient specific geometries V. Lissoni	17:00 - 17:12 Residual aortic dissection numerical modelling V. Deplano,	17:00 - 17:12 The gapping behaviour of the meniscus varies according to the tear type M. Sukopp	17:00 - 17:12 CFD simulations of the CO ₂ rebreathing in different helmet-like interfaces for the CPAP therapy delivery A. Formaggio
	17:12 - 17:24 Impact of patient morphology on valve thrombosis – combining patient data and computational modelling S. E. Jahren	17:12 - 17:24 Constituent-based quasi-linear viscoelasticity: capturing non-linear viscoelasticity with quasi-linear models A. Giudici	17:12 - 17:24 Patella design and isolated effects of patellar resurfacing in total knee arthroplasty M. Woiczinski	17:12 - 17:24 Experimental comparison of pressure performances in different CPAP delivery techniques M. De Luca
17:00–18:00	17:24 - 17:36 Biomechanical analysis of aortic roots based on echocardiographic images: differences between tricuspid and bicuspid aortic valve patients A. Aggarwal	17:24 - 17:36 Comparison of zero pressure geometry and prestress methodologies in cardiovascular in-silico analysis A. G. Mourato	17:24 - 17:36 How well does a new developed pivot tka restore the native kinematics: a cadaveric study C. Thorwächter	17:24 - 17:36 Modelling aerosol delivery in stenosed and stented tracheas considering different breathing conditions M. Malvè
	17:36 - 17:48 Computational modelling approaches to assess the in vitro performance of a tavr device S. Boxwell	17:36 - 17:48 Dissecting the role of elastin biomechanics using the finite element method P. Segers	17:36 - 17:48 Influence of biomechanical loading on the physical behavior of a hydrogel after injection into native human knees S. Krüger	17:36 - 17:48 Computational optimization of a sensorized 3D-printed smart patch for cardiorespiratory monitoring D. Bianchi
	17:48 - 18:00 Computational mitral valve modelling through a comprehensive MRI-based approach D. Tondi	17:48 - 18:00 Statistical modelling of the placental vasculature J. Quicken	17:48 - 18:00 Use of an industrial robot to record human knee kinematics in vitro - evaluation of the test method M. Nusser	
18:00–19:00	Early Career Research Award, Hans Kainz, Chairs: Michele Conti & Enrico Dall'Ara, Location: Auditorium 1 <i>Title: Internal loads and bone growth</i>			
19:00–20:00	Free time			
20:00–22:30	Student Night, <i>Location: Brasserie Tapijn (Tapijnkazerne 20)</i>			

Sydney	Rome	Athens	Copenhagen	
Session 19.4	Session 7.2	Session 13.1	Session 2.1	
Musculoskeletal / joint biomechanics IV: Knee biomechanics <i>Chairs: Petri Tanska & Luca Modenese</i>	Biomedical imaging II <i>Chairs: Greet Kerckhofs & Ralph Müller</i>	Dental biomechanics <i>Chair: Luger Keilig & María Perez Anson</i>	Advanced computing for biomechanics I <i>Chair: Paulo Fernandes & Esther Reina-Romo</i>	
17:00 - 17:12 Imu-based ground reaction forces and knee contact forces estimation in patients with knee OA G. Di Raimondo	17:00 - 17:12 Deep learning-based automatic segmentation of skeletal muscles Z. Lin	17:00 - 17:12 Experimental study on dental prostheses retrieval tools: removal efficiency and potential patients' discomfort A. T. Lugas	17:00 - 17:12 The influence of cross-linking on the deformation mechanism of collagen fibrils J. T. Kamml	
17:12 - 17:24 Sensitivity of knee joint finite element simulations to uncertainties in musculoskeletal modelling inputs S. Jahangir	17:12 - 17:24 Quantifying sex-related changes of bone mass in clinical trial CT scans using voxel-based morphometry A. Della Casa	17:12 - 17:24 Primary fixation of dental implants in bone surrogate in relation to insertion torque - biomechanical evaluation B. Yang	17:12 - 17:24 Uncertainty quantification coupled with finite element simulation of the second stage of labour T.-N.-T. Nguyen	
17:24 - 17:36 Reliability of a novel knee simulator and its concurrent validity against a validated dynamic knee simulator O. Taylan	17:24 - 17:36 Bone-fibrocarrilage crosstalk and osteocyte lacuno-canalicular network at the tendon-bone insertion A. Tits	17:24 - 17:36 Numerical investigation on the primary and secondary stability of root-analogue-implants L. Keilig	17:24 - 17:36 Towards predicting the discrete grades for progressive changes of knee osteoarthritis: a finite element study A. Paz	17:00–18:00
17:36 - 17:48 Experimental identification of a continuous, non-linear map of the knee compliance M. Conconi	17:36 - 17:48 Hierarchical phase-contrast tomography for scanning an intact human kidney and analysis of the vasculature across scales S. Rahmani	17:36 - 17:48 A semi-analytical model for stresses in the periodontal ligament for a tooth under loading L. R. Pavey	17:36 - 17:48 Sensitivity study of the hill muscle model in a musculoskeletal shoulder model A. Oswald	
17:48 - 18:00 Unilateral transfemoral amputees might be at risk of lateral compartment degeneration of the knee joint D. Toderita		17:48 - 18:00 Automatic real-time tool for the patient-specific performance evaluation of implant-supported dental rehabilitation treatment M. Sterba		
Early Career Research Award, Hans Kainz, Chairs: Michele Conti & Enrico Dall'Ara, Location: Auditorium 1 <i>Title: Internal loads and bone growth</i>				18:00–19:00
Free time				19:00–20:00
Student Night, Location: Brasserie Tapijn (Tapijkazerne 20)				20:00–22:30

Tuesday, 11th July 2023

	Auditorium 1	Paris	Brussels	Berlin
8:30–9:30	Keynote Blanca Rodriguez , Chair: Liesbet Geris, Location: Auditorium 1 Title: <i>Enabling in silico trials based on modelling, simulation and big data</i>			
9:30–10:30	Session 8.5 Cardiovascular biomechanics V: Medical devices and Treatments 1 Chairs: Claudio Chiastra & Carine Guivier-Curien	Session 8.12 Cardiovascular biomechanics XII: Image-based biomechanics Chairs: Richard Lopata & Michal Neidlin	Session 17.1 Impact / injury biomechanics Chairs: Spyros Masouros & Sebastian Laporte	Session 25.1 Spine biomechanics I: Devices Chairs: Marlène Mengoni & Stephen Ferguson
	9:30 - 9:42 Computational analysis of ventricular expander to treat diastolic dysfunction G. Marom	9:30 - 9:42 The reasons for differences between 2D and 3D echocardiography strain measurements C. H. Yap	9:30 - 9:42 Fracture management strategies influence the fracture hematoma proteome after multiple trauma C. Kuik	9:30 - 9:42 Semirigid spinal fixation techniques could help prevent proximal junctional kyphosis – a finite element study M. Turbucz
	9:42 - 9:54 Patient-specific combined fea-fsi methodology to model the tevar procedure A. Ramella	9:42 - 9:54 Investigation of subclinical hemolysis in aortic valve stenosis using 4D flow MRI-based CFD simulations T. Wang	9:42 - 9:54 Computational modelling for evaluating the effectiveness of protective plates in non-penetrating ballistic impacts M. Lustig	9:42 - 9:54 Biomechanical alterations after spinal fusion treatment and their relation to cage subsidence S. Ananth Swaminathan
	9:54 - 10:06 Modeling in-vitro maturation of tissue-engineered biohybrid heart valve implants M. Sesa	9:54 - 10:06 The impact of a limited field-of-view on computed hemodynamics in abdominal aortic aneurysms J. Fonken	9:54 - 10:06 A muscle model for injury simulation M. Millard	9:54 - 10:06 Automatic segmentation of the spine from MR and synthetic CT images J. Kok
	10:06 - 10:18 A multiscale model of in-stent restenosis in coronary arteries integrating drug kinetics with cell dynamics A. Corti,	10:06 - 10:18 A novel approach for examining motion and deformation of left ventricle: finite element analysis of 3D echocardiography data B. Cansiz	10:06 - 10:18 Cervical muscle reflexes during lateral accelerations M. Millard	10:06 - 10:18 Biomechanical effect of lumbar spine decompression: comparison of two different surgical techniques S. Montanari
10:18 - 10:30 In silico modelling of endovascular drug delivery from drug-coated balloons A. Fensterseifer Schmidt	10:18 - 10:30 Personalized finite element analysis of large abdominal aortic aneurysms using multi-perspective 3D+t ultrasound E. J. Maas	10:18 - 10:30 Development of a head acceleration event classification algorithm for female rugby union D. R. L. Powell	10:18 - 10:30 Influence of cervical total disc replacement on motion in the target segments and adjacent segments M. Vogt	
10:30–11:00	Coffee Break, Location: Expo hall			

Sydney	Rome	Athens	Copenhagen	
Keynote Blanca Rodriguez , <i>Chair: Liesbet Geris, Location: Auditorium 1</i> <i>Title: Enabling in silico trials based on modelling, simulations, and big data</i>				8:30–9:30
Session 19.5 Musculoskeletal / joint biomechanics V: Ligamentous effects <i>Chairs: Esther Tanck & Ronja Schierjott-Hermle</i>	Session 21.1 Patient-specific modelling I: Biomechanical tissue patient-specific modelling <i>Chair: Irene Vignon-Clementel & Giulia Luraghi</i>	Session 6.3 Biomechanics of movement and posture III: Movement Biomechanics Methodology 1 <i>Chairs: Annegret Muendermann & Hans Kainz</i>	Session 2.2 Advanced computing for biomechanics II <i>Chairs: Paulo Fernandes & María Angeles Pérez</i>	
9:30 - 9:42 Biomechanical analysis of knee joint flexion in healthy, cruciate deficient and cruciate substitute conditions E. Bori	9:30 - 9:42 Patient specific numerical study of an intracranial aneurysm mechanical characterisation device J. Raviol	9:30 - 9:42 Validation of a digital twin to quantify the level of motor control suboptimality in patients G. Davico	9:30 - 9:42 A new open-source workflow for multiscale modelling of hepatic perfusion M. A. Chetoui	
9:42 - 9:54 Can osteoarthritis after ACL reconstruction be explained by (altering) graft mechanical properties? J. Spierings	9:42 - 9:54 An inverse finite element analysis for the determination of the in vivo biomechanical properties of the bladder E. Silva	9:42 - 9:54 Knee flexion angle estimation based on functionally instead of anatomically defined coordinate systems A. Ancillao	9:42 - 9:54 Pre-operative risk assessment of paravalvular leakage using a computational tavi deployment model M. Spanjaards	
9:54 - 10:06 Length changes of the medial patellofemoral ligament during in vivo knee motion: a dynamic evaluation. M. R. Boot	9:54 - 10:06 Patient-specific modelling of the trapeziometacarpal joint ligaments T. Valerio	9:54 - 10:06 Evaluation of markerless motion capture using musculoskeletal models S. Auer	9:54 - 10:06 3D statistical shape modelling for classification of treatment effects on osteoporotic mouse bone geometry S. Moraiti	9:30 – 10:30
10:06 - 10:18 Tibiofemoral gaps of human cadaveric knees before and after sacrificing both cruciate ligaments S. A. Brendle	10:06 - 10:18 The influence of twisted structures of the Achilles tendon on strain distribution - patient-specific fe study A. Funaro	10:06 - 10:18 A frame orientation optimisation method to enable valid kinematic comparisons: assessing imu-based knee kinematics A. Ortigas Vásquez	10:06 - 10:18 Experiment and simulation study of the energy absorption in biomimetic scaffold lattices M. Vafaeefar	
10:18 - 10:30 Consequences of limiting electromyography and ground reaction forces on modelled anterior cruciate ligament forces A. Nasserri	10:18 - 10:30 A comprehensive biomechanical analysis of hemipelvic custom-made reconstructions in the long-term follow-up F. Taddei	10:18 - 10:30 Mimu based posturography: comparison of methods E. Pegolo	10:18 - 10:30 Pre-conditioning of training data for gaussian process regression enabled optimisation of the neovad L. D. Nissim	
Coffee Break, Location: Expo hall				10:30–11:00

	Auditorium 1	Paris	Brussels	Berlin
	Session 8.6	Session 25.2	Session 18.1	Session 27.2
	Cardiovascular biomechanics VI: Aneurysms <i>Chairs: Sandra Loerakker & Gil Marom</i>	Spine biomechanics II: Disorders <i>Chairs: Enrico Dall'Ara & David Mitton</i>	Implants / orthotics / prosthetics / devices I: Fracture treatment <i>Chairs: Peter Varga & Dieter Pahr</i>	Tissue engineering II: Applied tissue engineering <i>Chairs: Ioannis Papantoniou & Diana Massai</i>
11:00–12:15	11:00 - 11:25 From mechanobiology of aortic smooth muscle cells to improved prognosis of thoracic aortic aneurysms S. Avril	11:00 - 11:12 Strains and failure modes in human metastatic vertebrae M. Palanca	11:00 - 11:12 Prediction of overloading failure of osteosynthesis plates using validated finite element simulations D. Mischler	11:00 - 11:25 3D bioprinted scaffold with controlled release of mesenchymal stem secretome for bone regeneration M. Conti
	11:25 - 11:37 The impact of 4D-flow MRI-derived inlet conditions in flow simulations of aneurysmal type-b aortic dissection C. Stokes	11:12 - 11:24 Validation of homogenized finite element models of human metastatic vertebrae using digital volume correlation C. Garavelli	11:12 - 11:24 Towards unbiased and accurate simulations of screw-bone constructs with homogenized Fe models A. Synek	11:25 - 11:37 Paracrine effects of macrophage phenotype on tendon tissue remodelling H. F. M. Brouwer
	11:37 - 11:49 Merging 4D ultrasound and modified virtual fields method to regionally characterize abdominal aortic aneurysms M. Thirugnanasambandam	11:24 - 11:36 Intervertebral disc impact on stresses in growthplates of an adolescent idiopathic scoliotic spine following unilateral muscle weakening Z. Kamal	11:24 - 11:36 Simplified screw-bone interface models for computationally efficient μ Fe simulations P. Stefanek	11:37 - 11:49 Variable oxygen conditions and cardiomyocyte structure and function in novel immuno-heart chip A. A. Schmidt
	11:49 - 12:01 Analysing abdominal aortic aneurysm vessel, lumen and thrombus growth using 3D+t ultrasound A. Nievergeld	11:36 - 11:48 Spinal axial torque in adolescent idiopathic scoliosis before and after surgical correction C. Vergari	11:36 - 11:48 Fe analysis of an external stabilizer applied in treatment of the proximal phalanx fracture in horses M. Pawlikowski	11:49 - 12:01 The effects of anti-osteoporotic drugs on a 3D dynamic in vitro human bone remodelling model B. W. M. de Wildt
	12:01 - 12:13 Risk assessment of ascending aortic aneurysms using probabilistic material parameters and in vivo thickness S. Dreesen	11:48 - 12:00 Lower extremity gait biomechanics and their association with trunk flexion in patients with lumbar spinal stenosis C. Nüesch	11:48 - 12:00 Determination of the internal loads of the proximal phalanx during rehabilitation exercises P. Schwarzenberg	12:01 - 12:13 Mini invasive imaging window to guide and image foreign body reactions in vivo C. Conci
		12:00 - 12:12 Recovery of shoulder motion during gait at 1-week, 3-months and 1-year after spinal fusion surgery in ais T. Ackermans	12:00 - 12:12 Development of 3D printed patient-specific scaphoid implant to achieve customised scaphoid replacement S. L. Teng	
	12:15–13:15	Lunch break and Meet the Expert, <i>Location: Expo hall</i>		
13:15–14:15	Poster Session II, <i>Location: Expo hall</i>			
14:15–15:15	ESB Student Award , <i>Chairs: Peter Varga & Aurelie Carlier, Location: Auditorium 1</i>			
15:15–15:45	Tea, <i>Location: Expo hall</i>			

Sydney	Rome	Athens	Copenhagen	
Session 16.1 Hard tissue biomechanics I: Multiscale Tissue Mechanics <i>Chairs: Sara Checa & Philippe Zysset</i>	Session 21.2 Patient-specific modelling II: Cardiovascular patient-specific modelling <i>Chairs: Simona Celi & Wouter Huberts</i>	Session 24.3 Soft tissue biomechanics III: Soft tissue growth & remodelling <i>Chairs: Nele Famaey & Mathias Peirlinck</i>	Session 2.3 Advanced computing for biomechanics III: Bone fracture and repair <i>Chairs: Esther Reina-Romo & Pankaj Pankaj</i>	
11:00 - 11:25 News from the deep: multiscale tissue mechanics of cold-water corals in a changing ocean U. Wolfram	11:00 - 11:25 To assess the risk for a surgical intervention: through flow biophysical modelling or machine learning? I. Vignon-Clementel	11:00 - 11:25 What mechanical quantity do cells regulate in soft tissues? C. J. Cyron	11:00 - 11:12 Screw length impact on bone strain for a proximal humeral plate via a neural network model D. Mini	
11:25 - 11:37 Primary stability of cementless tibial trays during stair descent and deep knee bend: a micro-CT and DVC analysis L. S Wearne	11:25 - 11:37 CFD virtual angiogram for AVM pre-interventional treatment planning A. Blanch-Granada	11:25 - 11:37 Modelling and simulation of tissue growth caused by cell proliferation during morphogenesis Y. Yokoyama	11:12 - 11:24 Validated, high-resolution, non-linear, explicit finite element models for simulating screw push-in strength Y. Zhou	
11:37 - 11:49 Longitudinal subchondral bone microstructure and joint loading in rats with post-traumatic knee osteoarthritis J. Piet	11:37 - 11:49 Ultrasound-based FSI modelling of abdominal aortic aneurysms including patient-specific velocity profiles J. Fonken	11:37 - 11:49 A homogenized constrained mixture model for heart valve growth and remodelling E. Middendorp	11:24 - 11:36 Fracture angles influence healing in fully reduced distal femur fractures treated with locking plates X. Yu	11:00–12:15
11:49 - 12:01 Microscale compact bone properties of patients who underwent hip arthroplasty: influence of age and gender T. Kochetkova	11:49 - 12:01 Using digital twin technology to reduce animal studies for development of perinatal life support systems B. G. van Willigen	11:49 - 12:01 Parameter sensitivity and optimization of the mechano-immuno-driven model of endogenous tissue restoration H. Shirazi	11:36 - 11:48 A fully coupled computational framework for bone fracture repair in the presence of bioabsorbable magnesium fixation devices C. R. Quinn	
12:01 - 12:13 In vivo mechanical characterization of the osteoporotic distraction callus J. J. Toscano-Angulo	12:01 - 12:13 Assessment of the combined effects of valve phenotype and aneurysm progression on ATAA hemodynamics F. Galbiati	12:01 - 12:13 Reconciling the meso- and micro-scale mechanical properties of lung tissue using computational modelling A. Vadati	11:48 - 12:00 Feasibility of bone-like prostheses using a parametric trabecular bone model and dem simulations S. Laporte	
			12:00 - 12:12 Trabecular torsion can localise fracture in vitro in truss finite element models M. Pani	
Lunch break and Meet the Expert, <i>Location: Expo hall</i>				12:15–13:15
Poster Session II, <i>Location: Expo hall</i>				13:15–14:15
ESB Student Award , <i>Chairs: Peter Varga & Aurelie Carlier, Location: Auditorium 1</i>				14:15–15:15
Tea, <i>Location: Expo hall</i>				15:15–15:45

	Auditorium 1	Paris	Brussels	Berlin
	Session 24.4	Session 9.1	Session 18.2	Session 27.3
	Soft tissue biomechanics IV: Articular soft tissue mechanics <i>Chairs: Diana Massai & Dana Solav</i>	Cellular and molecular biomechanics / mechanobiology I: Mechanobiology 1 <i>Chairs: Laoise McNamara & Manuela Teresa Raimondi</i>	Implants / orthotics / prosthetics / devices II: Joint prosthetics: hip <i>Chairs: Luca Modenese & Mara Terzini</i>	Tissue engineering III: Mechanics and tissue engineering <i>Chairs: Alberto Sensini & Bart Smeets</i>
	15:45 - 15:57 Experimental investigations and constitutive modelling of the layer-dependent behaviour of the human oesophagus C. Durcan	15:45 - 16:10 Chemo-mechanical models of active cell forces in growth and remodelling E. McEvoy	15:45 - 15:57 Influence of anisotropic cortical bone properties in periprosthetic hip fractures Ö. Cebeci	15:45 - 16:10 Novel approaches in computer-aided scaffold design for bone regeneration S. Checa
	15:57 - 16:09 Mechanical characterisation of fat substitutes for subcutaneous drug delivery experimental model A. S. K. Kho	16:10 - 16:22 Mechanics of cell spheroids under large deformations D. Giannopoulos	15:57 - 16:09 Coatings osteoinductive effect calibration in aseptic loosening simulation of animal osteointegration experiment S. Baroni	16:10 - 16:22 Restoring disorganised tendinopathic tissue using magnetic topographical cues A. K. Mansoor
15:45–17:00	16:09 - 16:21 Freeze dried Wharton's jelly mechanical response change with hydration A. Baldit	16:22 - 16:34 Crosslinking enables long-ranged cell-matrix mechanics in a hybrid cellular pots and molecular dynamics model E. Tsingos	16:09 - 16:21 Patient-specific finite element model for intraoperative fractures prediction with a commercial design M. Petrucci	16:22 - 16:34 Design, characterization and testing of a platform for investigating cell response to controlled stretch G. Putame
	16:21 - 16:33 From animal model to human study: a mechanical and structural analysis of the stomach C. S. Holzer,	16:34 - 16:46 Agent-based modelling of spheroid-ECM interaction and evolution under fluid flow A. Carrasco-Mantis	16:21 - 16:33 Disrupted lubrication methodology to replicate squeaking on ceramic on ceramic hip joint replacements O. O'Dwyer Lancaster-Jones	16:34 - 16:46 Mechanical characterization of a triphasic mew PCL scaffold mimicking articular cartilage architecture A. Amicone
	16:33 - 16:45 A clot composition dependant hyperelastic model in the simulation of direct aspiration thrombectomy K. Bein Sneer	16:46 - 16:58 Alteration of microtubule mechanics by taxol: insights from multiscale analysis of tubulin dynamics M. Cannariato	16:33 - 16:45 Same offset, different stability: how head length affects taper junction micromotions in total hip arthroplasty F. A. Bologna	16:46 - 16:58 Large-scale production of ACPC-derived cartilage organoids F. Abinzano
	16:45 - 16:57 Evaluation of biomechanical properties of soft tissues mimicking phantoms by impact analyses A. Bouffandeau		16:45 - 16:57 Biomechanical analysis of hip cementless femoral stem designs in physiological and osteoporotic bone during different static loads E. Bori	

Sydney	Rome	Athens	Copenhagen	
Session 16.2	Session 21.3	Session 6.4	Session 3.1	
Hard tissue biomechanics II: Bone Tissue Scale <i>Chairs: Pankaj Pankaj & Uwe Wolfram</i>	Patient-specific modelling III: Patient-specific modelling <i>Chair: Irene Vignon-Clementel & William Taylor</i>	Biomechanics of movement and posture IV: Movement Biomechanics Methodology 2 <i>Chairs: Corina Nüesch & Peter Varga</i>	AI / Data-driven modelling in biomechanics I: Decision Support <i>Chairs: Christian Cyron & Tien-Tuan Dao</i>	
15:45 - 16:10 Optimality of trabecular bone at the continuum level P. Zysset	15:45 - 16:10 Towards personalized simulations as pre-planning tool for cardiovascular procedures G. Luraghi	15:45 - 15:57 Development of a 2-segment foot model for kinematic measurement of medical gait analysis L. Bauer	15:45 - 16:10 Modern ai meets biomechanics: a new paradigm for in silico medicine T.-T. Dao	
16:10 - 16:22 Mechanical properties of individual osteoporotic and control trabeculae in compression K. Haslinger	16:10 - 16:22 In silico development of patient-specific bariatric surgery I. Toniolo	15:57 - 16:09 Heel pad compression and impact during gait using ultrasonography and imu sensors: a pilot study L. Schluter	16:10 - 16:22 Prediction of knee osteoarthritis using machine learning enhanced finite element modelling approach – data from osteoarthritis initiative M. J. Turunen	
16:22 - 16:34 Mechanical loading of ex vivo bovine trabecular bone in 3D-printed bioreactors A. V. Correa	16:22 - 16:34 Can emg-driven musculoskeletal models estimate individual muscle displacements? C. P. Cop	16:09 - 16:21 A new synergy-based foot model: description of arches mobility in healthy and flat feet during GAIT M. Conconi	16:22 - 16:34 Predicting the premorbid anatomy of the scapula using generative models O. B. Satir	15:45–17:00
16:34 - 16:46 Micromechanical characterisation of osteoarthritic subchondral bone by micropillar compression S. McPhee	16:34 - 16:46 Ligament pre-tension determines outcome in sacroiliac joint in-silico modelling M. Heyland	16:21 - 16:33 An exploratory approach to muscular fatigue assessment during exoskeleton-assisted GAIT S. Pizzocaro	16:34 - 16:46 AI-based generation of multifarious medical data for in silico clinical trials R. Ganesan	
	16:46 - 16:58 An advanced modelling framework for assessing knee articular mechanics and soft tissue loading after total knee arthroplasty N. Guo	16:33 - 16:45 In water and on land forward and backward spatiotemporal gait characteristics C. Monoli		
		16:45 - 16:57 Kinetics of rat locomotion negotiating active perturbations E. Andrada		

Tuesday, 11th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 8.7	Session 4.1	Session 18.3	Session 25.3
	Cardiovascular biomechanics VII: Cardiac mechanics <i>Chairs: Stéphane Avril & Choon Hwai Yap</i>	Biofluids and transport I: Thrombosis and valves <i>Chairs: Xian Yun Xu & Diego Gallo</i>	Implants / orthotics / prosthetics / devices III: Joint prosthetics: knee and shoulder <i>Chairs: Dennis Jansen & Ronja Schierjott-Hermle</i>	Spine biomechanics III: Mechanobiology and biomechanics <i>Chairs: Marlène Mengoni & Stephen Ferguson</i>
	17:00 - 17:12 Myocardial trabeculae in zebrafish embryos improve tissue deformability and reduce stresses A. G. Cairelli	17:00 - 17:12 Assessment of thrombus formation in arterial stents M. Rezaeimoghaddam	17:00 - 17:12 Only in unloaded activities tka design features dominate in the amount of rolling and sliding P. Moewis	17:00 - 17:12 Oxygen diffusion dynamics within the intervertebral disc - a nanoscale agent-based model L. Baumgartner
	17:12 - 17:24 A biophysically detailed computational model of the four chamber human heart electromechanics R. Piersanti	17:12 - 17:24 Effects of shear stress-induced thrombus breakdown on thrombosis in aortic dissection K. Wang	17:12 - 17:24 Six dof knee gait kinematics of kinematic aligned tka A.-K. Einfeldt	17:12 - 17:24 A model to explore intervertebral disc cell activity in adverse biochemical environments S. Tseranidou
17:00–18:00	17:24 - 17:36 Regulatory mechanisms in cardiac active mechanics: from microscale models to multiscale numerical simulations F. Regazzoni	17:24 - 17:36 Computational simulation of patient-specific blood coagulation in stent thrombosis J. Cruts	17:24 - 17:36 FE study on the effect of patient-related variations on the primary fixation of a cementless peek tibial component C. Post	17:24 - 17:36 A cohort of patient-specific and virtual finite element models of intervertebral discs and model validation E. M. Muñoz-Moya
	17:36 - 17:48 Strain-controlled enzymic collagen degradation can explain the healthy native myocardial fiber organization an in-silico approach H. Hoursan	17:36 - 17:48 Numerical prediction of calcific regions in bioprosthetic heart valves: correlating imaging and simulation data P. Corso	17:36 - 17:48 Study of the locations and morphology of isolated knee focal cartilage defects using a statistical shape modelling approach M. Mohammad Sadeghi	17:36 - 17:48 AI-based identification of adult spinal deformities based on muscle activations P. Severijns
	17:48 - 18:00 A thermodynamic framework for sarcomere evolution in cardiomyocytes subjected to dynamic loading R. J. Coleman	17:48 - 18:00 Hemodynamic comparison of bioprosthetic valves based on in vitro 4D flow MRI F. Sturla	17:48 - 18:00 Influence of loading condition on the ability to predict humeral stress shielding C. Mueri	17:48 - 18:00 Biomechanical effects of lumbar multifidus and psoas major muscle dysfunction on the lumbosacral spine R. Remus
18:00–19:00	ESB General Assembly, <i>Location: Auditorium 1</i>			
19:00–20:00	Free time			
20:00–22:30	ESB Congress Dinner, <i>Location: The Bassin (address)</i>			

Sydney	Rome	Athens	Copenhagen	
Session 19.6	Session 21.4	Session 9.2	Session 3.2	
Musculoskeletal / joint biomechanics VI: Upper limb biomechanics <i>Chairs: Daniel Baumgartner & Annegret Muendermann</i>	Patient-specific modelling IV: Bone patient-specific modelling <i>Chairs: Harry van Lenthe & Benedikt Helgason</i>	Cellular and molecular biomechanics / mechanobiology II: Mechanobiology 2 <i>Chairs: Daphne Weihs & Manuela Teresa Raimondi</i>	AI / Data-driven modelling in biomechanics II: Gait <i>Chairs: Christian Cyron & Tien-Tuan Dao</i>	
17:00 - 17:12 Influence of the tear pattern on shoulder stability after arthroscopic superior capsular reconstruction M. Antunes	17:00 - 17:12 Predicting bone strength loss using voxel based morphometry and finite element modelling A. M. Baker	17:00 - 17:12 A thermodynamic framework for sarcomere formation in cardiomyocytes spread on micro-patterned substrates R. J Coleman	17:00 - 17:12 Gait phase identification based on IMU readouts using three gradient-boosted models A. Khandan	
17:12 - 17:24 Load-induced scapula rotation after rotator cuff tears during a 30° arm abduction movement E. Croci	17:12 - 17:24 Patient-specific bone modelling can better predict biomechanical outcomes of sacral fracture fixations M. Turbucz	17:12 - 17:24 Tissue scale agent-based model of the tension-mediated reversible fibroblast to myofibroblast transition Z. Karagöz	17:12 - 17:24 System based on artificial intelligence for detecting walking pace during human gait C. C. Silva	
17:24 - 17:36 Glenohumeral translation and muscle forces in ex vivo shoulders with rotator cuff injuries J. Genter	17:24 - 17:36 Finite element analysis for bone health assessment in Cushing's syndrome A. Giuliadori	17:24 - 17:36 Matrix stiffness-tgf- β 1 interplay regulates cardiac fibroblast contractility L. Hermans	17:24 - 17:36 Classifying physical activity level via kinematic GAIT data S. Galasso	17:00–18:00
17:36 - 17:48 Real-time optimization of upper limb joint kinematics through a constrained isb-consistent model M. Caruso	17:36 - 17:48 The effects of partial weight bearing on the healing process via biomechanical simulation A. Andres	17:36 - 17:48 Guiding cardiac fibroblast organization by stiffness patterns of GelMa hydrogels I. Jorba	17:36 - 17:48 Assisting clinical decision-making by predicting treatment response for paediatric movement disorders W. R. Taylor	
17:48 - 18:00 The modulation of muscular synergies as a function of unexpectedly perturbed grasping tasks E. Jakobowitz	17:48 - 18:00 Computational optimization of the primary fixation stability of proximal tibia fractures S. Comtesse	17:48 - 18:00 The effect of strain anisotropy on the interplay between notch signalling and vascular smooth muscle cells C. Karakaya	17:48 - 18:00 Fall recovery limitations for young adult and elderly models through coupled deep reinforcement learning simulations K. Nowakowski	
ESB General Assembly, <i>Location: Auditorium 1</i>				18:00–19:00
Free time				19:00–20:00
ESB Congress Dinner, <i>Location: The Bassin</i>				20:00–22:30

Wednesday, 12th July 2023

	Auditorium 1	Paris	Brussels	Berlin
8:30–9:30	Keynote Marino Arroyo , Chair: Hans van Oosterwyck, Location: Auditorium 1 Title: <i>Invasion in cancer organoids as the result of a mechanobiological instability</i>			
9:30–10:30	Session 8.8 Cardiovascular biomechanics VIII: CFD/FSI 2 Chairs: Monika Colombo & Umberto Morbiducci	Session 4.2 Biofluids and transport II: Emerging topics 1 Chairs: Xian Yun Xu & Diego Gallo	Session 18.4 Implants / orthotics / prosthetics / devices IV: Lower limb prostheses and orthoses Chairs: Jörg Miehling & Ronja Schierjott-Hermle	Session 25.4 Spine biomechanics IV: Biomechanics Chairs: Claudio Vergari & Marco Palanca
	9:30 - 9:42 Wall distensibility moderately affects wall shear stress topological skeleton at the carotid bifurcation S. Zambon	9:30 - 9:42 Computational simulation of haemodynamics in patient with va-ecmo B. Gu	9:30 - 9:42 The role of statistical shape models in the design framework of osseointegrated implants for distal femur V. Betti	9:30 - 9:42 Effects of intervertebral disc degeneration on the surface strain distribution of human vertebrae G. Cavazzoni
	9:42 - 9:54 Blood flow modelling in coronary arteries: Newtonian or non-Newtonian? G. De Nisco	9:42 - 9:54 Multi-objective optimization of hollow fibre membranes arrangement using modified enhanced jaya algorithm S. H. Monsefi	9:42 - 9:54 Implant stability and load transfer of osseointegrated transfemoral prosthesis G. Galteri	9:42 - 9:54 Structure and mechanics of the intervertebral disc-endplate junction analysed using synchrotron CT and DVC A. L. Parmenter
	9:54 - 10:06 A spatially varying multi-compartment model of the regulation of cerebral blood flow and volume S. J. Payne	9:54 - 10:06 Impact of sickle cell disease for oxygen transport in intracranial aneurysms M. S.Bazzi	9:54 - 10:06 Reasons for osteopenia in above the knee amputees: a biomechanical explanation J. L. Zavaleta Ruiz	9:54 - 10:06 Effect of facet joint degeneration on spinal unit biomechanics M. Mengoni
	10:06 - 10:18 Digital twin analysis of aortic root flow disturbances following transcatheter implantation and 4D MRI A. Banfalvi	10:06 - 10:18 How do sinusoidal scaffolds affect fluid flow-induced wall shear stress and mass transport? T. Baumgartner	10:06 - 10:18 Development of a pipeline for 3D printed customized plantar foot orthosis based on FEM and GAIT analysis Z. Sawacha	10:06 - 10:18 The effect of progressive herniation on lumbar intervertebral disc six degree of freedom mechanics M. P. Russo
		10:18 - 10:30 Development of nasal spray delivery system targeting at the posterior nose for mucosal immunization J. Xi	10:18 - 10:30 Verification of a passive ankle-foot orthosis design method by using truss models D. Scherb	10:18 - 10:30 Instability analysis after thoracic spinal compression and flexion-compression trauma: an in vitro study C. Liebsch
10:30–11:00	Coffee Break, Location: Expo hall			

Sydney	Rome	Athens	Copenhagen	
Keynote Marino Arroyo , Chair: <i>Hans van Oosterwyck</i> , Location: <i>Auditorium 1</i> Title: <i>Invasion in cancer organoids as the result of a mechanobiological instability</i>				8:30–9:30
Session 19.7	Session 21.5	Session 9.3	Session 3.3	
Musculoskeletal / joint biomechanics VII: Biomechanical measurement and modelling Chairs: <i>Ruth Wilcox & William Taylor</i>	Patient-specific modelling V: Musculoskeletal patient-specific modelling Chairs: <i>David Mitton & Nikolaos Aggelousis</i>	Cellular and molecular biomechanics / mechanobiology III: Mechanobiology 3 Chairs: <i>Laiose McNamara & Maria Gomez-Benito</i>	AI / Data-driven modelling in biomechanics III: Musculoskeletal System Chairs: <i>Marie-Christine Ho Ba Tho & Bernardo Innocenti</i>	
9:30 - 9:42 Impact of velocity on muscle force generation during long eccentric contractions T. Siebert	9:30 - 9:42 Clinical validation of static optimization during post stroke gait G. Giarmatzis	9:30 - 9:42 Mechanoregulation of bone formation during non-unions in prematurely ageing mice J. J. Kendall	9:30 - 9:42 Physics-informed neural networks for predicting fatigue during intermittent isometric tasks I. Loi	
9:42 - 9:54 Predictive control of plantarflexor muscle-tendon force during simulated human hopping M. Nabipour	9:42 - 9:54 Predicting knee cartilage degeneration in obese adults using patient-specific models: data from the carot trial H. Isaksson	9:42 - 9:54 Mechanobiochemical based orthotropic bone remodeling around uncemented acetabular component C. Mullakkara Saviour	9:42 - 9:54 Estimation of knee joint contact force maxima during gait using a video camera and demographic data J. J. Lavikainen	
9:54 - 10:06 A unifying approach for the standardisation of kinematic signals A. Ortigas Vásquez	9:54 - 10:06 Patient-specific bone plates: design strategies and biomechanical performance V. Moosabeiki	9:54 - 10:06 Mechano-biology of tissue regeneration within scaffolds in large bone defects comorbid with type 2 diabetes M. Jaber	9:54 - 10:06 Learning facial motion using deep reinforcement learning and finite element modelling D. P. Nguyen	9:30 – 10:30
10:06 - 10:18 Application of different optimisation criteria to standardise kinematic signals A. Sauer	10:06 - 10:18 Automated muscle localization and model-based estimation of ankle torques post-stroke via a wearable sensorised leg garment D. Simonetti	10:06 - 10:18 Prematurely aged polga mice exhibit degenerated osteocyte network and mechanosensation D. Yilmaz	10:06 - 10:18 Critical shoulder angle variability estimated with a causal Bayesian network P. Eghbali	
10:18 - 10:30 A LSTM framework for ankle joint biomechanics predictions from inertial sensors during gait L. Xiang	10:18 - 10:30 Influence of metastatic lesions on two models assessing vertebral failure H. Follet	10:18 - 10:30 Post-traumatic fibril reorientation in cartilage: adaptive in silico model validated against in vitro OA model S. A. Elahi	10:18 - 10:30 Generalization of machine learning model predictions of knee joint forces to post stroke gait G. Giarmatzis	
Coffee Break, Location: <i>Expo hall</i>				10:30–11:00

Wednesday, 12th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 24.5 Soft tissue biomechanics V: Soft tissue mechanical characterization II <i>Chairs: Dulce Oliveira & Alex Vadati</i>	Session 23.1 Skin biomechanics <i>Chair: Amit Gefen & Edoardo Mazza</i>	Session 18.5 Implants / orthotics / prosthetics / devices V: Joint prosthetics: knee <i>Chairs: Thomas Grupp & Bernardo Innocenti</i>	Session 12.2 Computer aided diagnosis, planning, and surgery I: Bone surgeries <i>Chairs: María Angeles Pérez & Bert van Rietbergen</i>
11:00–12:15	11:00 - 11:12 The effect of respiration on the in-vivo mechanical evaluation of linea alba by shear-wave elastography C. Vergari	11:00 - 11:25 How biomechanics is changing wound care: current achievements and future prospects A. Gefen	11:00 - 11:12 Contact area and contact pressure in knee implants: comparison of different testing and Fe methods J.-B. Weiß	11:00 - 11:12 Proposal of a new wrist model for surgical planning: the added benefits of 3D analysis R. Winter
	11:12 - 11:24 Estimating cerebral mechanical properties non-invasively through the use of tissue pulsations in the human brain S. J. Payne	11:25 - 11:37 On the mechanome of human skin E. Mazza	11:12 - 11:24 Wear rate comparison between additive manufactured and casted femoral components A. L. Puente Reyna	11:12 - 11:24 Optimizing bone regeneration in 3D scaffolds with computer-aided technology M. A. Perez Anson
	11:24 - 11:36 Region-dependent material parameters for full-scale human brain simulations S. Budday	11:37 - 11:49 Dermal fibroblasts feel and respond to physiological mechanical cues in vitro A. Martyts	11:24 - 11:36 Structural analysis of metallic orthopaedic implants based on ASFM standards: a software comparison study L. Modenese	11:24 - 11:36 Towards a computer-aided planning procedure for epiphysiodesis surgery A. Baeten
	11:36 - 11:48 Mechanical properties of the human pia-arachnoid complex P. Vandemaele	11:49 - 12:01 Investigation of gender-specific risks of skin folding after bariatric surgery: a computational approach J. Ralvoni	11:36 - 11:48 Effect of design parameters in fb & mb uka biomechanics B. Innocenti	11:36 - 11:48 Quantifying humeral head migration in shoulder osteoarthritis using biplanar radiography N. Daneshvarhashjin
	11:48 - 12:00 Biomechanics of the fetal membrane under different intrauterine pressures D. Fidalgo	12:01 - 12:13 Protecting the skin of patients who are positioned supine or prone M. Lustig	11:48 - 12:00 Kinematic vs mechanical alignment in medially-stabilised TKA: a matched-pairs kinematic analysis O. Taylan	11:48 - 12:00 Enhancing osseointegration using complex porous structures R. Asbai-Ghoudan
	12:00 - 12:12 Biomechanical integrity of the cervix in patients at low- and high-risk of preterm birth K. Myers		12:00 - 12:12 Validation of a knee finite element model for the development of surgical training models K. J. Bennett	12:00 - 12:12 Automatically designed patient-specific instrumentation for total ankle replacement: an in-vitro study M. Conconi
12:15–13:15	Lunch break, <i>Location: Expo hall</i>			
13:15–14:15	Poster Session III, <i>Location: Expo hall</i>			
14:15–15:15	Best Doctoral Thesis, Anna Corti , <i>Chairs: Dieter Pahr & Peter Varga, Location: Auditorium 1</i> <i>Title: Multiscale modelling of vascular adaptation</i>			
15:15–15:45	Tea, <i>Location: Expo hall</i>			

Sydney	Rome	Athens	Copenhagen	
Session 16.3 Hard tissue biomechanics III: Bone Microstructure Chairs: Sara Checa & Pankaj Pankaj	Session 6.5 Biomechanics of movement and posture V: Clinical Biomechanics - Upper limb & Methods Chairs: Lennart Scheys & Hans Kainz	Session 9.4 Cellular and molecular biomechanics / mechanobiology IV: Mechanobiology 4 Chairs: Eoin Mcevoy & Diana Massai	Session 11.1 Computational biology I: Cell biomechanics Chairs: Aurélie Cartier & Stéphane Avril	
11:00 - 11:25 Multiscale modelling of bone biomechanics - the structural roles of mineral and organic constituents T. Vaughan	11:00 - 11:12 Maximum arm elevation involves different spinopelvic mobilisation mechanisms in the asymptomatic population L. Gajny	11:00 - 11:25 Mechanobiology of cancer progression M. T. Raimondi	11:00 - 11:25 Cell-based modeling of biomechanics in biological development R. M. H. Merks	
11:25 - 11:37 Mineral content and mechanical properties of cement lines in human osteonal bone A. Cantamessa	11:12 - 11:24 Multibody kinematic optimization of scapular kinematics: the effect of marker weights F. Lefebvre,	11:25 - 11:37 Changes in cellular stiffness related to cancer-induced cytoskeleton reorganization L. Orlová	11:25 - 11:37 Mechanical modelling of cerebellar foliation caused by multicellular activities Y. Kameo	
11:37 - 11:49 Bone collagen tensile properties of the ageing human proximal femur S. D. Bracher	11:24 - 11:36 GAIT events detection in absence of the toes' and heels' position M. Hatamzadeh	11:37 - 11:49 An integrated finite element and agent-based model to analyse mechanosensitive tumour growth I. Senthilkumar	11:37 - 11:49 Computational insights into mechanical changes in bacterially infected cell monolayers M. J. Gomez-Benito	11:00–12:15
11:49 - 12:01 Mechanical environment around osteocytes during physiological loading A. Munoz	11:36 - 11:48 Comparison between two face mobility indexes for hypomimia assessment in Parkinson's disease E. Pegolo	11:49 - 12:01 Migration and traction force characterization of pancreatic ductal adenocarcinoma cells on stiffness-tuneable substrates S. Gabetti	11:49 - 12:01 Remodelling of 3D materials via a combination of the homogenized constrained mixture theory with plasticity F. Sempertegui	
12:01 - 12:13 Mineral mobilization near the lacunar and canal network in lactation M. Sieverts	11:48 - 12:00 An intelligent algorithm to predict movements and postures in spinal cord injured patients S. Caggiari	12:01 - 12:13 Data-driven 3D traction force microscopy in fibrillar hydrogels J. Barrasa Fano	12:01 - 12:13 Computational models of peritoneal dialysis S. Swapnasrita	
Lunch break, Location: Expo hall				12:15–13:15
Poster Session III, Location: Expo hall				13:15–14:15
Best Doctoral Thesis, Anna Corti, Chairs: Dieter Pahr & Peter Varga, Location: Auditorium 1 Title: Multiscale modelling of vascular adaptation				14:15–15:15
Tea, Location: Expo hall				15:15–15:45

Wednesday, 12th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 24.6	Session 14.1	Session 18.6	Session 12.2
	Soft tissue biomechanics VI: Soft tissue mechanical characterization III <i>Chairs: Ilse Jonkers & Hanna Isaksson</i>	Ergonomics / occupational biomechanics / rehabilitation I <i>Chairs: Xuguang Wang & Laurent Gajny</i>	Implants / orthotics / prosthetics / devices VI: Prosthetics and orthotics: Miscellaneous <i>Chairs: Jérôme Molimard & Frank Jourdan</i>	Computer aided diagnosis, planning, and surgery II: Cardiac and other surgeries <i>Chairs: María Angeles Pérez & Alberto Radaelli</i>
	15:45 - 15:57 A comparative study on the biomechanical properties of porcine meniscus in confined compression L. de Roy	15:45 - 15:57 Sensorised child walker for the assessment of rehabilitation therapies M. B. Estebanez Campos	15:45 - 15:57 Considering mixed epistemic and aleatoric uncertainty in the structural validation of a sapien-3 tavi fem-model N. Götzen	15:45 - 15:57 Ascending aortic aneurysm growth prediction based on machine learning and shape features derived from 3D slicer L. Geronzi
	15:57 - 16:09 Experimental assessment of mechanical changes in human osteoarthritic cartilage A. Berardo	15:57 - 16:09 Metabolic analysis of a wearable upper limb exoskeleton for overhead work G. Aronis	15:57 - 16:09 Effect of the lumbar belt on trunk mobility: a comparative clinical study A. Errabity	15:57 - 16:09 Inter-species differences in pulmonary artery morphometry and hemodynamics J. Brüning
15:45–17:00	16:09 - 16:21 Age influence on cut-out resistance of sutured meniscus: an experimental cadaveric study A. Peña-Trabalón	16:09 - 16:21 Bending response of a soft actuator for a wearable haptic device A. D. André	16:09 - 16:21 Investigating cervical collar design and fit: interface pressure and discomfort L. J. Russell	16:09 - 16:21 Integration of real-time simulations and augmented reality for catheter monitoring during percutaneous procedures V. Ruozi
	16:21 - 16:33 Parametric analysis of geometric variance in articular cartilage sample biomechanics using finite element V. Jönsson	16:21 - 16:33 Estimation of intersegmental load at L5-S1 during lifting/lowering task with markerless motion capture J. Jiang	16:21 - 16:33 Finite element model for the treatment of plagiocephaly by cranial orthosis. C. Cavinato	16:21 - 16:33 Machine learning and reduced order modelling for the simulation of braided stent deployment B. Bisighini
	16:33 - 16:45 Non-invasive MRI-based characterization of cartilage degradation using virtual fields method I. Mohout	16:33 - 16:45 Effects of an active back-supporting exoskeleton on kinematics during lifting and carrying loads H. Wackerle	16:33 - 16:45 A pipeline for mechanobiology-driven design of scaffolds M. J. A. Bedding-Tyrrell	
	16:45 - 16:57 Reduction of strain clusters in injured heel finite element models with a new pressure ulcer dressing N. Fougeron	16:45 - 16:57 Sensor-based continuous assessment of postoperative shoulder activity P. Varga		

Sydney	Rome	Athens	Copenhagen	
Session 16.4	Session 10.1	Session 9.5	Session 11.2	
Hard tissue biomechanics IV: Bone Strength <i>Chairs: Bert van Rietbergen & Uwe Wolfram</i>	Clinical and translational biomechanics / in silico clinical trials I: Digital Twins <i>Chairs: Marco Viceconti & Christine Mueri</i>	Cellular and molecular biomechanics / mechanobiology V: Mechanobiology 5 <i>Chairs: Daphne Weihs & Emanuela Jacchetti</i>	Computational biology II: Computational biomechanics <i>Chairs: Tommasi Ristori & Maria Gomez-Benito</i>	
15:45 - 15:57 The contribution of lower-mineralized tissue to the strength of fractured distal radii during healing M. Bevers	15:45 - 16:10 Building an ecosystem for digital twins in healthcare L. Geris	15:45 - 16:10 Mechanobiology for clinical cancer prognosis: contemporary science and future, applicative prospects D. Weihs	15:45 - 16:10 Sticking together: computational modelling of cell-cell and cell-matrix interactions A. Carlier	
15:57 - 16:09 Predicting femoral strength from 2D-3D DXA finite element models across age and ethnicities V. S. Cheong	16:10 - 16:22 In silico clinical trial to predict the efficacy of hip protectors for preventing hip fractures S. Oliviero	16:10 - 16:22 Generation of transgenic mice expressing fret-based tension sensor: measurement with conventional CLSM T. Matsumoto	16:10 - 16:22 YAP/TAZ and mechanical cues as temporal regulators of angiogenesis M. M. Passier	
16:09 - 16:21 Bone material strength index to differentiate early bone structure in patients affected by craniosynostosis A. Borghi	16:22 - 16:34 Stratifying hip fracture risk in the full ages Reykjavik cohort using finite element modelling A. D. Praveen	16:22 - 16:34 3D photopolymerized scaffold pore size regulates mesenchymal stem cell phenotype E. Jacchetti	16:22 - 16:34 A two-phase haemodynamic model for arterial microvascular bifurcations T. Wisitponchai	15:45–17:00
16:21 - 16:33 Statistical models informed by DXA images slightly outperform t-score in the prediction of hip fracture A. Aldieri	16:34 - 16:46 Using biofidelic fems to quantify the efficacy of invasive prophylactic treatments for hip fracture prevention A. Fung		16:34 - 16:46 Modelling midline shift and ventricle collapse in post-stroke cerebral oedema X. Chen	
16:33 - 16:45 QCT-based computational bone strength assessment updated with MRI-derived 'hidden' microporosity S. McPhee	16:46 - 16:58 Endoscopic strip craniectomy with helmet therapy: a computational tool for prediction of head reshaping L. Deliege		16:46 - 16:58 Towards modelling cold-water coral reef crumbling M. Peña Fernández	
16:45 - 16:57 Minimal detectable features in CT images and digital 3D models E. Benca				

Wednesday, 12th July 2023

	Auditorium 1	Paris	Brussels	Berlin
	Session 8.9	Session 14.2	Session 4.3	Session 16.5
	Cardiovascular biomechanics IX: Medical devices and treatments 2 <i>Chairs: Nele Famaey & Ted Vaughan</i>	Ergonomics / occupational biomechanics / rehabilitation II <i>Chair: Xuguang Wang & Dana Solav</i>	Biofluids and transport III: Emerging topics 2 <i>Chairs: Irene Vignon- Clementel & Patrick Segers</i>	Hard tissue biomechanics V: Bone remodeling and diseases <i>Chairs: Dieter Pahr & Enrico Dall'Ara</i>
	17:00 - 17:12 Limb flexion induced deformation of femoropopliteal artery stents in thiel embalmed cadavers S. Nandan	17:00 - 17:12 Predictive ergonomic evaluation of automotive digital workspaces K. Risvas	17:00 - 17:12 Data-driven generation of inlet velocity profiles for CFD modelling in thoracic aortic aneurysms S. Pirola	17:00 - 17:12 Homogenized fe models can predict hip joint loading using inverse bone remodelling at the Femoral Head S. Bachmann
	17:12 - 17:24 Role of vascular smooth muscle cell phenotype switching in the ross procedure: a computational study L. Maes	17:12 - 17:24 Validation of a method of locating the pelvis and spinal joint position in a seated position X. Wang	17:12 - 17:24 In search of cardiovascular biomarkers for pre-eclampsia R. van Loon	17:12 - 17:24 A platform for in-silico experiment of bone remodelling for understanding roles of mechano-chemical couplings Y. Kameo
17:00–18:15	17:24 - 17:36 On the impact of arterial modelling in coronary stenting simulations: a validated study on 5 patient-specific cases G. Poletti	17:36 - 17:48 Asymmetry of movements - a significant indicator of workplace ergonomics and well-being S. Winiarski	17:24 - 17:36 Modelling of cell-scale haemodynamics in the maternal intervillous space of human placenta Q. Zhou	17:24 - 17:36 In-silico approach to elucidate the pathways leading to primary osteoporosis: age-related vs. Postmenopausal R. Ruiz-Lozano
	17:36 - 17:48 Ultrastructural study of induced vascular damage caused by in vitro stenting G. Sommer	17:48 - 18:00 Instrumented harness to improve the welfare of guide dogs P. Zoeggeler	17:36 - 17:48 Numerical study of magnetic micro-beads steer by magnetic resonance navigation in tumour embolization M. Rezaei Adariani	17:36 - 17:48 Effect of the loading direction on the predicted mechanical properties of the mouse tibia S. M. Farage-O'Reilly
			17:48 - 18:00 Modelling blood flow in a micro-vessel bifurcation S. Payne	17:48 - 18:00 In silico exploration of osteoporosis drug effects on bone adaptation based on remodelling and modelling Y. K. Kim
				18:00 - 18:12 Limitations of homogenized finite elements analysis of distal tibia sections M. Simon
18:15–18:45	ESB Closing Ceremony, Location: Auditorium 1			

Sydney	Rome	Athens	Copenhagen	
Session 19.8	Session 10.2	Session 11.3	Session 3.4	
Musculoskeletal / joint biomechanics VIII: Muscle, modelling, in vivo measurement <i>Chairs: Zimi Sawacha & Sitikantha Roy</i>	Clinical and translational biomechanics / in silico clinical trials II: In Silico Trials <i>Chairs: Marco Viceconti & Christine Mueri</i>	Computational biology III: Bone and cartilage modelling <i>Chairs: Aurélie Cartier & Petri Tanska</i>	AI / Data-driven modelling in biomechanics IV: Cardiovascular System <i>Chairs: Richard Lopata & Simona Celi</i>	
17:00 - 17:12 Optical coherence tomography (oct) associated with clearing technique for measuring the evolution and degeneration of skeletal muscle optical parameters J. F. Escobar Huertas	17:00 - 17:12 From musculoskeletal digital twins to in silico trials of new interventions: a journey M. Viceconti	17:00 - 17:12 The role of anatomical location in scaffold-induced healing of craniofacial bone defects L. Lafuente-Gracia	17:00 - 17:12 Data-driven fsi simulation of ventricle and aorta integrating in vivo and in silico data M. A. Scarpolini	
17:12 - 17:24 Modeling of artificial muscle made of a fiber-reinforced conducting polymer for biomechanical applications S. Ghosh	17:12 - 17:24 Extraluminal and intraluminal artificial urinary sphincters: a comparison of biomechanical functionality M. V. Mascolini	17:12 - 17:24 Time-dependent computational model of cartilage mechanobiology during injurious and cyclic loading A. S. A. Eskelinen	17:12 - 17:24 A CT-based deep learning system for automatic assessment of aortic root morphology for tavi planning S. Saitta	
17:24 - 17:36 Impact of external flexion moment on patello femoral loading derived from in vivo loads and kinematics A. Trepczynski	17:24 - 17:36 Validation of the forceless framework for the differential diagnosis of dynapenia G. Davico	17:24 - 17:36 A mechanobiological model to simulate antioxidative treatment in impacted cartilage J. P Kosonen	17:24 - 17:36 Data-driven methods for patient-specific reduced order modelling of complex aortic flows C. Chatpattanasiri	17:00–18:00
17:36 - 17:48 Are kinematics and muscular function associated with mosaicism type in males with fragile x syndrome? F. Spolaor	17:36 - 17:48 In silico investigation of anti-angiogenic and cytotoxic treatments on an in vivo mammary carcinoma murine model V. Vavourakis	17:36 - 17:48 Genetic algorithm to calibrate a multiscale computer model of bone fracture healing E. Borgiani,	17:36 - 17:48 Aortic segmentation via synthetic data augmentation strategy from PC-MRI small dataset S. Garzia	
	17:48 - 18:00 Analysis of the effect of combined extracorporeal lung and kidney support using a cardiovascular model J.-N. Thiel	17:48 - 18:00 Accrual of osteoclast precursors drives bone loss after denosumab discontinuation: a digital twin study C. Ledoux	17:48 - 18:00 Deep residual ambivalent graph convolutional networks for biomarker prediction in large vessel networks A. B. Drysdale	
			18:00 - 18:12 Implementing digital twins of the cardiovascular system in clinical settings: an automated deep learning pipeline M. A. Scarpolini	
ESB Closing Ceremony, Location: Auditorium 1				18:00–19:00



Session I: 10 July 2023

Poster session I: 3D printing in biomedicine

Verification whether the porous structure manufacture with am method can be suitable for cell culture

S. Sikora, M. Pawlikowski, E. Bednarczyk, R. Grygoruk

Investigating the toolpath design of 3D-printed pva cryogels

L. V. Gale, A. Panieraki, J. P. Crolla, I. E. J. Thomas-seale

Mechanical behavior modelling for 3D-printed resorbable implants optimization and soft tissue reconstruction

X.-T.K. trinh, p. Lecomte-Grosbras, J.-F. Witz, O. Mayeur, f. Lesaffre, j. Destouesse, M. Cosson, T.-T. Dao

Design and rapid prototyping of a new cranial implant concept for cranioplasty

L. A. Zambrano Martínez, C. Asensio

Novel multi-layered 3D bioprinted construct as alternative vascular conduit replacement

F. Potere, G. Venturelli, B. Belgio, S. Guagliano, F. Briatico Vangosa, S. Boschetti, P. Petrini, S. Mantero

Fabrication of multi-layered biomaterials for vascular applications through sub-zero bioprinting

A. Panieraki, I. V. Gale, N. Mahmoodi, R. J. Dyson, I. E. J. Thomas-seale

Poster session I: Biomaterials

Identification of immunomodulatory topographies to regulate myofibroblast differentiation and influence fibrous encapsulation

P. K. Sudarsanam, T. Kuijpers, R. V. Mechelen, E. Alsema, J. D. Boer, H. Beckers

Cancer invasiveness is determined by cell adaptability to changes in microenvironment mechanics

M. Tulchinsky, D. Weihs

Innovative electrospun biomimetic myotendinous-inspired junctions for soft robotic applications

A. Sensini, R. D'anniballe, C. Gotti, I. De bellis, G. Marchiori, M. Fini, R. Carloni, M. L. Focarete, A. Zucchelli

Experimental self disinfecting alginate modified using silver nitrate, chlorohixidine and green synthesis

L. Singer, S. Karacic, C. Szekat, G. Bierbaum, C. Bourauel

Effect of brushing on the surface micro roughness of different types of cad/cam ceramics

R. D. Vasiliu, S. D. Porojan, I. Porojan

Characterization of hydration effect on haemostatic sponge structure using multimodal imaging

A. Baldit, c. Po, c. Laurent, h. Kerdjoudj, O. Perroud, J. Schiffler, N. Bahlouli, C. Mauprivez

Effect of denture cleaners on surface microroughness and hardness of cobalt-chromium alloys

L. Porojan, R. D. Vasiliu, S. D. Porojan, F. R. Toma

Structural and mechanical quantification of hybrid bone scaffolds with different calcium contents and sources

J. Liu, S. Rahmani, A. Heyraud, C. Disney, F. Tallia, A. Parmenter, J. Jones, P. Lee

Effect of polymer concentration on morphology and function of chitosan as drug-releasing scaffolds

E. Dathathri, G. Thakur, K. Koteshwara

Poster session I: Biomechanics of movement and posture

A biomechanical model-based system for assisting in clinical examination of Parkinson's disease patients

D. Lukšys, J. Griškevičius

Assessment of knee proprioception in patients after acl reconstruction or acl repair

P. Zalewska, T. Guszczyn, S. Piszczatowski

Integrated assessment of glenohumeral joint function during dynamic tasks: a preliminary study

E. Scalona, M. Mosso, G. Rossetto, M. F. Saccomanno, G. Milano, N. F. Lopomo

Effect of sensory interaction on balance control ability of freestyle ski aeriels athletes and healthy individuals

Y. Cheng, X. Wang, T. Zhao, I. Cao, Y. Gao

Impact of detailed skeletal models in the efficiency of forward dynamic simulation

F. Mouzo, F. Michaud, U. Luginis, J. Cuadrado

Missing muscle excitations prediction during walking through a muscle-synergies based calibration method

M. Romanato, F. Spolaor, Z. Sawacha

Performance of two pose estimation algorithms in gait analysis against the vicon reference system

A. A. Hulleck, M. Mohseni, M. K. Abu Hantash, R. Katmah, M. Almadani, N. Arjmand, K. Khalaf, M. El Rich

Mechanical model of human stability on external force-caused fall

M. Sopa, G. Sypniewska-Kamińska, T. Walczak, H. Kamiński

Poster session I: Biomedical imaging	Poster session I: Cardiovascular biomechanics	Poster session I: Dental biomechanics
<p>Three-dimensional osteocyte lacuno-canalicular network at the bone implant interface K. Abouzaid, T. Reiss, H. Albini-Iomami, G. Haïat, E. Vennat, S. Le Cann</p>	<p>Aortic local biomechanical properties in the case of ascending aortic aneurysms S. Lin, M. C. Morgant, D. M. Marín-castrillón, P. M. Walker, I. S. Aho Glélé, B. Presles, O. Bouchot, A. Lalande</p>	<p>Primary fixation of dental implants in bone surrogate - finite element analysis considering insertion damage B. Yang, A. Irastorza-landa, P. Heuberger, H.I. Ploeg</p>
<p>A contrast-enhanced x-ray imaging approach for characterizing articular cartilage S. Fantoni, M. Berni, M. Assenza, P. Cardarelli, A. Taibi, C. Trapella, V. Cristofori, F. Baruffaldi, N. F. Lopomo, M. Baleani</p>	<p>Insilico evaluation of aneurysm growth F. A. M. Garbou, O. Elnamla, W. A. K. A. Saber, K. Kose</p>	<p>Accuracy of cad-based and ct-based fe modelling to predict the fatigue behavior of porous titanium dental implants A. Vautrin, J. Aw, E. Attenborough, P. Varga</p>
<p>4D CT as a tool to measure scapholunate distance: an intra-and interobserver evaluation S. Goeminne, E. Salaets, W. Coudyzer, D. Shah, I. Degreef, I. Scheys</p>	<p>Cfd and csm models of the ascending thoracic aorta aneurysm with patient specific wall displacement R. B. Valente, A. Mourato, M. Brito, J. Xavier, A. Avril, A. Tomás, J. Fragata</p>	<p>The effect of alveolar bone crest shape on strain distribution in peri-implant bone tissue B. Thomková, T. Zikmund, J. Kaiser, M. Joukal, P. Marcián</p>
<p>Muscle diffusion tensor imaging: influence of segmentation on the determination of muscle architecture S. Vetter, H.-P. Köhler, M. Witt, J. Henkelmann, C. Roth</p>	<p>Modelling of fluid shear stress on smooth muscle cells in common carotid artery media S. Altundemir, K. Pekkan, A. K. Uguz</p>	<p>Fully crystalized versus partially crystalized lithium disilicate cad/cam blocks A. Fouda, M. Özcan, B. Stawarczyk, C. Bourauel</p>
<p>Neural radiance fields for vessel reconstruction from 2D x-ray coronary angiography projections – proof of concept A. J. E. Vermeer, K. W. H. Maas, P.-J.J. Vlaar, F. N. Vosse, M. van 't Ver</p>	<p>A computational framework for modelling patch-augmented aortic arch reconstruction R. Padmos, I. Noël, M. Peirlinck</p>	<p>Mandibular morphometry and tmj ankylosis: from the perspective of indian population G. Chandra, R. Ghosh, G. Khandelwal, A. Roychoudhury, S. Mukherjee, A. Chawla, K. Mukherjee</p>
<p>Coronary artery segmentation in hyperemia conditions for computed ffr analysis J. Festas, I. C. Sousa, C. C. António, S. Silva, S. I. Pinto</p>	<p>Fabrication of a patient-specific compliant and transparent phantom for in-vitro aortic dissection haemodynamics Q. Li, d. Nikitichev, J. Yu, V. Diaz-zuccarini, S. Balabani</p>	
<p>Deep learning thoracic aorta segmentation for feature extraction and hemodynamic analysis from 3D pc-MRI S. Garzia, M. A. Scarpolini, K. Capellini, V. Positano, F. Cademartiri, S. Celi</p>	<p>In-vitro haemodynamics in a patient-specific compliant dissected aorta Q. Li, V. Diaz-Zuccarini, S. Balabani</p>	
	<p>Vorticity transport-based analysis of the abdominal aortic aneurism hemodynamics V. Mazzi, K. Calò, m. Lodi rizzini, I. Saccaro, d. Gallo, a. Iollo, u. Morbiducci</p>	
	<p>On modelling the multilayer response of aorta using layer-specific experimental data J. A. Peña, M. A. Martínez, E. Peña</p>	
	<p>image-based in vivo estimation of regional strain and stiffness properties of the whole aortic vessel E. Vignali, E. Gasparotti, F. Dell'agnello, K. Capellini, M. A. Scarpolini, F. Cademartiri, S. Celi</p>	

**Poster session I:
Experimental biomechanics**

Schlieren and laser flow visualization of filtration and leakage of different facemasks

J. Xi, D. Carmona, J. Samonte, D. Mejia, x. Si, J. Xi, D. T. L. Liu

Ultra-high speed imaging for studying ultrasonic cutting of bone & cartilage

A. Marek, N. Alnamnam, x. Li, A. Luczak, I. Yang, M. Lucas, H. Simpson, F. Pierron

The fibrillar mechanics and structure of fibrotic tissue illuminated with in situ synchrotron x-ray nanomechanical imaging

Y. Zhang, D. Hollis, R. Ross, T. Snow, N. J. Terrill, Y. Lu, W. Wang, J. Connelly, G. Tozzi, H. S. Gupta

Can in vitro knee simulators replicate knee biomechanics: a systematic review

R. Y. Rao, O. Taylan, I. Schey, D. Shah

Coupling experimental & simulation workflow of treated human tibia concerning interfragmentary movement

K. Wickert, A. Andres, M. Roland, M. Orth, T. Pohlemann, S. Diebels

A novel approach to measure tibiofemoral kinematics in human cadaveric knees with intact capsule

S. A. Brendle, S. Krüger, t. M. Grupp

Design of a reverse shoulder implant to measure shoulder stiffness during implant component positioning

N. Förstl, F. Süß, C. Englert, S. Dendorfer

Biomechanical investigation of bone screw fixation using acoustic modal analysis versus conventional pullout test; an animal study

M. Einafshar, F. Bastami, A. Kiapour, A. Hashemi

Metaphyseal voids in plated proximal humerus fractures treated with a novel technique – a biomechanical study

I. Zderic, D. Zhelev, S. Hristov, A. Baltov, S. Ribagin, G. Richards, P. Varga, B. Gueorguiev

Dimension measurements from pictures of tensile test samples: guidelines to improve reproducibility

Y. Lafon, F. Bermond, F. Chassagne, B. Pierrat, K. Bruyère

Forces and temperature measurement during temporal bone milling

M. Boillat, A.-S. Bonnet, C. Parietti

**Poster session I:
Musculoskeletal / joint biomechanics**

3D printed knee for experimental validation of patellar tracking and contact simulation of digital twins after tkr

F. Michaud, F. Mouzo, U. Lugrís, D. Dopico, J. Cuadrado

Development of scalable finite element models based on knee laxity tests on cadavers

L. Kiener, A. Gomez, G. Tschupp, M. Nusser

Optical coherence tomography based microelastography for biomechanical assessment of natural and artificial cartilage

M. Vovchenko, M. Gielen, Z. De Vrij, R. Castro Viñuelas, S. A. Elahi, I. Jonkers, H. van Oosterwyck, C. Glorieux

Parametrisation of the calcaneus and medial cuneiform

Y. Cai, S. Junaid, B. Budair, G. Pascoletti, E. Zanetti, T. Ringrose, P. Zioupos

Effect of combining muscle sub-groups in the mandible during mastication: a finite element study

S. Sagar, R. Ghyar, B. Ravi, D. Shah

Validation of a data glove calibration protocol in hand osteoarthritis patients

A. Roda-Sales, V. Ibáñez, N. J. Jarque-Bou, j. L. Sancho-Bru, M. Vergara, V. Bayarri-Porcar

Web.am: wrist experimental and biomechanical analytical model

I. S. Mat Jais, Y. R. Wong, D. A. Mcgrouter, H. L. Leo

Biomechanical comparison of three different reconstructive techniques for scapholunate dissociation

I.-J. Park, T. S. Bae, D.-S. Kwak

**Poster session I:
Ocular biomechanics**

Corneal mechanics for the early detection of the keratoconus

C. Giraudet, J. Diaz, P. Le tallec, J.-M. Allain

Analysis of biomechanical response after corneal crosslinking with different fluence levels

I. Fischinger, S. A. Reifeltshammer, T. G. Seiler, M. H. Nambiar, P. Büchler, J. Wendelstein, M. Bolz

Poster session I: Respiratory biomechanics	Poster session I: Soft tissue biomechanics	Poster session I: Sports biomechanics
<p>Imaging local tissue strain using in vivo 4D synchrotron x-ray μct in bleomycin-induced lung injury in rats R. T. Deyhle, I. Fardin, I. Mahmutovic Persson, J. L. Cercos-Pita, G. Perchiazzi, I. E. Olsson, S. Bayat</p>	<p>Skin-to-bone interaction: mechanical characterization by peeling tests on pig scalps Y. Vallet, A. Baldit, C. Bertholdt, R. Rahouadj, O. Morel, C. Laurent</p>	<p>A kinematic and kinetic comparison of the counter movement jump and stop jump receptions C. Schwartz, J. Paulus, J.-F. Kaux</p>
<p>Tomography imaging and digital volume correlation of the lung during mechanical ventilation H. Arora, D. Kernot, J. Carson, J. Britton, R. van loon, G. Tanaka, T. Sera</p>	<p>Identification of transversely isotropic constitutive parameters using in-vivo macro-indentation methods A. Ashkenazi, Z. Oddes, D. Solav</p>	<p>Effect of pedalling workload on knee joint forces E. Martín-Sosa, E. Soler-Vizán, J. Mayo, J. Ojeda</p>
<p>An application for remote respiratory patterns detection in post-surgery patients E. Vignali, I. Miglior, E. Gasparotti, A. Ceni, C. Zirafa, D. Haxhiademi, I. Frediani, F. Melfi, S. Berti, V. Gervasi, S. Celi</p>	<p>Mechanical properties of the biceps brachii along its proximo-distal location C. Simon, M. Zidi</p>	<p>The effects of running shoes on ground reaction force in male recreational runners X. Jiang, D. Xu, I. Bíró, Y. Gu</p>
<p>Breathing as a mediator between postural stability and stress in students S. Tassani, P. Chaves, J. Mendoza, J. Ramirez, M. Beardsley, D. Hernandez-Leo, M. Portero-Tresserra, M. A. Gonzalez-Ballester, J. Noailly</p>	<p>Determination of the strain behavior of axially loaded collateral ligaments of the knee joint - a comparison of digital image correlation and strain gauges. G. Prusa, I. Bauer, I. Santos, C. Thorwächter, M. Woiczinski, M. Kistler</p>	<p>Trial-by-trial error correction for accurate baseball pitching A. Kusafuka, T. Okegawa, R. Yamamoto, K. Miyata, K. Kudo</p>
<p>Facemasks' protection efficiency in attenuated e. Coli bacteria filtration X. Si, D. Szeto, J. Samonte, D. Carmona, D. Mejia, J. Xi</p>	<p>Hyaluronic acid has no tribological effect on degenerated knee joint tissues - an in-vitro study L. De Roy, M. Sukopp, J. Schwer, G. Teixeira, A. Ignatius, A. M. Seitz</p>	<p>Upper and lower extremity reaction forces during vertical rock wall climbing H. M. English, M. W. Young, S. K. Lynch, N. D. Flaim, A. Lopez, M. C. Granatosky</p>
	<p>A data-driven constitutive framework for soft biological tissues O. Z. Tikenoğulları, AA. K. Açan, E. Kuhl, H. Dal</p>	<p>Automatically detecting fatigue gait based on time series bilateral plantar force distribution using deep learning algorithms. Z. Gao, Y. He, I. Xiang, F. Gusztáv, K. András, Y. Gu</p>
	<p>A new hyperelastic model for human myocardium J. Vaverka, A. Hrubanová, J. Burša</p>	
	<p>Mechanical properties of different tissues of carotid atheroma: experimental approach A. Hrubanová, z. Bednařík, I. Kubíček, J. Burša</p>	
	<p>A methodology to study the mechanical properties of normal breast tissues A. M. Teixeira, A. D. André, R. Correia, M. D. L. Barroso, H. Costa, P. Martins</p>	
	<p>Investigating the effect of reduced load on rat Achilles tendons viscoelastic properties: a finite element study R. Axelsson, G. A. Orozco, A. Gustafsson, H. Isaksson</p>	
	<p>Robust and accelerated subzone-based nonlinear inversion in elastography A. Awasthi, P. Mahajan, A. Suri, S. Roy</p>	
	<p>Development of a micro tomography protocol for PTA-contrasted human meniscus G. Marchiori, M. Berni, C. Falsina, N. F. Lopomo, G. Giavaresi, A. Grassi, G. Dal Fabbro, S. Zaffagnini, M. Maglio</p>	

Poster session I: Tissue engineering

Pore network modelling of tpms-based scaffolds for tissue engineering applications

J. E. Santos, P. S. Martins, P. R. Fernandes, A. P. G. Castro

Determining the effects of strain rate on uniaxial tensile behavior of single curly fiber

L. Mathebela, R. Sigwadi, T. Lekwana, T. Pandelani, H. Ngwangwa, F. Nemavhola

Two photon polymerization of an implantable microscope objective for intravital microscopy

A. Nardini, M. Marini, R. Martinez Vazquez, C. Conci, M. Bouzin, M. Collini, R. Osellame, G. N. Cerullo, B. S. Kariman, G. Chirico, M. T. Raimondi

Development of an in vitro platform to detect tumorigenic events in human haematopoietic stem cells (hHSCs)

P. Ritter, S. Oliveto, A. Bocconi, C. Di Buduo, L. della Volpe, R. Di Micco, A. Balduini, S. Biffo, M. T. Raimondi

Determination of material parameters of scaffold-free cartilage transplants in dependence of their cultivation

T. Reuter, I. Ponomarev, K. Wölfer, D. Barnewitz

Osteogenic potential of supramolecular upy-alendronate hydrogels: an in vitro study

E. E. A. Cramer, J. Huang, P. Y. W. Dankers, K. Ito, S. Hofmann

Exploration of hydrogel tissue scaffolds to improve the biomechanics of osteoporotic bone.

F. Alabdah, A. Alshammari, A. Hidalgo-Bastida, G. Cooper

Effect of scaffold porosity and length on the surface curvature of tpms structures

T. H. V. Pires, J. W. C. Dunlop, A. P. G. Castro, P. R. Fernandes

Topologically optimized graded gyroid bone scaffolds

M. SAHIN, O. Parlayan, G. Kiziltas Sendur

Tunable design and structure-property correlations of core-shell composite scaffolds obtained by 3D-printing

C. Pasini, L. Sartore, S. Pandini, G. Ramorino

Development of an advanced culture system to investigate vascular tissue engineering biomechanisms

E. Pederzani, C. E. Campiglio, M. Ripamonti, A. Rizzo, M. Esposito, A. Caldiroli, S. A. Riboldi, A. Remuzzi, G. B. Fiore, M. Soncini

Novel bioresorbable pulmonary valves: experimental assessment through an animal trial

A. Hendrickx, T. Vervenne, H. Shirazi, T. Langenaeken, H. Bauer, H. Fehervary, M. Cox, P. Claus, N. Famaey, B. Meuris

Session II: 11 July 2023

Poster session II: Advanced computing for biomechanics	Poster session II: AI / Data-driven modeling in biomechanics	Poster session II: Biomechanics of movement and posture
<p>Code verification of the micro finite element solver parosol using the method of manufactured solutions F. Trommer, P. Bhattacharya</p>	<p>Bone remodelling with artificial neural networks A. Pais, J. Lino alves, J. Belinha</p>	<p>Obesity's impact on joint kinetics and kinematics during gait A. A. Hulleck, T. Liu, R. Prasad, R. Katmah, K. Khalaf, M. El Rich</p>
<p>Numerical determination of an anatomical structure's unloaded state from in vivo medical imaging N. Collin, B. Watrisse, S. Le Floc'h, D. Ambard, J. Sigüenza</p>	<p>Optimization and industrialization of a metabolic holter device and software development E. Bori, M. Mouton, C. De Asmundis, R. Cannataro, B. Innocenti</p>	<p>Measurement of joint angles in a canine musculoskeletal model: direct kinematics versus inverse kinematics M. Aghapour, C. Peham, H. Kainz, B. Bockstahler</p>
<p>Validation of a multimodal 2D-3D registration algorithm using unimodal synthetic experiments F. Correia Marques, E. Wehrle, R. Müller</p>	<p>Deep learning approach for in-stent restenosis using biologically-informed neural networks J. Shi, K. Manjunatha, S. Reese</p>	<p>The effect of offloading insoles on gait kinematics and the implications for plantar pressure management. J. Shuang, A. Haron, G. Massey, M. Mansoubi, H. Dawes, G. Cooper, A. Weightman</p>
<p>Strain ratio distributions can elegantly describe the effect of lesion location and size in femoral metastases A. Rizvi, C. Scott, S. Seth, A. H. Simpson, P. Pankaj</p>	<p>Pre-training varied vascular geometries with a deep learning side network in physics-informed neural network simulations of vascular fluid dynamics H. S. Wong, B. Li, W. X. Chan, C. H. Yap</p>	<p>Beyond gait speed R. A. W. Felius, N. Wouda, M. Geerars, S. Bruijn, J. H. van Dieën, M. Punt</p>
<p>An unsupervised method to detect the left atrial appendages and classify their morphologies V. Martorana, G. M. Bosi, M. Lee, G. Burriesci, C. Coronello, M. Tumminello</p>	<p>2D-unet based approach for 3D segmentation of coronary artery from computed tomography angiography G. Nannini, S. Saitta, A. Baggiano, G. Pontone, A. Redaelli</p>	<p>Time vs. Space: comparing gait cycle normalization methods and their effect on foot placement control S. Fleischmann, J. Shanbhag, J. Miehl, S. Wartzack, S. Leyendecker, A. D. Koelewijn, B. M. Eskofier</p>
	<p>Cfd-based synthetic data generation for machine learning based pressure drop assessment in aortic stenosis T. I. Matej, A. B. Popescu, C. I. Nita, C. F. Ciusdel, I. M. Itu</p>	<p>Wearable sensor and machine learning estimation of knee moments for healthy participants A. Fishman, A. Sabaty, K. Y. Levi, A. G. Fischer</p>
	<p>Sine-based activation function is superior in physics-informed neural network for cardiovascular flows A. Aghaee, M. O. Khan</p>	<p>Aponeurosis inspired variable stiffness for soft robotics H. Mcaleese, A. Weightman, A. Cooper</p>
	<p>Three-dimensional flow reconstruction in a dissected aorta from 4D-MRI data D. Ahmed, C. Stokes, N. Lind, F. Haupt, D. Becker, V. Muthurangu, H. Von Tengg-Kobligk, S. Balabani, V. Diaz-Zuccarini, G. Papadakis</p>	<p>New insights for the design of bionic robots D. Xu, X. Jiang, W. Quan, H. Zhou, F. Gusztáv, Y. Gu</p>
	<p>The hard reality of scattered data to predict heart rhythm disorders C. M. Buck, M. A. de Winter, A. G. de Lepper, M. van 't Veer, W. Huberts, F. N. van de Vosse, I. R. Dekker</p>	<p>Bionic muscle-inspired design of cable-driven lower limb rehabilitation exoskeleton (c-lrex) R. Prasad, K. Khalaf, M. I. Awad, S. K. Agrawal, M. El-Rich</p>
	<p>Reverse homogenization using neural networks for stress shielding minimization A. Pais, J. Lino Alves, J. Belinha</p>	<p>Kinematics of upper limb movement in rhino:grasshopper K. Senvaitis, K. Daunoravičienė</p>
	<p>Parameter fitting for a viscoelastic constitutive model using a machine learning model M. Barra, C. Garcia-Herrera, D. Celentano, F. Sahli, E. Herrera</p>	

Poster session II: Impact / injury biomechanics

Predicting impact response of human femur using material mapping strategy
A. Malik, V. V. Yadav, A. Chawla, N. V. Datla

Poster session II: Implants / orthotics / prosthetics / devices

Influence of bone screw configurations on bone healing biomechanics using locking compression plate fixation
K. Khalaf, A. Azhang, M. Nikkhoo

Biomechanical comparison of two 2-mm headless cannulated screws versus a single 3-mm screw in capitellar humerus fracture fixation
I. Zderic, D. Zhelev, S. Hristov, S. Ribagin, S. Ivanov, G. Richards, B. Gueorguiev

Influence of polar gradation on design of functionally graded porous acetabular component
C. Mullakkara Saviour, S. Gupta

Evolution of metabolic and mechanical cost of walking with an above knee prosthesis simulator
A. Bonnet-Lebrun, X. Bonnet, A. Boos, L. Sedran, C. Heidsieck, M. Thomas-Pohl, H. Pillet

Can transient simulations improve lower limb-prosthesis interaction analysis?
V. Plesec, G. Harih

Evaluation method for high flex loosening of posterior stabilized femoral knee implants under dynamic loading
J. Schwiesau, B. Fritz, T. M. Grupp

Design optimisation of next-generation scaffold-based bone reconstruction implants: phd thesis presentation
B. M. Ferguson, J. Clark, Q. Li

Effect of foot orthoses on multi-segment foot kinematics: a systematic review
Y. Meng, I. Bíró, Y. Gu

Development of a 2-segment spinal fracture fixation rod to measure forces and moments in vivo
M. Mangaleshwaran, J. Leong, S. Taylor

A procedure for the in silico design of artificial urinary sphincters
J. V. Fotso Fogang, M. V. Mascolini, V. Salomoni, C. Fontanella, E. L. Carniel, A. N. Natali

Poster session II: Musculoskeletal / joint biomechanics

Real-time fatigue tracking using electromyography driven musculoskeletal models
M I Mohamed Refai, M. Sartori

Closed-form modeling of the soleus musculotendon unit
M. Nabipour, M. Sartori

Understanding the biomechanical significance of extracellular matrix for functional muscle force using a bio-inspired artificial muscle
Z. Liu, A. Weightman, G. Cooper

The movements and morphological characteristics of the sacroiliac joint
S. J. Shin, A. Jeon, T. S. Bae, D.-S. Kwak

Can we find safe hinge level during opening wedge high tibial osteotomy using heterogeneous tibial models?
T. S. Bae, H. H. Baek, M. G. Kyung, S.-B. Kang, D.-S. Kwak

Direct measurement of the forces and moments acting at the hinge of an instrumented humeral component for total elbow replacement
M. Basiouny, S. Lambert, C. Kue

Poster session II: Cardiovascular biomechanics	Poster session II: Cellular and molecular biomechanics / mechanobiology	Poster session II: Hard tissue biomechanics
<p>Particle tracing in aortic root models investigating sinus washout in transcatheter valve thrombosis patients K.-M. Bornemann, S. E. Jahren, P. Corso, C. Demirel, S. Stortreck, D. Obrist</p>	<p>An image-based methodology to quantify ultrasonic cell deformation M. Ballard, A. Marek, F. Pierron</p>	<p>Investigation of the impact of nanoscale geometry on the mechanical properties of hydroxyapatite platelets L. Ravazzano, L. Alfonso, F. Libonati</p>
<p>Potential of using shell elements methods in fsi simulations of pulmonary arteries H. Moradi, F. van de Vosse, W. Huberts</p>	<p>Electrospun polycaprolactone 3D fibrous scaffold for human periodontal ligament cells mechanobiology R. Gauthier, N. Attik, V. Salles, B. Grosgeat, K. Gritsch, A.-M. Trunfio-Sfarghiu</p>	<p>Fracture mechanics of cortical bone at the microscale by sruct imaging and digital volume correlation M. Peña Fernández, J. Schwiedrzik, A. Bürki, F. Peyrin, J. Michler, P. Zysset, U. Wolfram</p>
<p>In-vitro and in-silico modeling of the effect of gag on the opening angle of the ascending porcine aorta N. Ghadie, J.-P. St-Pierre, M. Labrosse</p>	<p>The effect of substrate stiffness on astrocytes and leptomenigeal cells A. J. Greaney, M. Abubaker, C. McCarthy, J. Mulvihill</p>	<p>Microcrack nucleation and fracture in bone ultrastructure: a computational study H. Aljani, T. Vaughan</p>
<p>A self-powered venous blood pump for single-ventricle heart disease R. Rasooli, K. E. T. Giljarhus, I. W. Jolma, J. L. Vinningland, H. Holmstrom, A. Hiorth</p>	<p>Mechanical response of endothelial cells to shear flow as possible marker in development of atherosclerosis L. Orlová, I. Zumberg, O. Lisický, J. Jagoš, V. Čmiel, J. Burša</p>	<p>Ciclope: an open source package to build finite element models from micro computed tomography images G. Iori, M. Pani, G. Crimi, G. Fraterrigo, F. Taddei, E. Schileo</p>
<p>Modelling transcatheter mitral valve replacement using the living heart project C. Catalano, S. Pasta</p>	<p>A tool for studying the role of intercellular stresses and dynamic cell shape modulations in mechanical inhibition of cell division A. Saleem, Y. Lavi, B. Abu Kaff, L. Atia</p>	<p>Does 3D-registration improve repeatability of hr-pqct-based homogenized finite element analysis? M. Indermaur, D. Schenk, K. Lippuner, P. Zysset</p>
<p>Evaluation of 4D ultrasound data to determine the relationship between 3D aortic wall displacement and age K. E. Kerr, W. Derwich, A. Wittek, C. Blase</p>	<p>Effects of the collagen composition on the mechanical microenvironment of breast cancer cells. P. Blázquez Carmona, R. Ruiz-Mateos-Brea, J. A. Sanz-Herrera, J. Barrasa-Fano, H. van Oosterwyck, E. Reina-Romo</p>	<p>Quantitative assessment of bone microarchitecture in the human knee using photon-counting CT is feasible F. Azari, W. Coudyzer, C. E. Wyers, J. P. van den Bergh, G. H. van Lenthe</p>
<p>Can the geometry of the atheroma plaque influence on drug transmural transport on drug eluting stents? E. Peña, J. Escuer, E. Pina, M. A Martínez</p>	<p>Actin filaments in response to chemical osteogenesis supplements alter the multicellular behavior of osteocytic spheroids J. Kim, T. Adachi, T. Matsumoto</p>	<p>Topography optimisation of an external circular fixator W. Barros, F. Nemavhola, D. Desai, H. Ngwangwa, T. Pandelani</p>
<p>Coupled modeling of drug coated balloon treatment of peripheral artery disease L. Spahić, L. Benolić, S. Ur Rehman Qamar, V. Simić, B. Milićević, M. Milošević, N. Filipović</p>	<p>Spatial modeling of yap phosphorylation through direct interaction with integrin adhesions H. Jafarinia, L. Shi, H. Wolfenson, A. Carlier</p>	<p>Investigating skeletal peri- and post-mortem trauma A. K Maier, A. Manzella, N.</p>
<p>Stent-grafts derived from auxetic unit cells: numerical simulation of deployment into a curved artery R. S. Vellaparambil, W.-S. Han, P. Di Giovanni, S. Avril</p>	<p>Stress fibers in aortic smooth muscle cells alter their direction to elevated strain direction under hypertension S. Sugita, R. Kawai, Y. Ujihara, M. Nakamura</p>	
<p>Fundamental insights into stent-vessel interactions through a novel constitutive law and in-silico framework J. Concannon, P. McGarry</p>	<p>What collagen hydrogel for optimal mechanobiology of 3D encapsulated smooth muscle cells? C. Techens, A. Ben Hassine, E.-J. Courtial, D. Eglin, S. Avril</p>	
<p>Computational modeling of in-stent restenosis: pharmacokinetic and pharmacodynamic evaluation K. Manjunatha, M. Behr, F. Vogt, S. Reese</p>		
<p>Examining the effect of parameters on mechanobiology atheroma plaque growth model P. Hernández López, M. Á. Martínez Barca, E. Peña Baquedano, M. Cilla Hernández</p>		

Poster session II: Patient-specific modelling	Poster session II: Soft tissue biomechanics	Poster session II: Spine biomechanics
<p>Multimodal molecular profiling to predict patient outcome after cartilage repair surgery M. J. Haartmans, K. S. Emanuel, B. D. Balluff, S. Nauta, G. J. Tuijthof, R. M. Heeren, P. J. Emans, B. Cillero-Pastor</p>	<p>Modeling thin layer hyperelastic soft biological tissues through macro-spherical compression tests L. K. Tappert, C. De Oliveira Cafiero, A. Baldit, A.-S. Bonnet, P. Lipinski</p>	<p>Numerical evaluations of functionally graded porous interbody cage for spinal fusion R. G. Talukdar, S. Dhara, S. Gupta</p>
<p>Biomechanical evaluation of generatively designed patient-specific high tibial osteotomy plate fixations S. Kanagalingam, T. Boutefnouchet, P. Champneys, M. Fernandez-Vicente, D. Shepherd, D. Wimpenny, L. Thomas-Seale</p>	<p>Biaxial stretch can help in correct interpretation of collagen fibre orientation histograms M. Turčanová, J. Fischer, M. Hermanová, Z. Bednařík, J. Burša</p>	<p>Assessing the effect of fixation length in lumbar spine combining rigid and flexible body modeling S. Borrelli, G. Putame, A. L. Audenino, M. Terzini</p>
<p>Bioresorbable lattice wedge for patient specific time dependant stiffness in high tibial osteotomy fixation B. Hawthorn, S. Kanagalingam, A. Triantaphyllou, F. Khan, R. Dyson, L. E. Thomas-Seale</p>	<p>Importance of structural parameters in constitutive models of aorta J. Fischer, M. Turčanová, V. Man, M. Hermanová, Z. Bednařík, J. Burša</p>	<p>Optimization of titanium spinal cages to maximize synthetic graft content in composite implants S. Ghandour, P. Isaksson, C. Persson</p>
<p>Efficient computational method for adjusting the stiffness of individual 3D-printed insoles F. Geiger, M. Kebbach, D. Vogel, V. Weissmann, L. Ruehrmund, R. Bader</p>	<p>Device induced damage of arterial porcine tissue M. Oude Vrielink, P. Timmermans, B. van de Wetering, O. van der Sluis</p>	<p>Biomechanical stability of lumbar spine instrumented with interbody fixation: which construct provides better stability? M. Einafshar, A. Kiapour, E. Massaad, J. Shin</p>
<p>Subject-specific femoroacetabular impingement severity computational assessment over various activities T. E. Rayment, A. Jones, S. Williams</p>	<p>Elucidating the mechanical signature of different brain lesions using dynamic nanoindentation U. Gautam, P. Narwal, A. Suri, S. Roy</p>	<p>Anatomy based test model of the sacroiliac joint for biomechanical testing of implants S. Krüger, T. Mendel, L. Becker, S. Schedel, M. Pumberger, C. Schilling, B. W. Ullrich</p>
<p>Towards individualized biomechanical models in multiple domains I. Wechsler, A. D. Koelewijn, S. Wartzack, J. Miehlung</p>	<p>Evaluation of ventricular stiffness of frogs and snakes M. Ito, V. D. Nguyen, Y. Ogura, S. Sugita, M. Nakamura, Y. Ujihara</p>	<p>Vertebral body tethering vs spinal fusion: looking beyond the radiographical outcome T. Ackermans, S. Schelfaut, P. Severijns, L. Moke, P. Moens, L. Scheys</p>
<p>Intra-operator comparison of two models to predict vertebral failure on the same experimental dataset V. Allard, C. Heidsieck, C. Confavreux, F. Bermond, C. Travert, L. Gajny, W. Skalli, D. Mitton, H. Follet</p>	<p>Development of a human whole body model taking into account the connective tissue H. Stark</p>	<p>Finite element strain prediction in intact and lesion-affected vertebral bodies: a new validation experiment G. Fraterrigo, E. Schileo, F. Taddei, P. Erani, G. Rota, M. Berni, M. Baleani</p>
<p>Impact of interobserver lumen segmentation uncertainty in FFR-CT: the location of the stenosis matters D. Fernández-Martínez, J. M. Montanero, J. M. Nogales-Asensio, M. R. González-Fernández, C. Ferrera</p>	<p>Biomechanical impact of a subsequent childbirth on the female pelvic floor D. Oliveira, M. Campos, R. Moura</p>	<p>Investigation of the bone density in an adolescent idiopathic scoliotic vertebra following a unilateral muscles paralysis M. Hosseinzadeh-Posti, M. Rajaeirad, A. Komeili, Z. Kamal</p>
	<p>Predicting pelvic floor stresses during vaginal delivery: a machine learning approach R. Moura, D. Oliveira, M. Parente, R. Natal Jorge</p>	<p>Effect of neglecting passive spinal structures on estimated joint loads: a musculoskeletal modelling study L. Meszaros-Beller, M. Hammer, S. Schmitt, P. Pivonka</p>
		<p>Development of a female finite element model of the cervical spine A. Silva, G. Carmo, R. Alves de Sousa, F. Fernandes, M. Parente</p>
		<p>Intra and inter operator variability in a finite element model of vertebra for failure load prediction A. Levillain, V. Allard, E. Chevalier, C. Confavreux, J.-P. Roux, F. Bermond, D. Mitton, H. Follet</p>

Session III: 12 July 2023

Poster session III: Biofluids and transport

An iterative regularisation algorithm to estimate permeability in myocardial perfusion
T. Zhang, K. Fraser, H. Gill, A. Cookson

Phenomenological prediction of false lumen thrombosis in type b aortic dissection
A. Jafarinia, C. H. Armour, X. Y. Xu, T. Hochrainer

Flow visualisation and simulation in realistic aneurysms geometries to determine the risk of rupture
C. Escobar-Del Pozo, A. Brambila-Solórzano, G. J. Martínez-Sánchez, J. Naude, A. García-Rebolledo, V. H. Castillo

Investigating bubble dynamics in a blood-filled cavity enclosed in a blood vessel
I. Kaykanat, K. Uguz

A synthetic embryonated avian eggshell computational modeled to predict the oxygen transport
C. Conci, I. Cherubin, M. Laganà, E. Jacchetti, M. Raimondi

Poster session III: Cardiovascular biomechanics

Intracranial aneurysms: what are you missing if you consider fully rigid arterial tissues?
A. Goetz, P. Jeken-Rico, R. Nemer, A. Larcher, P. Meliga, E. Hachem

Spatially varying multi-compartment model of blood flow and oxygen transport in the human brain
S. J. Payne

Sensitivity of intracranial haemodynamics towards varying arterial tree extensions
P. Jeken Rico, A. Goetz, J. Viquerat, P. Meliga, A. Larcher, E. Hachem

Influence of fluid-structure interaction in a model of atheroma plaque growth
P. Hernández-López, M. Cilla, E. Peña, M. Malvè, M. A. Martinez

Investigating the growth & remodeling model parameters influence on a hyperelastic artery
K. Yan, W. Ye, M. Rochette, P. Haigron, A. Bel-Brunon

Correcting the ejection fraction for better heart function representation and prognosis in heart failure
W. X. Chan, A. Kaura, A. Mulla, D. Papadimitriou, B. Glampson, E. Mayer, A. S. V. Shah, J. Mayet, C. H. Yap

On the anisotropy of the myocardium
N. Tueni, J.-M. Allain, M. Genet

A numerical workflow to investigate the hemodynamics effects of the left atrial appendage occlusion
B. M. Fanni, E. Gasparotti, K. Capellini, F. Danielli, F. Berti, S. Berti, G. Pennati, I. Petrini, S. Celi

Mechanical function in the infarcted heart supported by a regenerative assist device: a computational study
K. Janssens, M. van der Knaap, P. Bovendeerd

Poster session III: Cellular and molecular biomechanics / mechanobiology

Combining big data with cell culture on the 3D nichoid to discover new therapeutic strategies against cancer
C. Testa, E. Jacchetti, C. Martinelli, P. Pinoli, S. Carelli, S. Ceri, M. T. Raimondi

A preliminary 3D finite element study of cell-substrate interaction in microgravity conditions
A. Pica, A. Marinozzi, F. Marinozzi, F. Bini

Therapeutic effect of mechanical loading on bone metastasis: a hca modelling framework
C. Villette, I. Geris

A 3D mechanoregulatory bone healing model combining patient-specific geometry and individual loading data
A. Baumchen, M. Roland, M. Orth, T. Pohlemann, B. Ganse, S. Diebels

Cell spreading on fibrous matrix predicted by hybrid cellular potts model with dynamic adhesions
K. A. E. Keijzer, T. Erika, R. M. H. Merks

Modeling the reaction of a living cell cytoskeleton to mechanical stress in a flowing liquid
N. J. Branecka, M. Pawlikowski

Modeling and simulation of an osteocyte cellular process interacting with fluid flow in a canaliculus
J. Barber, M. Mukhin, V. Maybruck, I. Zhu

A physics informed neural network to simulate the free boundary problem of cell migration
S. Malla, S. Roy, D. Oelz

A 3-dimensional multiphase smooth muscle cell model exhibiting anisotropy & viscoelasticity
A. Marousis, Y. Dimakopoulos, J. Tsamopoulos

**Poster session III:
Cardiovascular biomechanics**

Novel patient-specific beating heart model incorporating active contractility and a pseudo-fluid domain

D. Senthil, J. Concannon, J. P. McGarry

Contrast agent transport in a poroelastic model of myocardial perfusion

T. Zhang, K. Fraser, H. Gill, A. Cookson

Cardiac output influence on the flow in a tri-leaflet mechanical heart valve

L. Ferrari

The influence of the position angle of the artificial bileaflet valve on the flow in the coronary arteries

K. Jankowski, A. Nieroda, M. Pawlikowski

Investigation of human mitral valve mechanics using an inhouse hybrid physical-computational platform

S. Javadpour, F. O'Brien, C. Conway

Effect of aortic valve geometry on leaflet strain within a phantom silicone aortic heart valve during closing.

T. Pritchard, M. Darcy, J. Davies, E. Geeves, I. Giron, C. Ling, R. Vanloon, H. Arora

Effect of mechanical aortic valves on coronary artery flow in a patient suffering from ischemic heart disease

A. Nieroda, K. Jankowski, M. Pawlikowski

Biomechanical parameter predicts successful fetal heart intervention outcome better than clinical scans

L. Green, A. X. Chan, A. Tulzer, G. Tulzer, C. H. Yap

Poster session III: Clinical and translational biomechanics / in silico clinical trials

Using a statistical shape model to estimate the knee joint center for aligning femoral finite element models
F. Eggermont, E. Mathijssen, M. Bakker, E. Tanck

Age- and sex-specific epidemiology of extra-articular femoral and tibial fractures 2005-2022
M. Heyland, M. Leskovar, D. Deppe, K. Ziegeler, S. Zachow, A. Trepczynski

Dxa-driven pipeline for building biofidelic fems for hip fracture risk assessment in clinical cohorts
D. Jha, A. Baker, A. Fung, V. S. Cheong, N. Hong, I. Fleps, Y. Rhee, P. Gupta, E. L. Lamoureux, S. J. Ferguson, B. Helgason

Multi modality approach for optimizing prophylactic augmentation of the proximal femur for hip fracture prevention
G. Samaras, A. Baker, A. Fung, S. J. Ferguson, B. Helgason

Validation of a fracture healing algorithm across multiple fixation stabilities
G. Morgan, L. Low, A. Ramasamy, S. Masouros

Virtual cohort generation for in silico trials of transcatheter aortic valve implantation
S. C. F. P. M. Verstraeten, M. J. M. M. Hoeijmakers, F. N. van de Vosse, W. Huberts

An uncertainty quantification of in-silico trials for the use case of non-union treatment
M. Roland, K. Wickert, A. Andres, B. Braun, T. Histing, S. Diebels

Poster session III: Computational biology

Modelling the initial callus phase in bone fractures
J. M. Naveiro, L. Gracia, J. Rocas, J. Albareda, S. Puértolas

Scalable agent-based modelling of cell biomechanics and therapy using the biodynamo platform
V. Vavourakis, R. Bauer

Cell proliferation study: a new computational model solved by the sph method
M. I. Barbosa, J. Belinha, R. Natal Jorge, A. Xavier de Carvalho

Simulation of angiogenesis during tumour growth proliferation
M. I. Barbosa, J. Belinha, R. Natal Jorge, A. Xavier de Carvalho

exploring the mechanisms of growth plate development and disease progression through a dynamic trabecular bone microstructure model
D. Quexada, S. Bensamoun, M.-C. Ho Ba Tho, D. Garzón, O. Trabelsi

Poster session III: Computer aided diagnosis, planning, and surgery

Collagen-matrix wrap reduces contact pressure in meniscal tear repair: an fea study.
R. Readioff, J. Murray, H. Gill

Parametric study of mechanical behavior of auxetic geometries for skin tissue engineering scaffolds
O. Lecina, M. Á. Pérez, C. Borau

Anatomical risk factors increasing pathological growth in craniosynostosis
M. Geoffroy, P.-M. François, R. H. Khonsari, S. Laporte

Transcatheter mitral valve replacement: assessment of left ventricular outflow tract obstruction
J. Brüning, K. Vellguth, J. Franz, C. Balemans, M. Barink, M. Oude Vrielink, V. Lavezzo

Virtual treatment planning of transcatheter edge-to-edge mitral valve repair
M. Barink, K. Vellguth, J. Franz, J. Brüning, V. Lavezzo

Development of digital twins from high-fidelity simulations for healthcare applications
L. Geronzi, A. Martinez, M. Rochette, M. E. Biancolini

Suction cup placement in instrumented vaginal delivery
D. Oliveira, E. Ferreira

Poster session III: Ergonomics / occupational biomechanics / rehabilitation

Simulation of maximum elbow flexion, extension, pronation and supination actuation torques based on zonotopes

J. Savin, N. Rezzoug

A biomechanical model to test the effects of a passive exoskeleton on the shoulder complex

A. Ayeche Abendaño, A. Ancillao, G. Aronis, T. Angeli, M. Gföhler

Forearm muscular activity during the real vs virtual box & block test

N. J. Jarque-Bou, V. Gracia-Ibáñez, A. Roda-Sales, A. De Los Reyes-Guzmán, J. L. Sancho-Bru, M. Vergara

Design and optimization of a six-bar linkage to assist in the rehabilitation of the pulp pinch grip in stroke patients

M. Gabarda-Lopez, V. Roda-Casanova, J. Andres-Esperanza, J. L. Iserte, J. F. Fuentes-Ballesteros, N. J. Jarque-Bou

Design of upper limb exoskeleton orthosis for rehabilitation purposes

E. J. O'Sullivan, A. R. Keppel, L. A. Zambrano Martínez

Novel therapy setting by using virtual and augmented reality— a comparative feasibility study

D. Baumgartner, A. Kilchenmann, D. Textor, J. Bansi

Poster session III: Hard tissue biomechanics

Mixed uniform boundary conditions improve homogenized fe models of bone-screws and inverse remodelling

D. Pahr, S. Bachmann, A. Synek

Biomechanical study on additively manufactured nitinol patient-matched device for unicoronal craniosynostosis

C. Bregoli, A. Borghi, J. Fiocchi, C. A. Biffi, S. Schievano, N. U. O. Jeelani, D. Dunaway, A. Tuissi

Mineral density and microstructural morphology of woven bone during distraction osteogenesis

J. Mora-Macías, B. V. Rietbergen, P. Blázquez-Carmona, P. García-Florencio, J. Domínguez, E. Reina-Romo

Fracture toughness of cancellous bone tissues used for the manufacturing of heterologous bone grafts

J. Agnelli, M. Morroni, M. Colombo, L. Treccani, F. Bignotti, F. Baldi

Damage propagation in osteon-inspired structures: the role of the cement line

T. Volders, L. Zorretto, H. Razi, R. Weinkamer, D. Ruffoni

Mechanical evaluation of bone graft enhanced ovine tibia bone defect using digital volume correlation

K. Karali, A. DeMori, R. Kallala, G. Blunn

A protocol for the local mechanical characterisation of metastatic bone

A. Levillain, C. B Confavreux, F. Bermond, D. Mitton, H. Follet

Three phases in bone tissue properties from micromechanical testing at the material level

A. Bonicelli, E. F. Kranioti, B. Xhemali, P. Zioupos

Effect of weight loss on subchondral bone cyst in the knee joint during gait: a 3D finite element analysis

J. Dahlgren, G. A Orozco, L. Stenroth, T. Alkjær, H. Isaksson

Poster session III: Implants / orthotics / prosthetics / devices

Pressure distribution at the device skin interface of a cervical collar: finite element and physical modelling

L. J. Russell, L. Jiang, D. Filingeri, P. R. Worsley

A numerical and experimental approach for evaluating the reliability of cervical surgical instrumentation

L. Ciriello, A. Belluzzo, A. Grassi, T. Villa

The feasibility of bespoke rehabilitation robot handgrips to meet the specific needs of stroke patients—part 2

L. Li, Z. Lu, Y. Tang, S. Tyson, G. Cooper, A. Weightman

Biomechanics of braided, long-term biodegradable scaffolds for acl tissue engineering

C. Emonts, P. Riedl, B. Bauer, T. Gries

A sawbone based biomechanical study to compare compression force and osseous area of contact of two screws for foot and ankle joint arthrodesis

A. Weigert, M. Kistler, L. Bauer, B. Holzapfel, B. Wegener

Utilising a 3D fe model to assess the effects of anatomy on stress/strain distribution in osseointegrated implants

T. McGuire, A. M J Bull

Adjustment of prosthetic socket using finite element analysis

A. Mrozek

Clinical perspective of developing robotic systems for assisting percutaneous tracheostomy

Y. Tang, L. Li, P. Yuan, Z. Lu, B. Adorno, B. McGrath, A. Weightman

Numerical model of the mechanical behaviour of medical compression stockings

I. Pita Miguélez, D. Soulat, X. Legrand, A. R. Labanieh

Insole: an in-silico tool to predict individual response to corrective insoles during walking.

B. A. Killen, S. van Rossom, F. Burg, I. Jonkers

Variable rotational speed substantially reduce the rate of hemolysis within in-house roller pump

J. Kohut, J. Jagos, M. Formanek, J. Bursa

Modelling biofilm growth subject to local antibiotic delivery

P. Mandal, N. Mottram, S. McGinty

A procedure for the in silico design of artificial urinary sphincters

J. V. Fotso Fogang, M. V. Mascolini, V. Salomoni, C. Fontanella, E. Carniel, A. N. Natali

Poster session III: Musculoskeletal / joint biomechanics

Biomechanical determinants of chondrolabral complex lesions in femoroacetabular impingement

I. Lazarev, A. Babko, M. Skyban

A matlab tool to scale iteratively and automatically generic musculoskeletal models

A. Di Pietro, F. Di Puccio

Lower limb amputees have similar upper limb function 8y post injury as uninjured group: the advance cohort study

F. C E Watson, A. E Kedgley, A. Bennett, A. M J Bull

Musculoskeletal multibody simulation of paediatric patients before and after femur osteotomy

L. Ruehrmund, N. Moeller, H. Boehm, C. Fritz, U. Schreiber, D. Vogel, R. Bader, M. Kebbach

Simulation of lower limb muscle activation using running shoes with different heel-to-toe drops using opensim

W. Quan, X. Jiang, D. Xu, H. Zhou, G. Fekete, Y. Gu

Emg-based joint torque estimation using physics-informed neural network in human upper limb

R. Kumar, S. Roy, L. Kumar, S. P. Muthukrishnan

New automated algorithm for muscle architecture extraction from b-mode ultrasound images

E. Karakasis, E. Giannakou, A. Arampatzis, K. Vadikolias, N. Aggelousis

Simulation environment for the development of neuro-muscular stimulation systems

S. Selkmann, J. Baier, R. Remus, M. Neumann, B. Bender

Computational simulation of the active behaviour of mouse rotator cuff muscles

Á. Heras, A. Pérez Ruíz, G. Abizanda, B. Calvo, J. Grasa

Validation of a musculoskeletal human shoulder model during a forward flexion motion

M. C. Labrune, S. H. Nasab Hosseini, D. T. Axford, R. Potra, J. Cadman, D. Dabirrahmani, W. R. Taylor, L. M. Ferreira, S. Raniga, R. Appleyard

Which are the minimum activities of daily living to represent forearm muscle activity?

N. J. Jarque-Bou, V. Gracia-Ibañez, A. Roda-Sales, J. L. Sancho-Bru, M. Vergara

Poster session III: Patient-specific modelling

Multi-scale coronary simulation pipeline: validation against intravascular velocity and pressure

A. A. Seresti, A. L. Marsden, A. M. Kahn, M. O. Khan

Tuning patient-specific coronary lumped parameter models in presence of severe aortic stenosis

D. Fernández-Martínez, J. M. Nogales-Asensio, M. R. González-Fernández, C. Ferrera

Patient-specific analysis of the haemodynamic factors contributing to restenosis in peripheral arterial disease

F. Ninno, A. Dardik, D. Strosberg, J. Tsui, S. Balabani, V. Diaz-Zuccarini

Impact of resistance distribution and pressure measurement in the computed ffr

S. I. Pinto, A. Martins, C. C. António, L. C. Sousa

Lumped-parameter model to assess coronary blood flow in aoca: a focus on the impact of boundary conditions

V. Ceserani, M. Lo Rito, G. M. Formato, M. L. Agnifili, A. Rosato, A. F. Pascaner, M. Conti

Efficient sensitivity analysis for biomechanical models with correlated inputs

P. L. J. Hilhorst, S. Quicken, F. N. van de Vosse, W. Huberts

Modelling hemodynamics with real physiological conditions of patient-specific coronaries

M. C. Fernandes, L. C. Sousa, C. C. António, S. I. Pinto

Aortic hemodynamics evaluation based on reduced order models: effect of inlet conditions

F. Galbiati, C. Angeletti, K. Capellini, E. Vignali, C. Morin, S. Avril, E. Costa, S. Celi

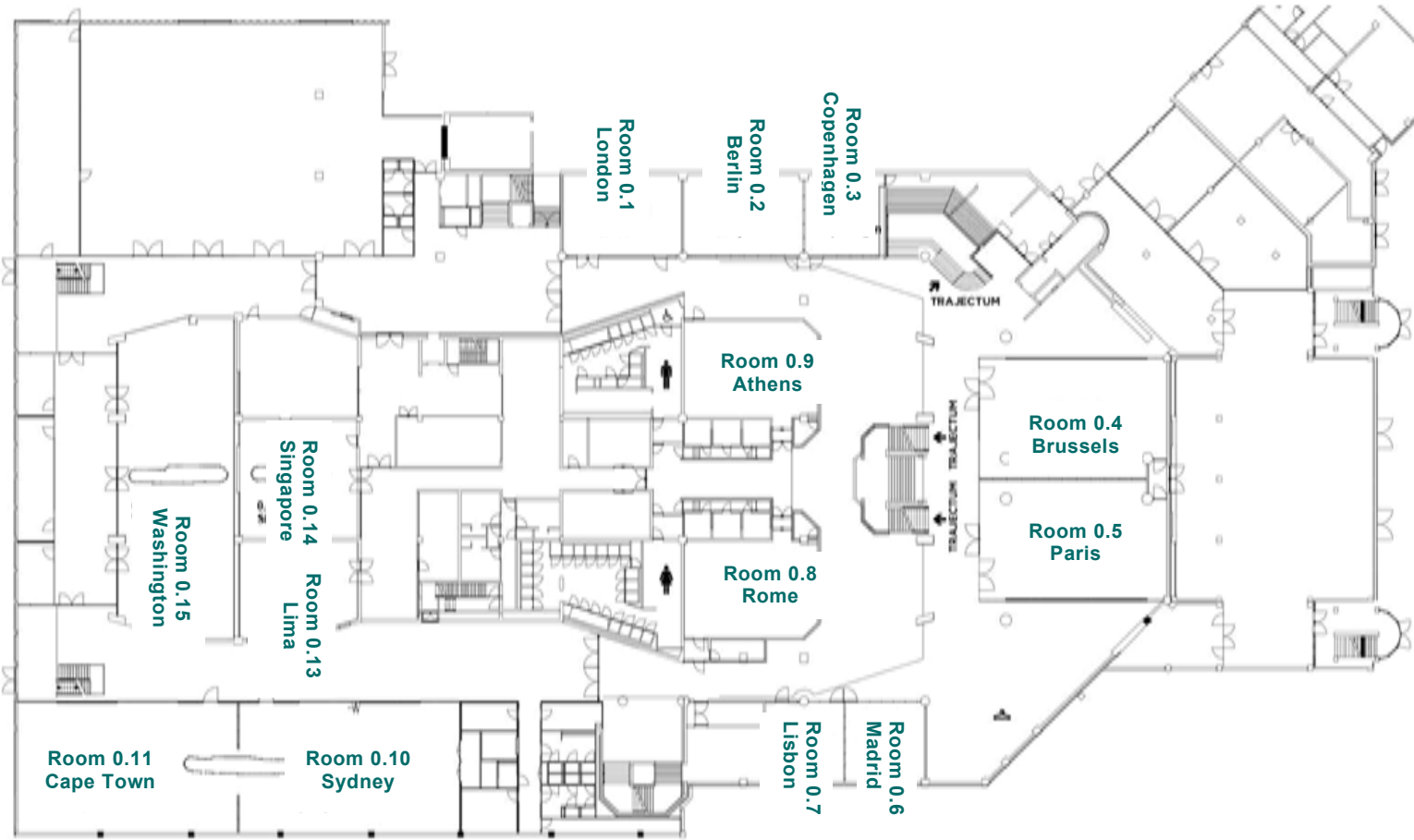
On the need of a reliable numerical model to simulate the left atrial appendage occlusion: a finite element study

F. Danielli, F. Berti, B. M. Fanni, E. Gasparotti, S. Celi, G. Pennati, L. Petrini

Personalised computational models to study the impact of covid-19 lungs under mechanical ventilation

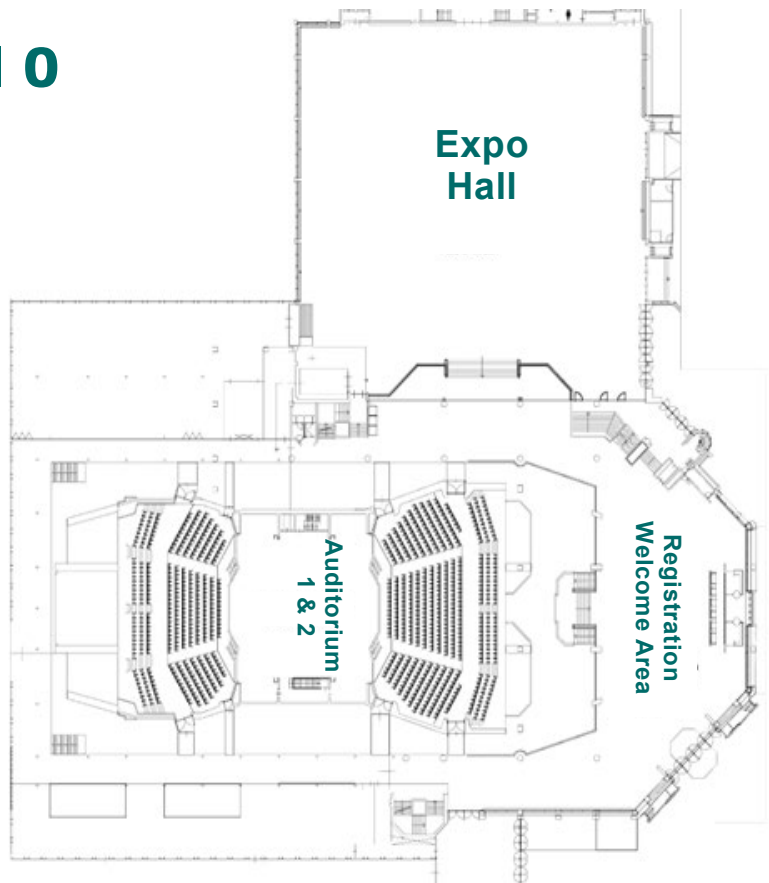
D. Kernot, J. Carson, R. van Loon, H. Arora

VENUE PLANS

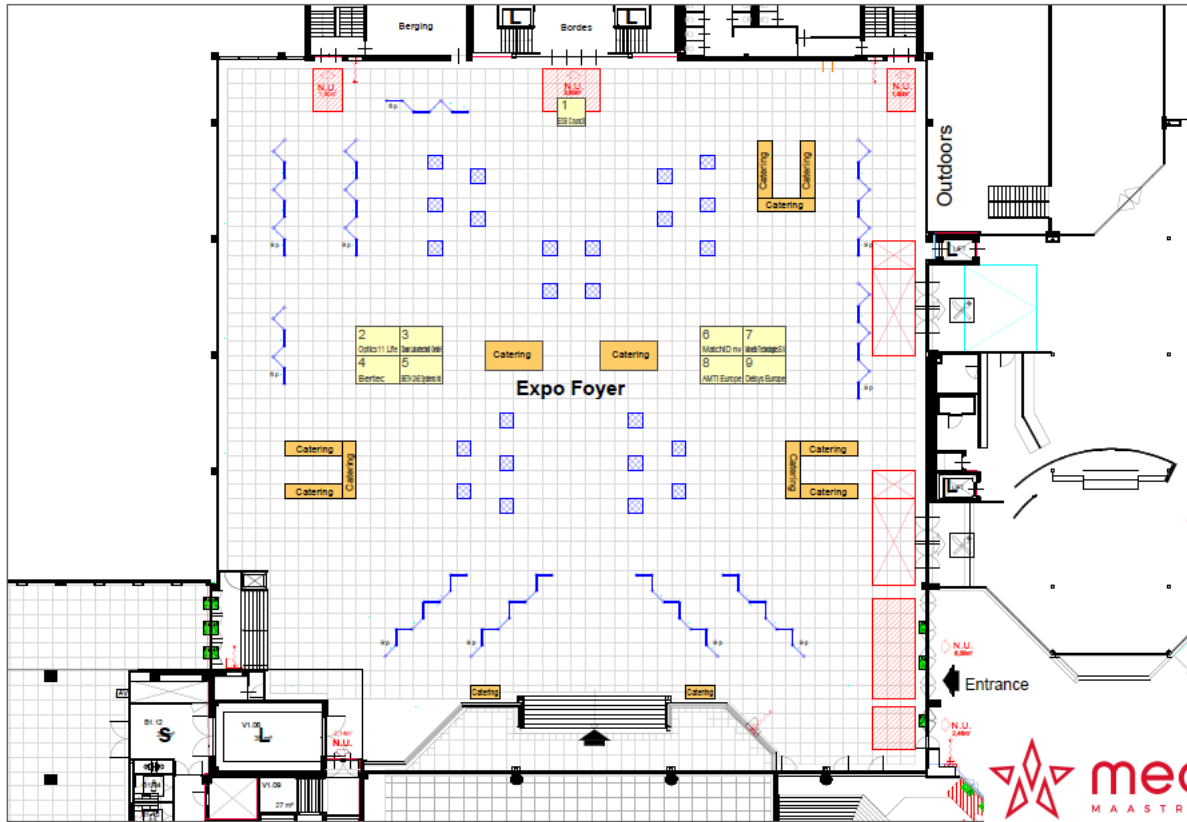


Ground Floor – Level 0

First Floor - Level 1



EXHIBITION PLAN



Company	Stand #
AMTI Europe	#8
Movella	#7
Bertec	#4
BETA CAE Systems	#5
Optics 11 Life	#2
Dunn Labortechnik GmbH	#3
Delsys Europe	#9
MatchID nv	#6

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THINGS TO DO IN MAASTRICHT



The Dominicanen bookshop (previously Selexyz Dominicanen and polare Maastricht) is located in a centuries-old Dominican church in the center of Maastricht. Even if you do not plan to buy any books, this gothic-style church is worth a visit. You can find in right by the Vrijthof.

For those who are not afraid of the dark, the caves of St. Pietersburg Hill are a must-visit. Once a labyrinth that comprised over 20,000 corridors, this underground 80-kilometre-long cave system is also called 'Grotten Noord' (North Caves). The site's unique attractions include the dome, the place where residents of Sint Pieter sheltered, and the safe. Dark and mysterious, away from crowds, light and phone signal, these caves form (literally) the foundations of Maastricht.



The Marina 't Bassin is an inner city port like those you can find on the French Coast. It is located right in the historical centre of Maastricht. The underground wharves of 't Bassin are alive with various restaurants, grand cafés, shops and galleries. At the Bassinn, you have the chance to have a cultural activity, enjoy a coffee on the terrace, or take a boat ride along the Meuse.

Restaurants in Maastricht

- BIKKE – Scandinavian cuisine
- CINQ – French restaurant with terrace
- Puur van Wijck – all-day breakfast concept
- Petit Café Moriaan – shared dining in a romantic terrace
- FoodChurch – food hall with several stands ranging from American to Asian cuisine.
- Harry's – luxe lunch and dining



PRACTICAL INFO



Air Travel

Maastricht has a central location in Europe. It's surrounded by 8 international airports within a 1 hour driving distance.

The airports are:

- Brussels Zaventem
- Düsseldorf International
- Maastricht Aachen Airport
- Eindhoven Airport
- Brussels-Charleroi Airport
- Düsseldorf – Weeze Airport
- Köln – Bonn Airport
- Liège Airport

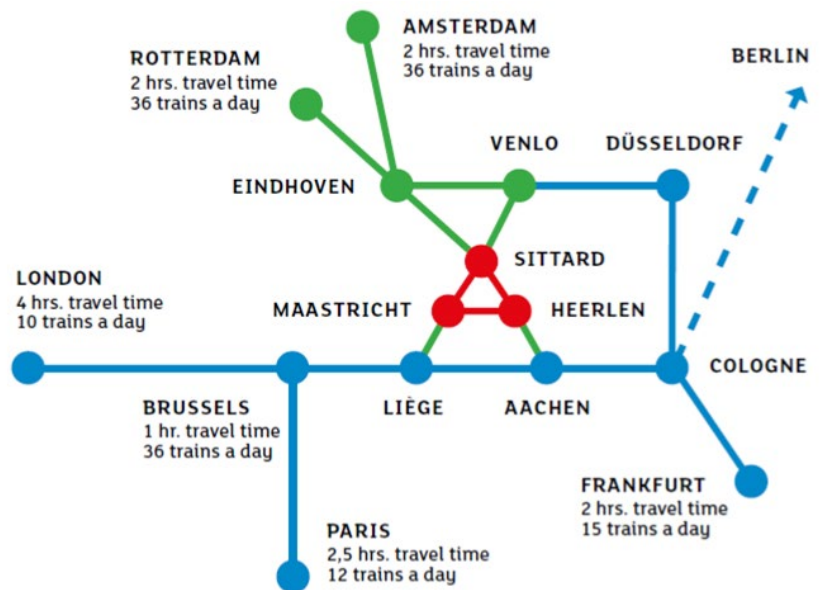


Or alternatively

- Schiphol Amsterdam (direct train to Maastricht)
- Paris/London (train connections)

Travel by Train

Maastricht can also be reached by train. The railway station is at 10 min walking distance from the conference venue, or by car (multiple parking areas available).



Getting to the Venue

- Stoptrein RS12
 - > Every 30 minutes from Maastricht Central Station
 - > Get off at Maastricht Randwyck.
 - > Walk 350 m
- Bus 7 direction Randwyck
 - > Every 30 minutes from Maastricht Central Station
 - > Get off at Maastricht, Station Randwyck
 - > Walk 260 m



ESSENTIAL

LOCATION

Southeast of The Netherlands
bathed by the Meuse river

GEOGRAPHIC COORDINATES

50.51N, 05.41E

CLIMATE

Sub-oceanic, humid and rainy.

TIME ZONE

GMT/UTC + 2 in the summer

POPULATION

122.692 (Source: CBS)

DIALLING CODE

The Netherlands +31

CURRENCY

€ (euro)

POWER SUPPLY

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

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Tuesday,	
Wednesday,	10:00-18:00
Friday and Saturday	
Thursdays	10:00-21:00

SHOPPING CENTRES

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RESTAURANTS

Lunch > 12:00 – 15:00
Dinner > 17:30 – 21:30

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Monday to Friday
> 08:30 – 17:30

CONTACTS

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30 June – 3 July 2024, Edinburgh, Scotland

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KEY DATES

October 2023

Call for
perspective
talks

November 2023

Abstract
submission
opens

November 30, 2023

Perspective talks
submission
deadline

December 15, 2023

Perspective talk
acceptance
notifications

January 31, 2024

Abstracts
submission
deadline

March 31, 2024

Abstracts
review
notifications

Multi-Joint Simulators

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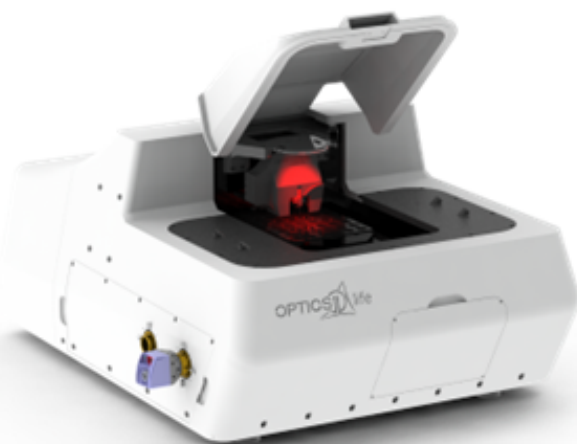


Unlock the power of Mechanobiology

Mechanics start the minute you put cells in a wellplate. As science continues to progress, it is crucial to consider real-time, non-destructive mechanical characterization of soft and living biomaterials such as cells, hydrogels, spheroids, organoids, and tissues.

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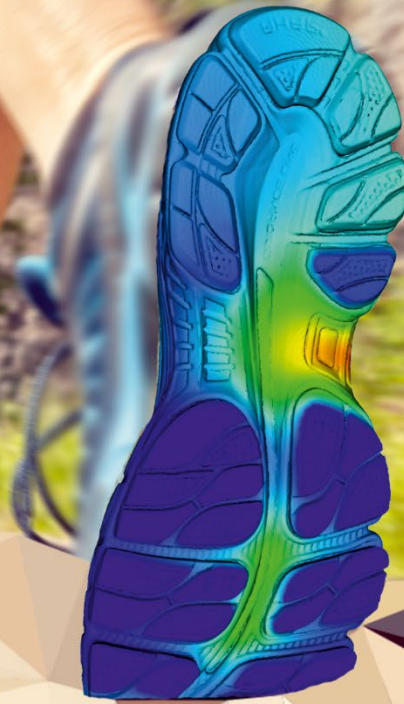
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Integrated modal analysis



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