European Society of Biomechanics

ESB2024

29th Congress of the European Society of Biomechanics

30 June – 3 July 2024, Edinburgh, Scotland

www.esbiomech2024.org

CONTENT

WELCOME TO EDINBURGH!

Dear Delegates,

Welcome to the city of Edinburgh and to the 2024 Congress of the European Society of Biomechanics. We are truly delighted to host you here.

Edinburgh, the capital of Scotland, has a very rich cultural heritage and it is and has been a centre of research and innovation breakthroughs. Edinburgh has a formidable legacy in the area of health and life sciences and continues to be, a beacon of knowledge, fostering groundbreaking research.

We have been working diligently over the last couple of years to create the perfect conference experience for you. To ensure you have a smooth and enjoyable stay, this brochure provides practical information on all events organised for the Congress including sessions, speakers, pre-courses, awards, and exhibitions. You'll also find helpful information on transport, city plans, and maps.

We extend our heartfelt thanks to all participants, speakers, and sponsors for making the ESB 2024 Congress possible. Your contributions are essential to the success of this event. We look forward to meeting you over the coming days and to the exciting discussions and discoveries that lie ahead.

Once again, welcome to Edinburgh. I hope your stay be both inspiring and memorable.

On behalf of the Local Organising Committee

Pankaj Pankaj
ESB 2024 Chair
School of Engineering,
The University of Edinburgh

Chloe E. H. Scott
ESB 2024 Co-Chair
Consultant Orthopaedic Surgeon,
NHS Lothian Edinburgh

ESB 2024 ORGANISATION

ESB 2024 Local Organising Committee

- **Richard Aspden**, *University of Aberdeen*
- **Edwin van Beek**, *University of Edinburgh*
- **Anthony Callanan**, *University of Edinburgh*
- **Michele Conti**, *University of Pavia*
- **Michael Crichton**, *Heriot-Watt University*
- **Marta Pena Fernandez**, *Heriot-Watt University*
- **Peter Hoskins**, *University of Edinburgh & University of Dundee*
- **Xiaoyu Luo**, *University of Glasgow*
- **Jennifer Paxton**, *University of Edinburgh*

ESB Council

The European Society of Biomechanics was founded in 1976 at a meeting of 20 scientists from 11 countries in Brussels. Its goal is to encourage research, disseminate knowledge and promote progress in biomechanics. It is now the largest biomechanics society in Europe with over 1500 members.

- **David Mitton**, President
  Université Gustave Eiffel, Lyon, France
- **Jérôme Noailly**, Vice President and Awards Committee Chair
  Pompeu Fabra University, Barcelona, Spain
- **Enrico Dall'Ara**, Secretary-General
  University of Sheffield, United Kingdom
- **Dieter Pahr**, Treasurer
  Vienna University of Technology, Austria
- **Marlène Mengoni**, Diversity-Inclusion and Membership Committee Chair
  University of Leeds, United Kingdom
- **Michele Conti**, Meetings and External Affairs Committee Chair
  University of Pavia, Italy
- **Peter Varga**, Meetings WebPortal Committee Chair
  AO Research Institute Davos, Switzerland
- **Bernardo Innocenti**, Publication Committee Chair
  Universitè Libre de Bruxelles, Belgium
- **Ilse Jonkers**, Scientific Communications Committee Chair
  KU Leuven, Belgium
- **Aurélie Carlier**, Education and Student Committee Chair
  Maastricht University, the Netherlands

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- **Chiara Dazzi**, *Charité – Universitätsmedizin Berlin, Germany*
- **Jorge Barrasa Fano**, *KU Leuven, Belgium*
- **Laura Lafuente Gracia**, *KU Leuven, Belgium*
- **Gianluca Santesarti**, *Sapienza University of Rome, Italy*
- **Aurélie Levillain**, *Université Gustave Eiffel, Lyon, France*
- **Sangita Swapnasrita**, *Maastricht University, the Netherlands*
- **Andrada Pica**, *Sapienza University of Rome, Italy*
- **Alexandra Tits**, *University of Liège, Belgium*
- **Rajdeep Ghosh**, *University of Sheffield, United Kingdom*
- **Anna Corti**, *Politecnico di Milano, Italy*
- **Benedetta Fantaci**, *University of Zaragoza, Spain*

ESB 2024 International Scientific Committee

- **Jean-Marc Allain** – *Institut Polytechnique de Paris, France*
- **Maria Angeles Perez Anson** – *University of Zaragoza, Spain*
- **Ayman Assi** – *Saint Joseph University, Lebanon*
- **Ferdinando Auricchio** – *The University of Pavia, Italy*
- **Stephane Avril** – *École des Mines de Saint-Étienne, France*
- **Sam Bayat** – *Centre Hospitalier Universitaire de Grenoble, France*
- **Edwin van Beek** – *The University of Edinburgh, United Kingdom*
- **Christoph Bourauel** – *University of Bonn, Germany*
- **Claire Brockett** – *University of Sheffield, United Kingdom*
- **Arjan Buis** – *University of Strathclyde, United Kingdom*
- **Anthony Callanan** – *The University of Edinburgh, United Kingdom*
- **Begoña Calvo** – *University of Zaragoza, Spain*
- **Alessandra Carriero** – *The City College of New York, USA*
- **Aurelie Cartier** – *PSL Research University, France*
- **Dario Cazzola** – *University of Bath, United Kingdom*
- **Mustafa Suphi Erden** – *Edinburgh Centre for Robotics, United Kingdom*
- **Yuhang Chen** – *Herriot Watt University, United Kingdom*
- **Floren Colloud** – *Ecole Nationale Supérieure d´Arts et Métiers, France*
- **Michele Conti** – *The University of Pavia, Italy*
- **Michael Crichton** – *Heriot Watt University, United Kingdom*
- **Luca Cristofolini** – *University of Bologna, Italy*
- **Christian Cyron** – *Hamburg University of Technology, Germany*
- **Enrico Dall'Ara** – *University of Sheffield, United Kingdom*
- **Tien-Tuan Dao** – *Centrale Lille Institut, France*
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- **Alex Dickinson** – *University of Southampton, United Kingdom*
- **Mona Eskandari** – *University of California, Riverside, USA*
- **Sara Checa Esteban** – *Charité-Universitätsmedizin Berlin, Germany*
- **Sam Evans** – *Cardiff University, United Kingdom*
- **Paulo Rui Fernandes** – *University of Lisbon, Portugal*
- **Fabio Galbusera** – *Schulthess Klinik, Switzerland*
- **Christian Gasser** – *KTH Royal Institute of Technology, Sweden*
- **Amit Gefen** – *Tel Aviv University, Israel*
- **Margit Gföhler** – *TU Wien, Austria*
- **Frank Gijsen** – *Erasmus MC, the Netherlands*
- **Richie Gill** – *University of Bath, United Kingdom*
- **María José Gómez-Benito** – *University of Zaragoza, Spain*
- **Miguel Ángel Ariza Gracia** – *University of Zaragoza, Spain*
- **Markus Heller** – *University of Southampton, United Kingdom*
- **Christian Hellmich** – *TU Wien, Austria*
- **Graham Henderson** – *NHS Lothian, United Kingdom*
- **Cathy Holt** – *Cardiff University, United Kingdom*
- **Peter Hoskins** – *The University of Edinburgh, United Kingdom*
- **Wouter Huberts** – *Eindhoven University of Technology, the Netherlands*
- **Dominika Ignasiak** – *ETH Zurich, Switzerland*
- **Bernardo Innocenti** – *Université Libre de Bruxelles, Belgium*
- **Hanna Isaksson** – *Lund University, Sweden*
- **Ilse Jonkers** – *Katholieke Universiteit Leuven, Belgium*
- **Ludger Keilig** – *University of Bonn, Germany*
- **Sabine Kling** – *ETH Zürich, Switzerland*
- **Sébastien Laporte** – *BME Paris, France*
- **Xinshan Li** – *University of Sheffield, United Kingdom*
- **Sandra Loerakker** – *Eindhoven University of Technology, the Netherlands*
- **Richard Lopata** – *Eindhoven University of Technology, the Netherlands*
- **Mhairi K. MacLean** – *University of Twente, the Netherlands*
- **Matthew Justin Major** – *Northwestern University, USA*
- **Spyros Masouros** – *Imperial College London, United Kingdom*
- **Edoardo Mazza** – *ETH Zürich, Switzerland*
- **Sean Mcginty** – *University of Glasgow, United Kingdom*
- **Laoise McNamara** – *University of Galway, Ireland*
- **Marlène Mengoni** – *University of Leeds, United Kingdom*
- **Francesco Migliavacca** – *The Polytechnic University of Milan, Italy*
- **David Mitton** – *University Lyon – IFSTTAR, France*
- **Annegret Muendermann** – *University of Basel, Switzerland*
- **Kaushik Mukherjee** – *Indian Institute of Technology, India*
- **Ralph Muller** – *ETH Zürich, Switzerland*
- **Perumal Nithiarasu** – *University of Swansea, United Kingdom*
- **Jérôme Noailly** – *Pompeu Fabra University, Spain*
- **John Norrie** – *The University of Edinburgh, United Kingdom*
- **Vít Nováček** – *University of West Bohemia, Czechia*
- **Dulce Oliveira** – *INEGI, Portugal*
- **Dieter Pahr** – *TU Wien, Austria*
- **Yohan Payan** – *TIMC-imag, France*
- **Christian Peham** – *University of Veterinary Medicine Vienna, Austria*
- **Andrew Phillips** – *Imperial College London, United Kingdom*
- **Stefaan Verbruggen** – *Queen Mary University of London, United Kingdom*
- **Gwendolen Reilly** – *University of Sheffield, United Kingdom*
- **Esther Reina Romo** – *University of Seville, Spain*
- **Sithikanta Roy** – *Indian Institute of Technology, India*
- **Gianluigi Rozza** – *International School for Advanced Studies, Italy*
- **Massimo Sartori** – *University of Twente, the Netherlands*
- **Silvia Schievano** – *University College London, United Kingdom*
- **Anthal I.P.M. Smits** – *Eindhoven University of Technology, Netherlands*
- **Fulvia Taddei** – *Instituto Ortopedico Rizzoli, Italy*
- **William R. Taylor** – *ETH Zürich, Switzerland*
- **Lauren Thomas-Seale** – *University of Birmingham, United Kingdom*
- **Philipp J. Thurner** – *TU Wien, Austria*
- **Harry van Lenthe** – *Katholieke Universiteit Leuven, Belgium*
- **Peter Varga** – *AO Research Institute Davos (ARI), Switzerland*
- **Antonio Prieto Veloso** – *University of Lisbon, Portugal*
- **Pasquale Vena** – *The Polytechnic University of Milan, Italy*
- **Xuguang Wang** – *The University of Oklahoma, USA*
- **Andrew Weightman** – *Manchester University, United Kingdom*
- **Ruth Wilcox** – *University of Leeds, United Kingdom*
- **Elisabeth Williams** – *Swansea University, United Kingdom*
- **Sophie Williams** – *University of Leeds, United Kingdom*
- **Shuqiao Xie** – *Smart Surgical Solutions, United Kingdom*
- **Amir A. Zadpoor** – *Delft University of Technology, the Netherlands*
- **Feihu Zhao** – *Swansea University, United Kingdom*
- **Peter Zioupos** – *University of Hull, United Kingdom*
- **Rebeka Zsoldos** – *University of Queensland, Australia*

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
- Lab listed on the ESB website
- Access to ESB Facebook and LinkedIn sites
- Job posting through the ESB media (website, Facebook, LinkedIn, Twitter)
- Eligibility to large pool of ESB Awards
- Eligibility to candidate your Institution for organizing the annual ESB congress

Additional Student Benefits

- Detailed information of biomechanics laboratories with ESB members
- Information about possible exchange to another laboratory
- Information about available courses (in biomechanics and other related fields)
- Job opportunities in biomechanics (offer, demand and information) in industry & academia
- Student events at the ESB Congress
- Access to ESB social media discussion forums on LinkedIn and Facebook
- List of funding sources
- Eligibility to ESB Student Award (see membership application review timeline to ensure you are eligible for awards) and Best Doctoral Thesis Award (need to be a member in good standing for at least 6 months)
- Eligibility to the ESB Mobility Award for Young Researchers (need to be a member in good standing for at least 6 months)
- Eligibility to join the ESB Student Committee

Additional Corporate Benefits

Corporate Membership is designed for industrial parties. It is not intended for University or Research groups.

- 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 organized by the ESB (ESB Congress, Meetings of the ESB National Chapters and affiliated societies, …)
- Corporate logo and company link website on the ESB homepage (http://www.esbiomech.org/)
- Submit contents (product news, special offers for ESB members, workshops /webinars, …) 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 having a booth)
- Opportunity to organize 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

Becoming a member with the ONLINE TOOL is easy!

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

Members from institutions in Low Income or Lower-middle Income Countries can get a 80% fee reduction.

ESB2025

30th Congress of the European Society of Biomechanics

AI IN BIOMECHANICS: OPPORTUNITIES AND CHALLENGES

6 – 9 July 2025
Zürich, Switzerland

esbiomech2025.org

ESB2025 TIMELINE

- **October 2024**
  Call for perspective talks
- **November 1, 2024**
  Abstract submission opens
- **November 30, 2024**
  Perspective talks submission deadline
- **December 20, 2024**
  Perspective talk acceptance notifications
- **January 31, 2025**
  Abstracts submission deadline
- **January 2025**
  Registration opening
- **March 31, 2025**
  Abstracts review notifications
- **May 16, 2025**
  Early registration deadline
- **July 6 - 9, 2025**
  ESB 2025 Congress

PRACTICAL INFORMATION

Conference venue

The EICC is the leading conference venue in Scotland. When it was built in 1995, it became the first conference venue in the world to utilise revolving auditoria to optimise events space – don't be surprised if the meeting room you have just been in has disappeared melting with the Pentland Suite plenary.

Address: EICC
The Exchange
Edinburgh
EH3 8EE, Scotland

Getting there

The EICC venue is conveniently located just 0.4 miles from the **Haymarket Railway Station (5-min walk)**.

The closest tram stop to the EICC is actually at **Haymarket Station**.

Walk from the **Haymarket Railway Station:** Exit Haymarket Station, head east towards pedestrian crossing, walk straight up Morrison Street to find EICC on the left.

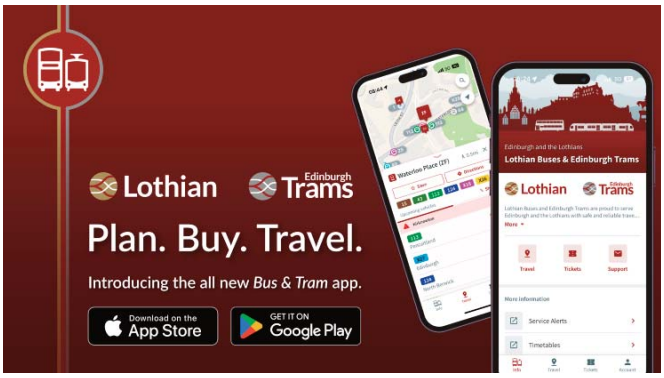
If you arrive to the Edinburgh Waverley Railway station: There is a train every 4 minutes from the Waverley Railway Station to the Haymarket Railway Station.

Arriving from the airport:

By tram: Edinburgh Trams operate between Airport and York Place. Closest stop to EICC is at Haymarket Station (see more information at https://edinburghtrams.com/). Every tram stop has ticket vending machines where you can buy Single, Return and DAYtickets.

By bus: Take Airlink 100 for a frequent service to the city center. Disembark at Haymarket Station and follow signs to EICC. Visit Lothian Buses https://www.lothianbuses.com/ for more info on timetables and tickets.

With the official Transport for Edinburgh app, you can buy and load your phone with m-tickets for Edinburgh Trams and Lothian Buses. The app allows you to buy tickets, plan your travel, and keep up to date with service alerts.



ESB Conference 2024 delegates get 20% off tram tickets!

Buy any ticket from edinburghticket.com and use code **ESB2024** at the checkout.

Flying into Edinburgh Airport?

Airport Tickets	Adult	Child	Family
Single	~~£7.00~~ £5.60	~~£3.50~~ £2.80	-
Open Return	~~£9.00~~ £7.20	~~£4.80~~ £3.84	~~£25.00~~ £20.00
3 Day Multi-Day	~~£18.00~~ £14.40	~~£9.00~~ £7.20	~~£45.00~~ £36.00
4 Day Multi-Day	~~£20.00~~ £16.00	~~£10.00~~ £8.00	~~£50.00~~ £40.00
5 Day Multi-Day	~~£22.00~~ £17.60	~~£11.00~~ £8.80	~~£55.00~~ £44.00

Arriving by train into Waverley or Haymarket?

City Tickets	Adult	Child	Family
3 Day Multi-Day	~~£10.00~~ £8.00	~~£5.00~~ £4.00	~~£22.00~~ £17.60
4 Day Multi-Day	~~£13.00~~ £10.40	~~£6.50~~ £5.20	~~£28.00~~ £22.40
5 Day Multi-Day	~~£15.00~~ £12.00	~~£7.50~~ £6.00	~~£34.00~~ £27.20

Contact us

0131 338 5780

Live Chat at edinburghtrams.com

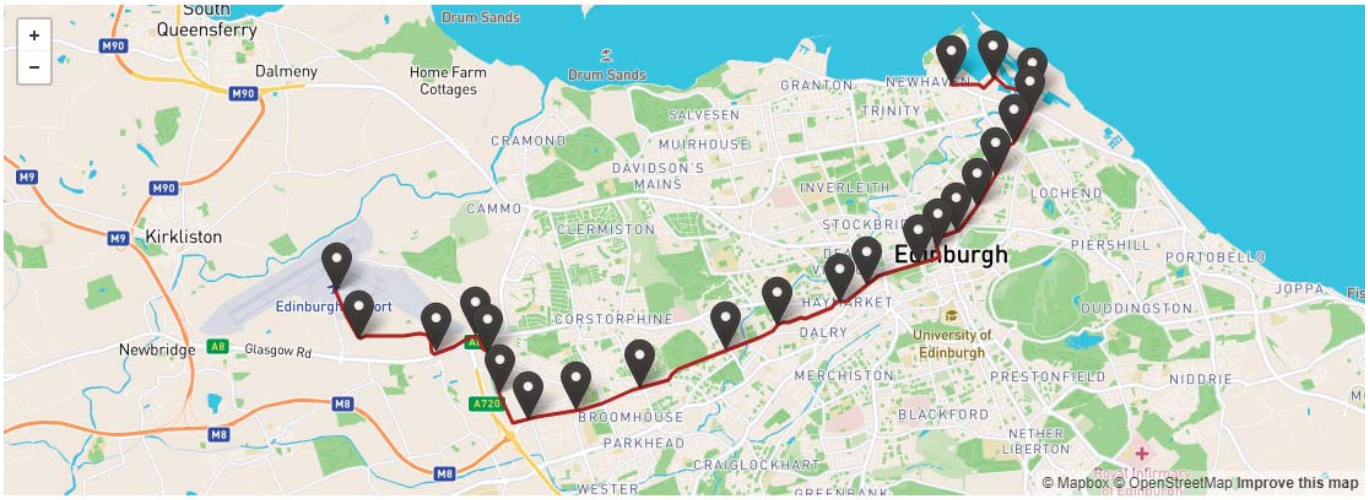
Text 'TRAM' to 82228

customer@edinburghtrams.com

EDINBURGH TICKET.com

Edinburgh Trams

Tram Stops



Due to the city centre location of the EICC there is no onsite parking available. List of close by parking places is available on the conference website.

Download the Edinburgh parking app NCP and use the discount code **"EICC4R"**!

Conference app

The **Conference4me smartphone app** provides you with the most comfortable tool for planning your participation at ESB 2024. Browse the complete programme of sessions including all presentations directly from your phone or tablet and create your very own agenda on the fly. The app is available for Android, iOS, and Windows Phone.

You can also find useful materials, maps, updates and surveys in the app.

Coffee breaks & lunches

Coffee and lunch breaks are included in the registration fee and will be served according to the time schedule mainly in the Exhibition and networking area Cromdale (floor -2), but also in the Registration area Strathblane (floor 0).

Water fountains will be available in hallways. Bring your own bottle.

Poster areas

Posters will be split in two poster areas – one in the exhibition hall Cromdale (floor-2) and the other one in the registration area Srathblane (floor 0). Catering will be available in both poster areas in order to facilitate exchange and discussions in the poster areas during all breaks.

Exhibition

The main networking and exhibition area, where the main companies in the field will present their latest software and products, as well as a project corner is located in the Cromdale area.

The exhibition and networking space will be open throughout the conference days:

- Monday 1 July | 9am – 8pm
  (including the Whisky tasting event dedicated to networking with partners from industry)
- Tuesday 2 July | 9am – 5:40pm
- Wednesday 3 July | 9am – 4:30pm

Internet access

Free wifi access is available in all areas of the venue.
Network: **delegate**
Password: **haymarket**

Certificates of attendance

The certificates of attendance will be available for download in the conference platform Conftool after the conference. All participants will be notified by email when the certificates are ready for download.

Abstract book

The abstracts are available in the online programme in the conference platform Conftool. Go to **Browse conference agenda** and click on the title of the session you are looking for in order to display the full list of presentations with the pdf of their abstracts. Abstracts are also available in the conference app Conference4me. Click on the presentation you are interested in (works for both oral and poster presentations) and open the External resource A file.

Printing companies

More printing companies are available in the proximity of the congress venue:

- **Copy Print**
  22 - 22a Morrison street, Edinburgh, EH3 8BJ
  https://www.copyprintedinburgh.com/
  Open Monday-Thursday 9:00-17:00 and Friday 9:00-16:00
- **Copymade Ltd**
  3 West Maitland Street, Edinburgh EH12 5DS
  https://www.copymade.com/

ESB 2024 Congress Secretariat

The Codan Consulting team will be available onsite to assist with any queries that you might have related to the registration, scientific programme, exhibition and social events. Do not hesitate to stop at the Registration desk (Strathblane area, floor 0) for any questions.

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

Registration

Opening hours
Sunday 30 June | 08:30am – 7:30pm
Monday 1 July | 07:30am – 6:30pm
Tuesday 2 July | 08:00am – 6:45pm
Wednesday 3 July | 08:00am – 6:15pm

Pre-Registrations
We strongly encourage participants arriving to Edinburgh on Sunday already to stop by and register directly on Sunday in order to avoid queues on Monday morning. Please note that all registration documents have been prepared for pre-registered participants and sorted by last name. Therefore, when approaching the appropriate registration counter make sure to clearly state your last name (family name) under which you have registered.

Name badge
The participants are required to wear and display their name badge at all times in order to enter the congress venue. Please do not forget to bring your badge to the social events as attendance will be checked by scanning the QR codes available on your badges due to the limited number of places.

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

Presentations upload

Presentations should be uploaded prior to the conference through the **conference platform Conftool**.

If you have an updated version of your presentation, a **Central speakers' upload** will be located in the Lomond Foyer on floor 0. Please bring your presentation on USB and come to upload it ideally on the day before, or latest 2 hours before your session starts.

Poster set up

If you are presenting on Monday, July 1, you should set up your poster either on the pre-registration day on Sunday June 30 starting from 3:00pm (in this way your poster should already be in place during the welcome reception) or in the morning on July 1 starting from 07:30am. You have to remove your poster on the 1st of July by 8:00pm.

If you are presenting on Tuesday, July 2, you should set up your poster in the morning on the 2nd of July starting from 07:30am. You can remove your poster on Wednesday July the 3rd in the afternoon.

All posters that have not been removed by Wednesday July 3rd by 6:30pm will be dismantled and disposed by the conference organizers.

Presenters are asked to be present by their posters during the indicated time slots in order to present their posters to the other delegates and to the scientific committee members and answer any questions coming from them.

SOCIAL EVENTS

ESB Walk

Date: 30 June 2024, 11:00am and 2:30pm
Location: Arthur's Seat and Holyrood Park

This will be a slow walk around this iconic hill taking in some of the best views of this ancient city. A good jacket and comfortable flat shoes recommended (runners or shoes with decent grip as the ground can be slippery).

Starting Point at the gate in front of Holyrood Palace, located at the end of the Royal Mile. Free entrance but registration needed. Distance: 4,75 km / 3 miles; Ascent: 279 m

Welcome reception

Date: 30 June 2024, 6:30pm-8:00pm
Venue: Edinburgh International Conference Centre; The Exchange, 150 Morrison St

Warm welcome to all participants and great occasion to catch up with colleagues again after a year! Kickstart your conference journey with a drink reception taking place directly at the conference venue. If you want to buy some extra drinks after the welcome reception, the bar accepts only card payments.

Whisky tasting & Industry Networking

Date: 1 July 2024, 6:40pm - 8:00pm
Venue: Edinburgh International Conference Centre; The Exchange, 150 Morrison St

Reserved for participants who have booked this event while registering for the conference. Registered participants will receive 3 tokens to vouchers for the degustation. Please bring those with you to the whisky tasting event.

Embark on a journey of flavors from smooth single malts to warm blends at our special Monday whisky tasting event while networking and getting to know the conference exhibitors. Limited number of places.

As part of the experience, you can visit all the The Scotch Malt Whisky Society's across the UK. See more information on the right.

Edinburgh

SMWS - Queen Street
28 Queen Street, Edinburgh, Midlothian, United Kingdom, EH2 1JX

Glasgow

SMWS - Bath Street
40 Bath Sreet, Glasgow, United Kingdom, G2 1HG

Leith

SMWS - The Vaults
The Vaults, 87 Giles Street, Leith, United Kingdom, EH6 6BZ

London

SMWS - London
19 Greville Street, Holborn, London, United Kingdom, EC1N 8SQ

CONTACT DETAILS

28 QUEEN STREET EDINBURGH EH2 1JX
0131 220 2044
QUEENSTREET@SMWS.COM

OPENING HOURS

Monday	Closed
Tuesday	11am – 11pm
Wednesday	11am – 11pm
Thursday	11am – Midnight
Friday	12 noon – Midnight
Saturday	12 noon – Midnight
Sunday	12 noon – 10pm

Night in town for students

Date: 1 July 2024, 8:00pm-10:30pm
Venue: Revolution Edinburgh; 30A Chambers Street, Edinburgh EH1 1HU

For students who have registered for this event only, limited capacity of the venue. Please **bring your badge,** attendance will be checked. Join us for a relaxed evening tailored for Master and PhD students! Engage filled with networking, games and music in a unique venue showcasing tradition and architecture. Enjoy drinks and snacks, meet new colleagues, and reconnect with friends in a dynamic atmosphere.

How to get there from EICC:

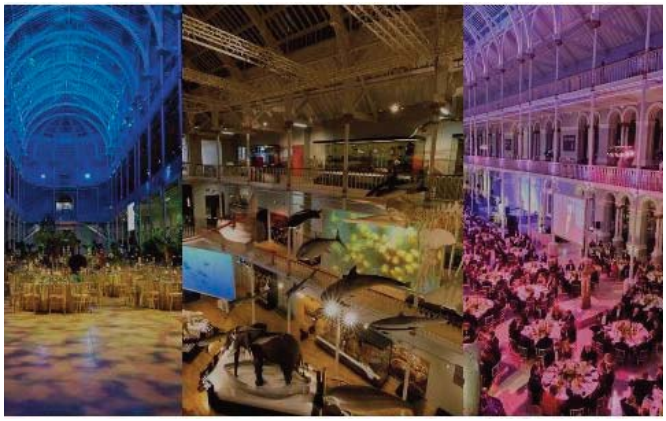
20 min. walk through the center of Edinburg or taking a bus from Morrison street getting off at Bristo place or National Museum of Scotland (10 min. ride).

https://www.lothianbuses.com/

- bus number 35 from Semple Street – 10 min.
- bus number 2 from Morrison Street – 7 min.
- walking 19 min.
- cycling 7 min.

ESB Congress dinner

Date: 2 July 2024, 8pm-11pm
Venue: National Museum of Scotland; Chambers St, Edinburgh



Reserved for participants who have booked the registration fee including networking or who have booked the dinner. Limited number of places, attendance will be checked, please bring your badge with you.

Please note that payment by card is required for buying the extra drinks at the museum.

The congress dinner will be held in the Grand Gallery of the National Museum, a breath-taking architecture with soaring glass atrium and one of the very few in town that can accommodate such a large and vibrant group! Join us for this wonderful networking evening surrounded by the museum's inspiring exhibits.

How to get there from the EICC:

20 min. walk through the center of Edinburg or taking a bus from Morrison street getting off at Bristo place or National Museum of Scotland (10 min. ride).

https://www.lothianbuses.com/

- bus number 35 from Semple Street – 10 min.
- bus number 2 from Morrison Street – 7 min.

Networking and mentoring events

Lunch mentoring event: Meet the Biomechanics Experts

Date: Monday 1 July 2024, 1pm
Place: Platform 5 café at the EICC congress venue (floor +1). Lunch will be available directly at Platform 5 for the attendees registered for the Meet the Biomechanics Experts

Would you like to ask advice to research experts of biomechanics on how to succeed in becoming an independent scientist or how to manage work-life balance? Would you like to know more about their current research, or what are their next scientific challenges? On Monday July 1st, have your lunch with a senior researcher and discuss informally in small groups about research and/or career.

ESB Diversity in Biomechanics

Date: Monday 1 July 2024, 6:35pm
Place: Pentland Suite (floor +3)

Speakers:
Prof. Rachel Williams, University of Liverpool
Dr. Fraje Watson, Imperial College London

The "Diversity in biomechanics" session has as its main goal to discuss and identify which actions the ESB should and/or could take to improve gender and any other diversity in biomechanics.

KEYNOTE TALKS

Alison Marsden

Professor of Cardiovascular Diseases, Stanford University, Stanford, US
Lecture: Multi-physics Modeling in Pediatric Cardiology
Monday 1 July 2024, 08:30am, Pentland Suite

Congenital heart disease affects 1 in 100 infants and is the leading cause of infant mortality in the US. Computational modeling is particularly valuable in this heterogeneous and high-risk population because of the need for personalized treatment planning. We will present recent work extending traditional hemodynamics simulations to include multiple physical processes and cardiac function in pediatric cardiology. In particular, we will discuss 1) melding constrained mixture models of vascular growth and remodeling with patient specific finite element simulations, and 2) multi-physics cardiac simulations incorporating electrophysiology, active contraction and fluid structure interaction. Novel algorithms for generating synthetic vascular networks for 3D bioprinting applications and simulating tissue perfusion will also be described. We will finally describe open-source software and data resources available via the SimVascular project and the Vascular Model Repository.

Fares S Haddad

Professor and Consultant Orthopaedic Surgeon,
University College Hospitals, London, UK
Lecture: Robotic Assisted Hip and Knee Arthroplasty: Are We Making Headway?
Tuesday 2 July 2024, 08:30am, Pentland Suite

Conventional manual total hip arthroplasty (CO THA) and total knee arthroplasty (CO TKA) are well-established surgical procedures for the treatment of symptomatic end-stage arthritis. These procedures use preoperative two-dimensional radiographs for surgical planning and intraoperative handheld instruments to guide bone resections and component positioning. However, these manual procedures are associated with surgical errors in component positioning and have limited scope for assessing patient-specific joint biomechanics. Recent innovations in surgical technology have led to the development of robotic assisted total hip arthroplasty (RO THA) and robotic assisted total knee arthroplasty (RO TKA). These procedures use preoperative three-dimensional imaging to create patient-specific surgical plans and an intraoperative robotic device to execute these plans with high-levels of accuracy and reproducibility. In addition, RO THA uses dynamic preoperative assessments of spinopelvic kinematics to modify implant positioning, whilst RO TKA uses intraoperative assessments of knee biomechanics to fine-tune component positioning and restore native limb alignment. Existing studies have shown that RO THA is associated with improved accuracy in executing the planned horizontal and vertical centres of rotation, combined offset, cup inclination, cup version, and leg-length correction compared with CO THA. Clinical studies have shown RO TKA is associated with improved accuracy in templating component sizes, increased accuracy of component positioning, reduced opiate analgesia consumption, faster postoperative rehabilitation, shorter time to hospital discharge, less iatrogenic soft tissue injury, reduced systemic inflammatory response and improved Forgotten Joint scores at five years follow-up compared with CO TKA. For both RO THA and RO TKA, there are no learning curves for executing the planned component positioning and no additional risk of complications during the learning phases. Robotic planning software and intraoperative technology have been used to develop the coronal plane alignment of the knee (CPAK) and macroscopic soft tissue injury (MASTI) classifications, establish individualized "functional cup positioning" in THA and "functional alignment" in TKA, and assess the effects of controlled ligament releases and fixed flexion deformity on knee biomechanics.

Wafa Skalli

Professor, École Nationale Supérieure d'Arts et Métiers, Paris
Lecture: Clinical Research in Spine Biomechanics
Wednesday 3 July 2024, 08:30am, Pentland Suite

The spine is a key structure to withstand external loads, and particularly gravity in the erect position. It essential role is also to allow for motion while protecting the spine chord located in the medullar canal.

From a mechanical point of view, spine complex architecture has been widely investigated and modelled, taking into account the complex geometry and material properties of vertebrae and connecting soft tissues.

Despite these extensive efforts, clinical issues still represent major challenges for the Biomechanical engineer: spine disorders represent a huge human and societal burden, with associated pain impacting quality of life, fractures and loss of autonomy. When severe disorders require surgery, mechanical complications are not rare. Prevention is difficult because of the lack of understanding of the underlying mechanisms. In this context, clinically oriented research in spine biomechanics will be presented with two major aspects :

Recent advances in subject specific spine modelling, considering not only the geometry and material properties of a given patient, but also subject specific loads, which require a global approach with head to pelvis and lower limb analysis in relation with musculo-skeletal issues.
Translation from research to the service of patients and society. Academic research innovative models often require a tremendous effort (human and financial) to tackle issues such as extensive evaluation in real life (which may require drastic models evolution), proof of the medical service provided, ergonomy with regard to a routine clinical use, …. Some related research and development issues will be presented.

PRE-COURSES

REFRAME – Interpreting joint motion patterns

Date: 30 June 2024, 12:30pm – 3:00pm
Speakers: William R. Taylor, Ariana Ortigas Vásquez, Adrian Sauer

- Increase awareness of the substantial effect that even minor differences in reference frame orientation and position have on the shape and magnitude of kinematic signals and highlight why it is essential that researchers consider these effects before concluding that two sets of kinematic signals that look different actually represent different underlying joint motion.
- Explain how the REference FRame Alignment MEthod (REFRAME) can be used to remove artefact caused by differences in frame alignment and account for such potential inconsistencies in motion analysis – and thereby provide researchers with the tools necessary to reach more robust and reproducible conclusions regarding joint kinematics.

Digital Image Correlation

Date: 30 June 2024, 3:30pm – 6:00pm
Speakers: Fabrice Pierron, Pascal Lava

The objective is to provide a detailed introduction of Digital Image Correlation to an audience that may have heard about it but never used it. Basics will be covered and examples provided. This will of course only provide an overview and time does not allow for a full hands-on experience. However, this course is based on ten years of experience of MatchID in DIC training and interested attendees will be able to subscribe to a more in-depth course that MatchID organizes on a regular basis. It is worth noting that this course is not designed to advertise the MatchID software, it is platform-independent and reviews the important bricks common to all DIC packages.

Machine learning in computational biomechanics

Date: 30 June 2024, 09:00am – 12:30pm
Speakers: Ankush Aggarwal, Chaitanya Kaul, Choon Hwai Yap

a) Understand the mathematical foundation of neural networks and Gaussian processes and what it means to train them
b) Learn how to implement and use neural networks and Gaussian processes in Python-based libraries
c) Application of these techniques to three specific problems:
    a) constitutive modeling,
    b) classification of images, and
    c) solving differential equations
d) Learn about challenges and opportunities in this field

Constitutive modelling of soft tissues

Date: 30 June, 2024, 09:00am – 11:30am
Speakers: Xiaoyu Luo, Hao Gao, Nicholas Hill, Namshad Thekkethil

The course will primarily concentrate on establishing the fundamentals of biomechanics and constitutive modeling within biological tissues. It will lay the groundwork for understanding tensor algebra, continuum mechanics, and nonlinear elasticity, progressing to the study of constitutive modeling in biological solids. Additionally, the course will touch on topics such as computational methods, growth, and remodeling, with a consistent emphasis on theoretical analysis and mathematical modeling integrated into the curriculum.

Constitutive modelling of hard tissues

Date: 30 June 2024, 3:30pm – 6:00pm
Speakers: Philippe Zysset, Uwe Wolfram

In this pre-course, participants will discover the organizational architectures and multiscale mechanical behavior of two biological hard tissues: bone tissue and cold-water coral skeletons. Following the pre-course, participants will be able to select appropriate constitutive models to address a variety of research questions involving hard tissues.

ESB 2024 SCIENTIFIC AWARDS

ESB Clinical Biomechanics Award

This award was established by ESB with the purpose of fostering the application of Biomechanics to clinically oriented problems. The four selected finalists will present their work on **Tuesday July 2nd at 4:20pm in the Pentland Suite**.

- MEDICAL DEVICE DEVELOPMENT TO QUANTIFY LUNG STIFFNESS IN SMOKERS USING MAGNETIC RESONANCE ELASTOGRAPHY
  S. F. BENSAMOUN, University of technology of Compiègne, France
- DXA-BASED 3D FINITE ELEMENT MODELS PREDICT HIP FRACTURES BETTER THAN AREAL BMD IN OSTPRE FEMALE COHORT
  L. Grassi, Lund University, Sweden
- ON THE USE OF TEVAR PATIENT-SPECIFIC FINITE ELEMENT SIMULATIONS IN THE CLINICAL PRACTICE
  A. Ramella, Politecnico di Milano, Italy
- IN SILICO MULTI-CRITERIA PLANIFICATION OF SPINE SURGERY TO AVOID PROXIMAL JUNCTIONAL FAILURE
  M. Rasouligandomani, Pompeu Fabra University, Barcelona, Spain

ESB Student Award

The four selected finalists will present their work on **Monday July 1st at 2:50pm in the Pentland Suite**.

- FEMORAL GROWTH PREDICTIONS BASED ON MULTI-SCALE MODELS: WHICH MODEL LEADS TO THE MOST ACCURATE PREDICTIONS?
  W. Koller, University of Vienna, Austria
- EXPLORING ARTERIOVENOUS FISTULA WALL VIBRATIONS: A FLUID STRUCTURE INTERACTION LONGITUDINAL STUDY
  L. Soliveri, Istituto di Ricerche Farmacologiche Mario Negri IRCCS and Politecnico di Milano, Italy
- DETERMINING PATIENT SPECIFIC CORNEAL MECHANICAL PROPERTIES IN REAL TIME USING DEEP LEARNING
  E. Redaelli, Universidad de Zaragoza, Spain
- OMIBONE, OMICS-DRIVEN COMPUTER MODEL OF BONE REGENERATION FOR PERSONALIZED TREATMENT
  M. Jabe, Berlin Institute of Health at Charité–Universitätsmedizin Berlin, Germany

ESB Early Career Research Award

The winner will present his/her work on Tuesday, 2nd July at 2:50pm in Pentland Suite

ESB 2024 Poster Award

The ESB poster award recognizes the best poster presented at the annual conference. The best poster prize will be announced during the Closing session.

VALIDATION OF VIRTUAL TRANSCATHETER AORTIC VALVE IMPLANTATION USING IN VITRO AND CLINICAL DATA – *Giulia Luraghi, Politecnico di Milano, Italy*

2024 Best Doctoral Thesis Award

VALIDATION OF VIRTUAL TRANSCATHETER AORTIC VALVE IMPLANTATION USING IN VITRO AND CLINICAL DATA - *Tian Yuan, Imperial College London, United Kingdom*

The winner will present his/her work on **Tuesday, July 2nd at 2:50pm in the Pentland Suite**.

PERSPECTIVE TALKS OVERVIEW

Stephen John Payne, *National Taiwan University, Taiwan*
New Approaches To Cerebral Haemodynamics Models In Cerebrovascular And Neurodegenerative Disease

Dominique Pioletti, *EPFL, Switzerland*
Temperature: The Missing Link In Our Understanding Of Cartilage Homeostasis?

Francesco Migliavacca, *Politecnico di Milano, Italy*
Personalised Digital Twins To Predict Responses To Therapeutic Actions: Application To Aortic Diseases

Yohan Payan, *Univ. Grenoble Alpes, France*
Biomechanical Digital Twins: Challenges And Bottlenecks -

Lorenzo Grassi, *Lund University, Sweden*
Subject-Specific Fe Models And In-Silico Medicine. How To Combine Credibility With Clinical Feasibility?

Choon Hwai Yap, *Imperial College London, United Kingdom*
Clinically Relevant Fetal Heart Biomechanics Modelling

Andreas Stylianou, *European University Cyprus, EUC Research Centre - Cyprus*
AFM-Based Nanomechanical Biomarkers

Umberto Morbiducci, *Politecnico di Torino, Italy*
Endothelial Shear Stress In Vascular Disease: Inside And Outside Of The Plato's Cave

Matthew J Major, *Northwestern University, USA*
Framing Leg Prosthesis Design As An Optimization Problem: Linking Mechanical Function To Biomechanical Outcomes

Francesco Sturla, *IRCCS Policlinico San Donato, Italy*
Leveraging Computational Tools To Cope With Clinical Needs And Personalize Cardiovascular Treatments

Clement de Loubens, *LRP CNRS UGA, France*
Challenges And Advances In Modeling Gastrointestinal Tract Motility And Transport Phenomena

Behrooz Fereidoonnezhad, *TU Delft, the Netherlands*
Towared Personalised Treatment Of Stroke: A Multiscale Computational Approach

Richie Harinderjit Singh Gill, *University of Bath, United Kingdom*
From Simulation To Surgery: Personalised Biomechanical Treatment For Knee OA

Marco Palanca, *University of Bologna, Italy*
New Insights On The Mechanical Properties Of Metastatic Vertebrae As Evaluated From Combined Advanced Imaging And Experimental Approaches

Seyyed Hamed Hosseini Nasab, *ETHZ, Switzerland*
Enhancing Total Knee Arthroplasty Outcomes: Navigating Challenges, Innovations, And Future Directions

Seraina Anne Dual, *KTH Royal Institute of Technology, Sweden*
Impacting Cardiovascular Health With Sensor Systems

Stephen J. Ferguson, *ETHZ, Switzerland*
Acetabular Labrum Restoration By Tissue Engineering: Structure, Biomechanics, Mechanobiolgy

Angela Elizabeth Kedgley, *Imperial College London, United Kingdom*
Relevance Of In Vitro Joint Motion Simulation In An Increasingly Digital World

Alessandro Borghi, *Durham University, United Kingdom*
Craniofacial Biomechanics: Integrating Research With Clinical Practice

Sandra Loerakker, *Eindhoven University of Technology, the Netherlands*
Computational Modeling Of Growth And Remodeling To Advance Cardiovascular Tissue Engineering

Anthal Smits, *Eindhoven University of Technology, the Netherlands*
Dissecting Macrophage Mechanobiology To Engineer Immuno-Regenerative Cardiovascular Implants

Jose F Rodriguez Matas, *Politecnico di Milano, Italy*
Computational Model Of The Zebrafish Heart

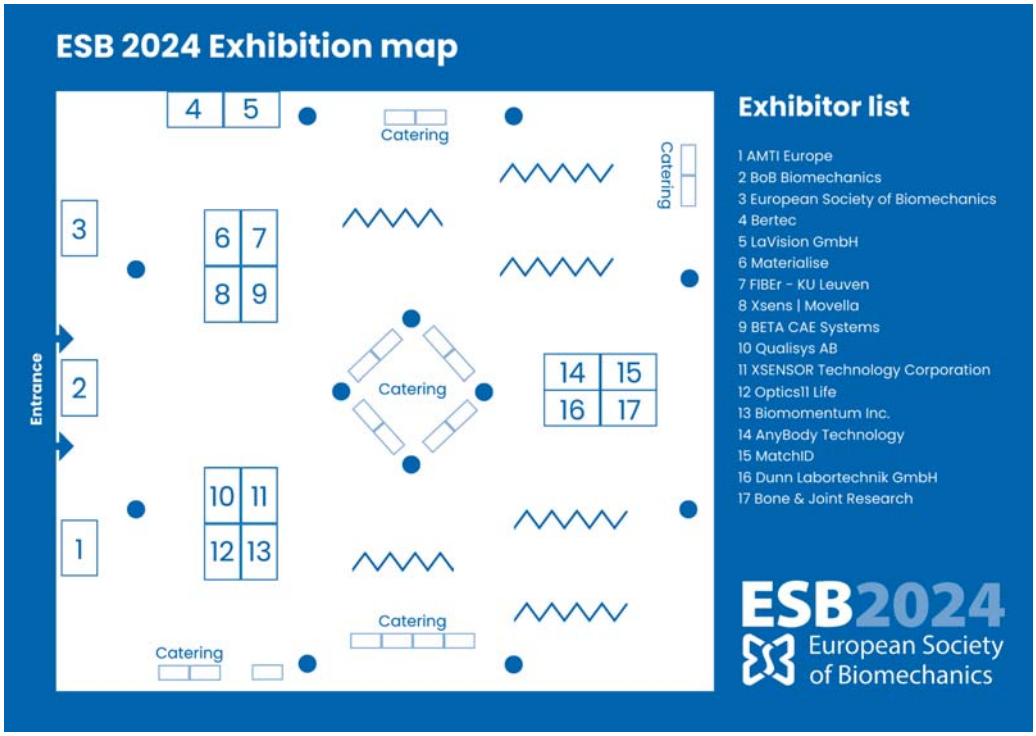
Hélène Pillet, *Arts et Métiers Institute of Technology IBHGC, France*
Biomechanics Of The Locomotion Applied To Prosthetic Design

Diana Massai, *Politecnico di Torino, Italy*
Knowledge-Generation Platform For Unravelling Bone Mechanotransduction Mechanisms

Jérôme Noailly, *Pompeu Fabra University, Spain*
Computational Systems Mechanobiology To Explore Important Endotypes In Non-Communicable Disorders

Peter Zioupos, *University of Hull, United Kingdom*
Bone Tissue Properties To Understand Fracture Risk In Bone Disorders

ESB 2024 EXHIBITION PLAN



Stand 1 **AMTI Europe**
www.amti.biz

Stand 2 **BoB Biomechanics**
www.bob-biomechanics.com

Stand 3 **European Society of Biomechanics**
www.esbiomech.org

Stand 4 **Bertec**
www.bertec.com

Stand 5 **LaVision GmbH**
www.lavision.com

Stand 6 **Materialise**
www.materialise.com

Stand 7 **FIBEr – KU Leuven**
www.fiber.biomech.be

Stand 8 **Xsens | Movella**
www.movella.com

Stand 9 **BETA CAE Systems**
www.beta-cae.com

Stand 10 **Qualisys AB**
www.qualysis.com

Stand 11 **XSENSOR Technology Corporation**
www.xsensor.com

Stand 12 **Optics11 Life**
www.optics11life.com

Stand 13 **Biomomentum Inc.**
www.biomomentum.com

Stand 14 **AnyBody Technology**
www.anybodytech.com

Stand 15 **MatchID**
www.matchid.eu

Stand 16 **Dunn Labortechnik GmbH**
www.dunnlab.de

Stand 17 **Bone & Joint Research**
www.boneandjoint.org.uk

ESB 2024 PROGRAMME OVERVIEW

Sunday, 30 June 2024

8:30am – 7:30pm	Registration
9:00am – 11:30am	**Pre-course: Constitutive modelling of soft tissues** (Kilsyth Suite)*; Xiaoyu Luo, Hao Gao, Nicholas Hill & Namshad Thekkethil*
9:00am – 12:30pm	**Pre-course: Machine learning in computational biomechanics** (Tinto Suite); *Ankush Aggarwal, Chaitanya Kaul & Choon Hwai Yap*
11:00am –1:30pm	**Morning ESB Walk** (Arthur's Seat and Holyrood Park)
12:30pm – 3:00pm	**Pre-course: REFRAME - Interpreting joint motion patterns** (Moorfoot Suite)*; William R. Taylor, Ariana Ortigas Vasquez & Adrian Sauer*
2:30pm – 5:00pm	**Afternoon ESB Walk** (Arthur's Seat and Holyrood Park)
3:30pm – 6:00pm	**Pre-course: Digital image correlation** (Tinto Suite)*; Fabrice Pierron & Pascal Lava* **Pre-course: Constitutive modelling of hard tissues** (Kilsyth Suite)*; Philippe Zysset & Uwe Wolfram*
6:30pm – 8:00pm	**ESB 2024 Welcome reception** (Cromdale Hall)

Monday, 1 July 2024

	Pentland Suite	Sidlaw Auditorium	Fintry Auditorium	Tinto Suite	Moorfoot Suite
7:30am – 6:30pm	Registration				
8:30am – 9:15am	*Keynote lecture:* **MULTI-PHYSICS MODELING IN PEDIATRIC CARDIOLOGY***; Alison Marsden* *Chairs: Pankaj Pankaj, Michele Conti*				
9:15am – 9:45am	Coffee break (Cromdale & Strathblane Hall)				
9:45am – 10:55am	TR01.1 **MUSCULOSKELETAL BIOMECHANICS I: LOWER EXTREMITY I** *Chairs: David Mitton, David Elwyn Williams*	TR02.1 **COMPUTATIONAL METHODS FOR ORTHOPAEDIC APPLICATIONS I** *Chairs: Paulo Fernandes, André P. G. Castro*	TR03.1 **HARD TISSUE BIOMECHANICS I** *Chairs: Davide Ruffoni, Uwe Wolfram*	TR04.1 **SOFT TISSUE BIOMECHANICS I: KNEE & CARTILAGE** *Chairs: Michael Crichton, Raul Aparicio-Yuste*	TR05.1 **COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS I** *Chairs: Michael S Sacks, Giulia Luraghi*
11:00am – 1:00pm	TR01.2 **MUSCULOSKELETAL BIOMECHANICS II: UPPER EXTREMITY** *Chairs: Angela Elizabeth Kedgley, Sara Checa Esteban*	TR02.2 **COMPUTATIONAL METHODS FOR ORTHOPAEDIC APPLICATIONS II** *Chairs: Dieter Pahr, Enrico Schileo*	TR03.2 **HARD TISSUE BIOMECHANICS II** *Chairs: Harry van Lenthe, Aurélie Levillain, Davide Ruffoni, Vee San Cheong*	TR04.2 **MECHANOBIOLOGY I: SOFT TISSUE AND CARTILAGE** *Chairs: Claire Leclech, Andreas Stylianou*	TR05.2 **COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS II** *Chairs: Frank Gijsen, Alison Marsden*
1:00pm – 2:00pm	Lunch break & Exhibition viewing (Cromdale & Strathblane Hall) **MEET THE BIOMECHANICS EXPERTS** (Platform 5 cafe)				
2:00pm – 2:45pm	**POSTER SESSION A** (Cromdale Hall) **POSTER SESSION B** (Strathblane Hall)				
2:50pm – 3:50pm	**ESB STUDENT AWARDS** *Chairs: Aurelie Carlier, Jérôme Noailly*				
3:50pm – 4:20pm	Coffee break (Cromdale & Strathblane Hall)				
4:20pm – 5:30pm	TR01.3 **MUSCULOSKELETAL BIOMECHANICS III: MUSCULOSKELETAL MODELLING WHOLE BODY I -** *Chairs: Darshan Sunil Shah, Bryce Adrian Killen*	TR02.3 **ORTHOPAEDIC IMPLANTS AND DEVICES I: TOTAL KNEE ARTHROPLASTY** *Chairs: Thomas M. Grupp, William R. Taylor*	TR03.3 **ORTHOPAEDIC IMPLANTS AND DEVICES II: FRACTURE TREATMENT AND BONE SUBSTITUTES** *Chairs: Ruth Wilcox, Chloe E Scott*	TR04.3 **SOFT TISSUE BIOMECHANICS II: CONSTITUTIVE MODELLING** *Chairs: María José Gómez-Benito, Elena Redaelli*	TR05.3 **IN VIVO MEASUREMENTS AND SENSORS IN CLINICAL BIOMECHANICS** *Chairs: Peter Zioupos, Seraina Anne Dual*
5:35pm – 6:30pm	**ESB DIVERSITY IN BIOMECHANICS** *Chairs: Marlène Mengoni, Marta Peña Fernández & Zimi Sawacha*				
6:40pm – 8:00pm	Whisky tasting & industry networking (Cromdale Hall)				
8:00pm – 10:30pm	Night in town for students (Revolution Bar, 30a Chambers St, Edinburgh EH1 1HU, United Kingdom)				

Detailed programme including all presentations is available here and in the conference app.

Kilsyth Suite	Carrick Suite	Harris Suite	Ochil Suite
TR06.1 **CARDIOVASCULAR BIOMECHANICS I: LARGE VESSEL BIOMECHANICS I** *Chairs: Francesco Sturla, Ali Cagdas Akyildiz*	TR07.1 **ADDITIVE MANUFACTURING FOR BIOMECHANICS I: ADVANCED COMPUTATIONAL AND EXPERIMENTAL TECHNIQUES** *Chairs: Michele Conti, Andrew R. Hamilton*	TR08.1 **IN VIVO MEASUREMENTS AND SENSORS IN BIOMECHANICS** *Chairs: Dana Solav, Eline van der Kruk*	TR09.1 **SPORTS BIOMECHANICS I: FROM INJURY PREVENTION TO FULL BODY MODELLING** *Chairs: Genevieve Williams, Adam Trepczynski*
TR06.2 **CARDIOVASCULAR BIOMECHANICS II: LARGE VESSEL BIOMECHANICS II** *Chairs: Stéphane Avril, Anna Pukaluk*	TR07.2 **ADDITIVE MANUFACTURING FOR BIOMECHANICS II: APPLICATIONS IN BIOMEDICAL AND TISSUE ENGINEERING** *Chairs: Pasquale Vena, Nazli Tumer*	TR08.2 **ORTHOTICS AND PROSTHETICS** *Chairs: Alex Dickinson, Arjan Buis*	TR09.2 **OCULAR BIOMECHANICS** *Chairs: Jorge Grasa, Benedetta Fantaci, Matteo Frigelli*
TR06.3 **CARDIOVASCULAR IMPLANTS AND DEVICES I: LIFE SUPPORT SYSTEMS AND VASCULAR ACCESS** *Chairs: Andrea Remuzzi, Michael Neidlin*	TR07.3 **TISSUE ENGINEERING I: CARDIOVASCULAR SYSTEM, TUMORS & PERFUSION** *Chairs: Sara Checa Esteban, Marta Peña Fernández*	TR08.3 **SOFT TISSUE BIOMECHANICS VI: SKIN PRESSURE ULCERS** *Chairs: Aisling Ni Annaidh, Pierre-Yves Rohan*	TR09.3 **SPORTS BIOMECHANICS II: FOOT AND LOWER LIMB IN SPORTS BIOMECHANICS** *Chairs: Antonio Prieto Veloso, Qiang Zhang*

Tuesday, 2 July 2024

	Pentland Suite	Sidlaw Auditorium	Fintry Auditorium	Tinto Suite	Moorfoot Suite
8:00am – 6:45pm	Registration				
8:30am – 9:15am	Keynote lecture: **ROBOTIC ASSISTED HIP AND KNEE ARTHROPLASTY: ARE WE MAKING HEADWAY?**; *Fares S. Haddad* *Chairs: Chloe E Scott, David Mitton*				
9:15am – 9:45am	Coffee break (Cromdale & Strathblane Hall)				
9:45am – 10:55am	TR01.4 **MUSCULOSKELETAL BIOMECHANICS IV: LOWER EXTREMITY II** *Chairs: Peter Varga, Andrew Phillips*	TR02.4 **ORTHOPAEDIC IMPLANTS AND DEVICES III: LOWER LIMB DEVICES** *Chairs: Bernardo Innocenti, Sanjay Gupta*	TR03.4 **HARD TISSUE BIOMECHANICS III** *Chairs: Enrico Dall'Ara, Marta Peña Fernández*	TR04.4 **BIOMATERIALS I: BIOMATERIALS FOR MUSCULOSKELETAL TISSUES** *Chairs: Feihu Zhao, Jennifer Paxto*	TR05.4 **COMPUTATIONAL BIOLOGY I** *Chairs: María Ángeles Pérez Ansón, Edoardo Borgiani*
11:00am – 1:00pm	TR01.5 **MUSCULOSKELETAL BIOMECHANICS V: SPINE AND CRANIUM** *Chairs: Enrico Dall'Ara, Peter Varga*	TR02.5 **COMPUTATIONAL METHODS FOR ORTHOPAEDIC APPLICATIONS III** *Chairs: Fulvia Taddei, Alexander Synek*	TR03.5 **HARD TISSUE BIOMECHANICS IV** *Chairs: Alessandra Carriero, María Ángeles Pérez Ansón, Lorenzo Grassi*	TR04.5 **SOFT TISSUE BIOMECHANICS III: SOFT TISSUES** *Chairs: Alice Berardo, Sofia Pettenuzzo*	TR05.5 **IN SILICO AND IN VIVO CLINICAL TRIALS** *Chairs: Chloe E Scott, Stefaan Verbruggen*
1:00pm – 2:00pm	Lunch break & Exhibition viewing (Cromdale & Strathblane Hall)				
2:00pm – 2:45pm	**POSTER SESSIONS C** (Cromdale Hall) **POSTER SESSIONS D** (Strathblane Hall)				
2:50pm – 3:50pm	**BEST DOCTORAL THESIS AWARD AND ESB EARLY CAREER AWARD** *Chairs: David Mitton, Jérôme Noailly*				
3:50pm – 4:20pm	Coffee break (Cromdale & Strathblane Hall)				
4:20pm – 5:30pm		TR02.6 **MECHANOBIOLOGY II: BONE - TISSUE AND ORGAN SCALE** *Chairs: Diana Massai, Philipp J. Thurner*	TR03.6 **HUMAN MOVEMENT I: METHODOLOGY** *Chairs: William R. Taylor, Hans Kainz*	TR04.6 **SOFT TISSUE BIOMECHANICS IV: EYE, BRAIN, PANCREAS, BREAST, FASCIA** *Chairs: Hanna Isaksson, Carolina Tacchella*	TR05.6 **COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS + CARDIOVASCULAR IMAGING III** *Chairs: Stéphane Avril, Simona Celi*
5:40pm – 6:45pm	**ESB GENERAL ASSEMBLY**				
8:00pm – 11:00pm	ESB Congress dinner (National Museum of Scotland, Chambers St, Edinburgh EH1 1JF, United Kingdom)				

Wednesday, 3 July 2024

	Pentland Suite	Sidlaw Auditorium	Fintry Auditorium	Tinto Suite	Moorfoot Suite
8:00am – 6:15pm	Registration				
8:30am – 9:15am	Keynote lecture: **CLINICAL RESEARCH IN SPINE BIOMECHANICS**; *Wafa Skalli* *Chairs: Richard Aspden, Enrico Dall'Ara*				
9:15am – 9:45am	Coffee break (Cromdale & Strathblane Hall)				
9:45am – 10:55am	TR01.7 **ORTHOPAEDIC IMPLANTS AND DEVICES IV: SPINE** *Chairs: Luca Cristofolini, Wafa Skalli*	TR02.7 **MECHANOBIOLOGY III: BONE - CELL LEVEL** *Chairs: Tommaso Ristori, Umberto Morbiducci*	TR03.7 **CARDIOVASCULAR IMPLANTS AND DEVICES IV: IMPLANTS AND BLOOD INTERACTION** *Chairs: Keefe Manning, Alessandro Caimi*	TR04.7 **SOFT TISSUE BIOMECHANICS V: MUSCLE & TENDON** *Chairs: Uwe Wolfram, Edward Rees*	TR05.7 **COMPUTATIONAL BIOLOGY II** *Chairs: Jérôme Noailly, Laura Baumgartner*
11:00am – 1:00pm	TR01.8 **MUSCULOSKELETAL BIOMECHANICS VI: LOWER EXTREMITY III** *Chairs: Cathy Holt, Hans Kainz*	TR02.8 **MUSCULOSKELETAL BIOMECHANICS VII: SOFT TISSUES AND INTERFACES** *Chairs: Luca Cristofolini, Laura Müller*	TR03.8 **HUMAN MOVEMENT II: CLINICAL APPLICATIONS** *Chairs: Ayman Assi, Zimi Sawacha*	TR04.8 **CARDIOVASCULAR BIOMECHANICS V: CEREBRAL PERFUSION-CLOTTING** *Chairs: Behrooz Fereidoonnezhad, Caitríona Lally*	TR05.8 **BIOMATERIALS II: POLYMERS, GELS AND CELLS** *Chairs: Gwendolen Reilly, Wenbo Zhan*
1:00pm – 2:00pm	Lunch break & Exhibition viewing (Cromdale & Strathblane Hall)				
2:00pm – 3:00pm	**RESEARCH TO PRACTICE: CLINICAL TRANSLATION** *Chairs: Pankaj Pankaj, Peter Varga*				
3:00pm – 4:00pm	**ESB CLINICAL BIOMECHANICS AWARD** *Chairs: Marlène Mengoni, Peter Varga*				
4:00pm – 4:30pm	Coffee break (Cromdale & Strathblane Hall)				
4:30pm – 5:40pm	TR01.9 **MECHANOBIOLOGY IV: IN SILICO STUDIES** *Chairs: Zerihun Workineh; Lorenzo Grassi*	TR02.9 **MUSCULOSKELETAL BIOMECHANICS VIII: MUSCULOSKELETAL MODELLING WHOLE BODY II** *Chairs: Fabio Galbusera, Anoop Chawla*	TR03.9 **INJURY/IMPACT BIOMECHANICS** *Chairs: Sébastien Laporte; Spyros Masouros*		TR05.9 **CELLULAR AND MOLECULAR BIOMECHANICS II: SINGLE CELL AND INTRACELLULLAR MECHANICS** *Chair: Vee San Cheong, Eoin McEvoy*
5:45pm – 6:15pm	Closing ceremony (Pentland)				

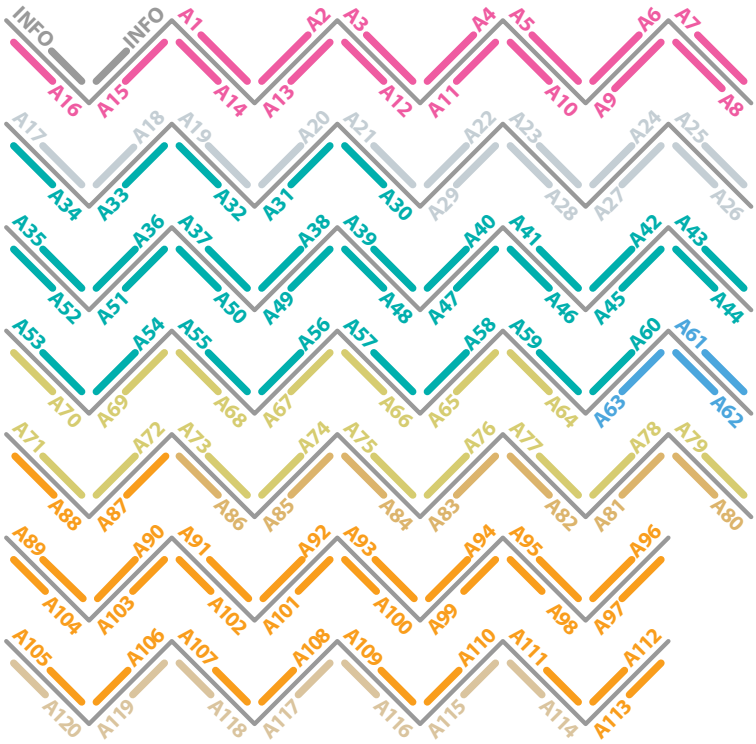
Kilsyth Suite	Carrick Suite	Harris Suite	Ochil Suite
TR06.4 **CARDIOVASCULAR IMPLANTS AND DEVICES II: BIOMECHANICS OF VALVE IMPLANTATION** *Chairs: Francesco Migliavacca, Elie Hachem*	TR07.4 **TISSUE ENGINEERING II: MUSCULOSKELETAL SYSTEM I** *Chairs: Rhiannon Grant, Ekaterina Oleinik*	TR08.4 **NEW MATHEMATICS IN BIOMECHANICS** *Chairs: Christian Hellmich, Maxence Lavaill*	TR09.4 **CORPORATE MEMBERS SESSION** *Chairs: Marlène Mengoni, Michael Crichton*
TR06.5 **CARDIOVASCULAR IMPLANTS AND DEVICES III: STENTS AND BALLOONS** *Chairs: Sean McGinty, Gerhard Sommer*	TR07.5 **COMPUTATIONAL METHODS IN TISSUE MECHANICS I** *Chairs: Jean-Marc Allain, Anthony Callanan*	TR08.5 **DATA DRIVEN HEALTHCARE AND MACHINE LEARNING IN BIOMECHANICS** *Chairs: Ankush Aggarwal, Chotirawee Chatpattanasiri*	TR09.5 **CARDIOVASCULAR BIOMECHANICS III: HEART** *Chairs: Sandra Loerakker, Estefania Peña*
TR06.6 **CARDIOVASCULAR BIOMECHANICS IV: TISSUE ENGINEERING - MISC.** *Chairs: Nele Famaey, Mirunalini Thirugnanasambandam*	TR07.6 **TISSUE ENGINEERING III: MUSCULOSKELETAL SYSTEM II** *Chairs: Anthony Callanan, Chiara Dazzi*	TR08.6 **ANIMAL AND PLANT BIOMECHANICS** *Chairs: Christian Peham, Anja Uellendahl*	TR09.6 **CELLULAR AND MOLECULAR BIOMECHANICS I: CELL-CELL AND CELL MICROENVIRONMENT INTERACTIONS** *Chairs: Aurélie Carlier, Eoin McEvoy*

Kilsyth Suite	Carrick Suite	Harris Suite	Ochil Suite
TR06.7 **COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS IV** *Chairs: Nele Famaey, Michele Conti*	TR07.7 **DENTAL BIOMECHANICS** *Chairs: Aurélie Benoit, Lamia Singer*	TR08.7 **COMPUTATIONAL METHODS IN TISSUE MECHANICS II** *Chair: Marlène Mengoni, Sam Evans*	TR09.7 **REPRODUCTIVE BIOMECHANICS I** *Chairs: Dulce Oliveira, Rita Moura*
TR06.8 **COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS V** *Chairs: Simona Celi, Choon Hwai Yap*	TR07.8 **CLINICAL APPLICATIONS AND TRANSLATIONAL RESEARCH** *Chairs: Richie Harinderjit Singh Gill, Philippe Moewis*	TR08.8 **VERIFICATION, VALIDATION AND UNCERTAINTIES QUANTIFICATION** *Chairs: Wouter Huberts, Sjeng Quicken*	TR09.8 **REHABILITATION** *Chairs: Mhairi Katriona MacLean, Fraje Watson*
TR06.9 **ERGONOMICS AND OCCUPATIONAL BIOMECHANICS + HUMANOID ROBOTICS AND MECHATRONICS** *Chairs: Margit Gföhler, Georgios Aronis*	TR07.9 **RESPIRATORY BIOMECHANICS** *Chairs: Sam Bayat, Mona Eskandari*	TR08.9 **COMPUTATIONAL METHODS IN TISSUE MECHANICS III** *Chairs: Hanna Isaksson, Stephen J. Ferguson*	TR09.9 **REPRODUCTIVE BIOMECHANICS II** *Chairs: Vít Nováček, Ina Adler*

Detailed programme including all presentations is available here and in the conference app.

Poster session A

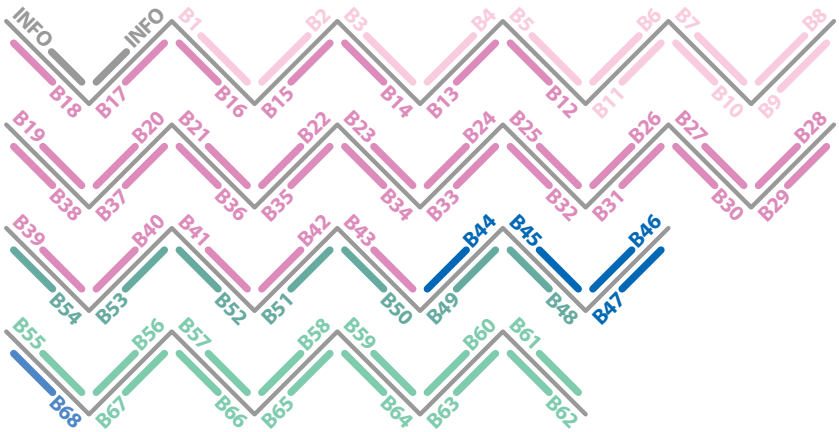
1 July 2024 2:00pm – 2:45pm, Cromdale Hall



- Group 1 | A1 – A16
  Computational methods for cardiovascular applications
- Group 2 | A17 – A29
  Hard tissue biomechanics
- Group 3 | A30 – A60
  Human movement
- Group 4 | A61 – A63
  In vivo measurements and sensors in biomechanics
- Group 5 | A64 – A79
  Orthopaedic implants and devices
- Group 6 | A80 – A86
  Rehabilitation
- Group 7 | A87 – A113
  Soft tissue biomechanics
- Group 8 | A114 – A120
  Tissue engineering

Poster session B

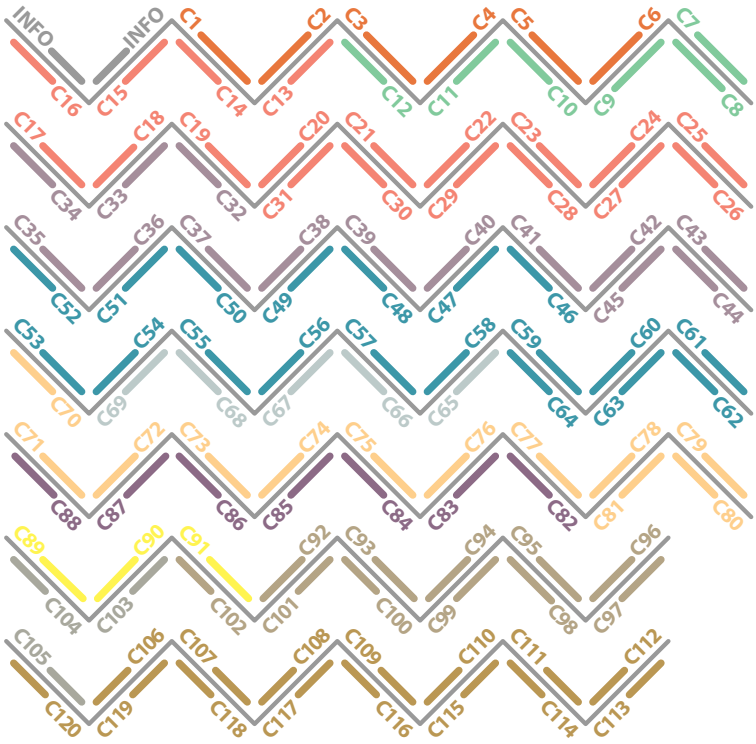
1 July 2024 2:00pm – 2:45pm, Strathblane Hall



- Group 1 | B1 – B11
  Biomaterials
- Group 2 | B12 – B43
  Cardiovascular biomechanics
- Group 3 | B44 – B47
  Cardiovascular imaging
- Group 4 | B48 – B54
  Clinical applications and translational research
- Group 5 | B55 – B67
  Sports biomechanics
- Group 6 | B68
  Musculoskeletal biomechanics

Poster session C

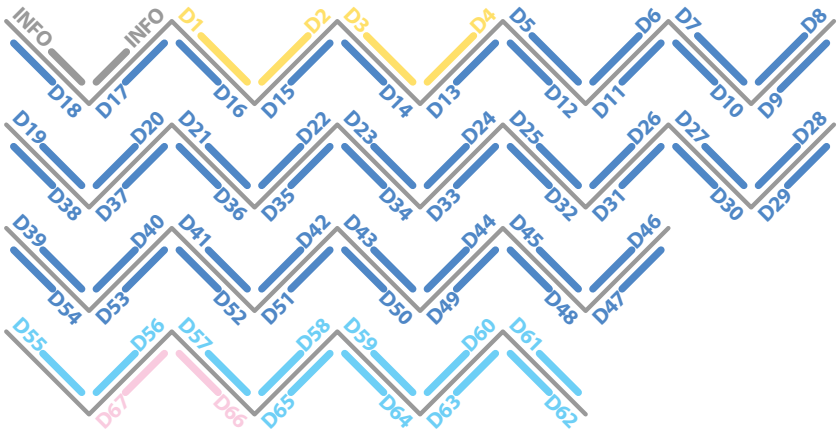
2 July 2024 2:00pm – 2:45pm, Cromdale Hall



- Group 1 | C1 – C6
  Additive manufacturing for biomedical applications
- Group 2 | C7 – C12
  Computational biology
- Group 3 | C13 – C31
  Computational methods for orthopaedic applications
- Group 4 | C32 – C45
  Computational methods in tissue mechanics
- Group 5 | C46 – C64
  Data driven healthcare and machine learning in biomechanics
- Group 6 | C65 – C69
  Dental biomechanics
- Group 7 | C70 – C81
  Mechanobiology
- Group 8 | C82 – C88
  Musculoskeletal imaging
- Group 9 | C89 – C91
  Respiratory biomechanics
- Group 9 | C92 – C102
  Tissue engineering
- Group 9 | C103 – C105
  Verification, validation and uncertainties quantification
- Group 9 | C106 – C120
  Multiple topics

Poster session D

2 July 2024 2:00pm – 2:45pm, Strathblane Hall



- Group 1 | D1 – D4
  Cellular and molecular biomechanics
- Group 2 | D5 – D54
  Musculoskeletal biomechanics
- Group 3 | D55 – D65
  Orthotics & prosthetics
- Group 4 | D66 – D67
  Biomaterials

Poster session A, Cromdale Hall

COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS

A1	330	SCALE-SPACE ANALYSIS OF THORACIC AORTIC SHAPE: SIGNAL PRESERVATION FOR ENHANCED CLINICAL DECISION-MAKING ***Pugar, Joseph Andrew***
A2	388	RISK OF CLOTS MIGRATION IN CONTACT AND IN THE MIDDLE OF THE PATIENT ANEURYSM - NUMERICAL STUDY ***Pinto, Sónia***
A3	610	VALIDATION OF IN-SILICO SIMULATION OF CORONARY ARTERY FLUID FLOW AGAINST IN-VITRO DATA ***Mousavi, Seyyed Mahmoud***
A4	638	THROMBOSIS RISK SIMULATIONS WITH COMPUTATIONALLY REDEFINED LEFT ATRIAL APPENDAGE MORPHOTYPES ***Lee, Matthew Tsu-En***
A5	639	CODE-TO CODE COMPARISON: AN ASSESSMENT OF COMMERCIAL CFD TOOLS FOR LEFT VENTRICLE MODEL GEOMETRIES ***Lazpita, Eneko***
A6	658	PATIENT-SPECIFIC FE SIMULATION OF TOTAL CAVOPULMONARY CONNECTION: PROCEDURE PLANNING AND DEVICE DEVELOPMENT ***Chestnutt, Lisa***
A7	697	COMPUTATIONAL MODELING OF AN ARTERIAL-VENOUS FISTULA SYSTEM USING IN VIVO VALIDATION ***Pugar, Joseph Andrew***
A8	792	AGE-DEPENDENT STIFFENING OF AORTA IN HEALTHY INDIVIDUALS ***Çelikbudak Orhon, Cemre***
A9	856	EFFECTS OF THE AORTIC MORPHOLOGY ON THE VA-ECMO CONFIGURATION: AN SSM AUGMENTED STUDY ***Mazzoli, Marilena***
A10	913	AUTOMATIC FRAMEWORK TO PERFORM FINITE ELEMENT ANALYSIS OF ATHEROSCLEROTIC CAROTID ARTERY BASED ON CTA ***Conti, Michele***
A11	965	CFD SIMULATION OF THE CERVICAL AORTIC ARCH WITH AN UNUSUAL ANEURYSM ***Rosato, Antonio***
A12	973	A FAST-TO-EVALUATE MODEL TO INFORM DEVICE DESIGN DECISIONS FOR PULMONARY ARTERY PRESSURE SENSORS ***Schlief, Adriano***
A13	1022	EXPLORING THE INTERPLAY OF VASCULAR REMODELING AND HEMODYNAMIC INSTABILITY IN CAROTID ARTERIES ***Poloni, Sofia***
A14	1071	A WORKFLOW FOR PATIENT-SPECIFIC CFD SIMULATIONS OF ATHEROSCLEROTIC CAROTID ARTERIES ***Dell'Agnello, Francesca***
A15	1191	ULTRASOUND BASED FRAMEWORK FOR CFD MODELING OF PERIPHERAL ARTERIES USING AN OPTICAL TRACKING APPROACH ***Gillissen, Milan***
A16	1253	UNRAVELING HEMOLYSIS PREDICTION: STRESS-BASED VS. STRAIN-BASED APPROACHES AND METHODOLOGICAL INSIGHTS ***De Gaetano, Francesco***

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A19	433	MULTISCALE MODELING OF HUMAN BONE FROM NANOSCALE TO MACROSCALE TO PREDICT ITS PROPERTIES ***Kwon, Young***
A20	699	EFFECTS OF INTERFERENCE FIT ON BONE STRAINS SURROUNDING A CEMENTLESS TIBIAL TRAY: A MICRO-CT AND DVC STUDY ***Wearne, Lauren***
A21	754	BIOMECHANICAL CHARACTERIZATION OF ACCESSORY CARPAL BONE BY FORCE-TO-FAILURE EXPERIMENTS ***Reuter, Thomas***
A22	776	EXAMINING INDIVIDUAL VARIATION IN AND DEFORMATION DEPENDENCE OF GROWTH PLATE TISSUE MECHANICS ***Hucke, Lucie***
A23	800	CLINICAL IMAGE-BASED BONE PROPERTIES FOR PATIENT-SPECIFIC BIOMECHANICAL MODELING ***De Cet, Anna***
A24	860	COMPARISON OF FE-PREDICTED FEMORAL STRENGTH AT BASELINE AND FOLLOW-UP IN THE COMPLETE AGES-REYKJAVIK COHORT ***Praveen, Anitha D.***
A25	922	EFFECTS OF MICROSTRUCTURAL ALTERATIONS ON THE ELASTIC PROPERTIES OF DENTIN WITH DENTINOGENESIS IMPERFECTA ***Touraivane, Shangaya***
A26	1019	INTERVERTEBRAL DISC DEGENERATION AFFECTS THE VOLUMETRIC STRAINS OF HUMAN METASTATIC VERTEBRAE ***Cavazzoni, Giulia***
A27	1037	BIOMECHANICAL PROPERTIES OF THE OSTEOCYTE LACUNO-CANALICULAR NETWORK AT THE BONE-IMPLANT INTERPHASE ***Mahfouz, Corinne***
A28	1199	3D LACUNAE STRUCTURE – MICROMECHANICS RELATIONSHIP OF ENTHESIS CALCIFIED FIBROCARTILAGE ***Moayedi, Atousa***
A29	1339	THE INFLUENCE OF CYCLIC LOADS ON THE STRUCTURAL PROPERTIES OF THE FEMUR BONE TISSUE WITH OSTEOARTHRITIS ***Nikodem, Anna***

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A31	191	CLASSIFICATION OF TRIP RECOVERY STRATEGIES DEPENDING ON THE RELATIVE POSITION OF COM AND BOS ***Kim, Jeongmin***
A32	192	ENHANCING AMPUTEE GAIT: ANALYSIS OF A TRASFEMORAL PROSTHETIC SOCKET WITH ADAPTIVE AIR BLADDER TECHNOLOGY ***Kim, Jeongmin***
A33	239	THE EFFECT OF ACTIVE LEG SWING ON WALKING TEMPLATE MODEL DYNAMICS ***Renjewski, Daniel***
A34	263	FULL-BODY AUTOMATED IMU TO BODY SEGMENT ASSIGNMENT USING DEEP LEARNING ***Sakthivelu, Uthvag***
A35	277	EVALUATION OF THE BIOMECHANICS OF LOWER LIMBS IN NORMAL, OVERWEIGHT AND OBESE PEOPLE USING SMART F-IMU SYSTEM ***Manupibul, Udomporn***
A36	310	CENTRE OF PRESSURE COMPLEXITY ANALSYSIS IN INDIVIDUALS WITH MENIERE'S DISEASE DURING FLOOR VIBRATIION ***Smith, Matthew***
A37	346	GAIT ANALYSIS FROM UNILATERAL LOWER LIMB AMPUTEES AND NON-AMPUTEES ***Alsayed, Khalid***
A38	364	EFFECT OF SHOE CHARACTERISTICS ON THE DYNAMIC STIFFNESS OF THE ANKLE DURING GAIT. A PILOT STUDY ***Sancho-Bru, Joaquín L.***
A39	384	THE INTERSECTION OF DANCE BIOMECHANICS AND IMAGINATION TECHNIQUES FOR ENHANCED PERFORMANCE AND MOVEMENT QUALITY, A CASE STUDY ***Alokla, Eisa***
A40	402	MODULATING LOCOMOTION STABILITY: HOW MUSCLE STIMULATION AND TENDON STIFFNESS SHAPE OUR MOVEMENT ***Araz, Matthew***
A41	564	THE EFFECTS OF A NOVEL NEUROMUSCULAR TRAINING PROGRAMME ON RECREATIONAL FEMALE HOCKEY PLAYERS ***Johnston, Tom***
A42	573	RELATIONSHIP BETWEEN TORSO BALANCE CONTROL AND METABOLIC COST IN WALKING ***Firouzi, Vahid***

A43	577	HUMERAL HEAD DISPLACEMENT MEASURED VIA ULTRASOUND: ANALYSIS OF INTER-OPERATOR RELIABILITY ***Mosso, Martina***
A44	588	NON-LINEAR PCA OF THE GAIT IN FEMALE OSTEOARTHRITIC PATIENTS: DISCRIMINATING THE PATIENT REQUIRING TKR ***Tassani, Simone***
A45	609	GAIT ANALYSIS FOLLOWING HINDFOOT INTERPOSITION ARTHRODESIS USING AN IMU BASED 2-SEGMENT FOOT MODEL ***Bauer, Leandra***
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A47	651	USE OF AN INERTIAL MEASUREMENT SYSTEM IN THE UP AND GO TEST IN MULTIPLE SCLEROSIS ***Szaflik, Piotr***
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A50	718	COMPARISON OF FORWARD DYNAMICS AND INVERSE DYNAMICS METHODS IN CALCULATING JOINT KINETICS ***Yoon, Seungwoo***
A51	773	CUSTOMIZATION OF INERTIAL PARAMETERS OF HUMAN BODY SEGMENTS FOR MECHANICAL MODELS ***Sopa, Martyna***
A52	838	EXPERIMENTAL TIBIALIS POSTERIOR TENDON PAIN EFFECT ON ANKLE KINEMATICS AND KINETICS ***Simonsen, Morten Bilde***
A53	1060	A COMPARISON OF GLUTEUS MEDIUS ACTIVITY DURING HIP ABDUCTION PERFORMED ON LAND AND IN WATER ***Kaliarntas, Konstantinos***
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A55	1207	SENSITIVITY ANALYSIS OF AN INERTIAL CALIBRATION METHOD: ERROR PROPAGATION ON 3D KNEE KINEMATICS ***di Falco, Camille***
A56	1225	DESCRIPTION OF A FUNCTIONAL SCORE TO EVALUATE GAIT ABNORMALITIES IN PATIENTS WITH ADULT SPINAL DEFORMITY ***Assi, Ayman***
A57	1269	A COMPARATIVE ANALYSIS OF GAIT PARAMETERS IN OSTEOARTHRITIS: PRE, POST, AND HEALTHY PERSPECTIVES ***Chandarana, Milan***
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A63	806	IN-SHOE PLANTAR STRESS SENSORS: DOES CALIBRATION METHOD AFFECT SENSOR MEASUREMENTS? ***Haron, Athia***

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A64	361	THE IMPACT OF INITIATING MICROMOTION AT DIFFERENT TIMINGS ON FRACTURE HEALING ***Leung, Frankie Ka Li***
A65	600	INFLUENCE OF THE KNEE COLLATERAL LIGAMENTS' LAXITY LEVEL ON MECHANICAL ALIGNMENT VS KINEMATIC ALIGNMENT IN TKA ***Sisella, Mattia***
A66	713	EVALUATING THE EFFICACY OF A FLOAT-RING IMPLANT IN PARTIAL MENISCECTOMY - A FINITE ELEMENT ANALYSIS ***Udayanga, Thotegodage Don Isuru***
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A71	888	FAILURE OF FEMORAL NECK SYSTEM (FNS): A CASE STUDY ***Rao, Laureb***
A72	894	THE EFFECT OF A COLLAR ON PRIMARY STABILITY OF CEMENTLESS HIP STEMS. DO UNDERSIZED COLLARED HIP STEMS PROVIDE SUFFICIENT STABILITY? ***Woiczinski, Matthias***
A73	903	HOW DOES A MODULAR ALIF CAGE IMPLANTATION AFFECT THE ENDPLATE AND LORDOSIS? A COMPARATIVE IN-VITRO STUDY ***Liebsch, Christian***
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A77	1254	FEM ANALYSIS OF TRANSVERSE CONNECTORS IN PEDICLE-SCREW FIXATION FOR THORACOLUMBAR COMPRESSION FRACTUR ***Pezowicz, Celina***
A78	1334	EFFECT OF LAMINECTOMY AND POSTERIOR FIXATION ON THE BIOMECHANICS OF THE LUMBAR SPINE: AN EX-VIVO STUDY ***Montanari, Sara***
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C91	871	BIOMECHANICS OF THE UNSTABLE THORAX: RESPIRATORY WORK AND INTRATHORACIC VOLUME CHANGES IN SEGMENTAL RIB FRACTURES ***Zierke, Julian N.***

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C93	687	MECHANICAL EVALUATION OF HIP IMPLANTS IN HEALTHY AND OSTEOPOROTIC BONE USING FINITE ELEMENT ANALYSIS ***Alabdah, Fahad***
C94	700	PORE SIZE QUANTIFICATION FOR TPMS-BASED SCAFFOLDS ***Santos, Jorge E.***
C95	721	VISCOELASTICITY CAN BE TUNED TO INFLUENCE STRAIN TRANSFER IN CARTILAGE TISSUE MODELS ***Stok, Kathryn***
C96	750	DETERMINATION OF MATERIAL PARAMETERS OF SCAFFOLD-FREE TENDON REGENERATES WITH HYPERELASTIC MATERIAL MODELS ***Reuter, Thomas***
C97	1016	SEX DIFFERENCES ON THE BENCH ***Grant, Rhiannon***
C98	1053	TAILORING HYDROGEL MECHANICS AND ARCHITECTURE FOR EFFECTIVE VOCAL FOLD REGENERATION ***Nejati, Sara***
C99	1066	CLINICAL INSIGHTS INTO MANDIBULAR REGENERATION: A STUDY ON MULTIMATERIAL SCAFFOLD APPLICATIONS ***Rebolo, Pedro Daniel***
C100	1186	BIOMECHANICAL ASSESSMENT OF CRYOPRINTED HYBRID SCAFFOLDS FOR CARTILAGE TISSUE ENGINEERING ***Yigit, Kubra***
C101	1252	MECHANICAL EVALUATION OF ANNULUS FIBROSUS REPAIR STRATEGY USING FINITE ELEMENT MODELLING ***Song, Lipeng***
C102	1288	A TRI-ZONAL MELT ELECTRO-WRITTEN CONSTRUCT FOR CARTILAGE TISSUE ENGINEERING: AN IN-SILICO APPROACH ***Varatharajan, Prasannavenkadesan***

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C105	1080	QUANTIFYING THE EFFECT OF MUSCULOTENDON GEOMETRY UNCERTAINTY ON MUSCLE FORCE ESTIMATION DURING WALKING ***Di Pietro, Andrea***

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C106	527	EXPLORING THE DIVERSE MECHANICAL PROPERTIES OF SPIDER SILK IN VARIOUS TYPES AND SPECIES ***Promnil, Siripanyo***
C107	694	EFFECTS OF FEMORAL TUNNEL APERTURES ON GRAFT BENDING ANGLE IN CANINE CRANIAL CRUCIATE LIGAMENT RECONSTRUCTION ***Wu, Ching-Ho***
C108	1278	DINKIN: DIDACTIC TOOL FOR INVERSE KINEMATICS ***Zambrano, Lilibeth***
C109	1308	SENSITIVITY ANALYSIS OF THE HYBRID CARDIOVASCULAR SIMULATION DEVICE ***Ważydrąg, Igor***
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C112	1220	ESTIMATING MATERIAL PARAMETERS OF GOAT TIBIA UNDER IMPACT BENDING USING INVERSE CHARACTERIZATION METHOD ***Malik, Ankit***
C113	400	ELUCIDATING THE EFFECT OF ZETA POTENTIAL AND PARTICLE SIZE ON NANOPARTICLE DIFFUSION IN BRAIN TUMOURS ***Yang, Yi***
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C118	1099	A NEW CLINICAL TOOL FOR THE REGULATION OF ECMO SUPPORT IN PATIENTS UNDER CARDIAC SHOCK ***Gasparotti, Emanuele***
C119	1306	ASSESSMENT OF MUSCLE FUNCTION AND GAIT ASYMMETRY AFTER A STRAYER PROCEDURE APPLIED TO A CHILD WITH CEREBRAL PALSY ***Prieto Veloso, Antonio***
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D2	724	PM2.5 INDUCED LYSOSOMAL RUPTURE-MEDIATED PYROPTOSIS IN HVFFS ***Kim, Choung Soo***
D3	1001	MECHANICAL PROPERTIES OF ARTIFICIAL CELLS DETERMINED BY MATHEMATICAL MODELS ***Mendová, Katarína***
D4	1183	THE BIODYNAMO PLATFORM FOR HIGH-PERFORMANCE AGENT-BASED MODELLING OF CELL BIOMECHANICS ***Vavourakis, Vasileios***

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D11	370	DEVELOPMENT OF A NOVEL HUMAN SHOULDER SIMULATOR ***Williams, Sophie***
D12	438	BIOMECHANICAL EVALUATION OF THE SECONDARY STABILIZER FOR PREVENTING SCAPHOLUNATE DISSOCIATION ***Kwak, Dai-Soon***
D13	529	AN INVESTIGATION OF THE FLUID STRUCTURE INTERACTION ARISING IN ARTICULAR CARTILAGE ACROSS DISPARATE SCALES ***Butler, Emily Jayne***
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D16	652	THE IMPACT OF THE AGEING PROCESS AND MASS CHANGE ON THE ABILITY TO PERFORM ACTIVITIES OF DAILY LIVING - A MODEL STUDY ***Zadoń, Hanna***
D17	660	ANALYSING THE EFFECTS OF SIMULATING MARROW IN PAEDEATRIC FEMUR BONES ***Allison, George***
D18	665	PROXIMAL MUSCLES LEAD BALANCE RECOVERY IN MEDIOLATERAL GYROSCOPIC MOMENT PERTURBATIONS DURING WALKING ***Mohseni, Omid***
D19	690	OPENDIHU: SCALABLE FINITE ELEMENT FRAMEWORK FOR SKELETAL MUSCLE SIMULATIONS ***Ghosh, Gautam Debeshkumar***
D20	726	FULL-CORTICAL VS DETAILED ANATOMICAL VERTEBRA FOR PRECLINICAL ASSESSMENT OF SPINAL IMPLANTS ***Ghosh, Rajdeep***
D21	731	MUSCULOSKELETAL SIMULATION FOR LOAD ASSESSMENT OF GAIT ON 3D-NETWORK-STRUCTURED FIBER MATERIAL ***Tawara, Daisuke***
D22	741	EFFECTS OF GASTROCNEMIUS BOTOX INJECTION FOR CALF HYPERTROPHY ON BALANCE CONTROL DURING SLOPED WALKING ***Lin, Shang Hsi***
D23	757	PERSONALIZED STATISTICAL MODELING OF SOFT TISSUE STRUCTURES DURING KNEE FLEXION ***Van Oevelen, Aline***
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D25	927	A METHOD FOR THE RECONSTRUCTION OF SUBTALAR KINEMATICS FROM CT SCAN: TOWARD AN EVOLUTIONARY PERSPECTIVE ***Conconi, Michele***
D26	940	FEA OF SI SCREW FIXATION OF CONTRALATERAL SUBSEQUENT FRACTURE AT THE POSTERIOR PELVIC RING. ***Klimek, Matthias***
D27	944	NEUROMUSCULAR ACTIVATION OF THE FOOT'S MUSCLES DURING STRENGTHENING EXERCISES AND EVERYDAY MOVEMENTS ***Wisdish, Samuel Jack***
D28	950	MUSCLE SELECTION IN A NOVEL PREDICTIVE SIMULATION FRAMEWORK FOR ELECTRICAL STIMULATION CYCLING ***Cardoso de Sousa, Ana Carolina***
D29	953	A HUMAN WHOLE-BODY MODEL, WITH CONSIDERATION OF THE CONNECTIVE TISSUE ***Stark, Heiko***
D30	961	LOW BACK PAIN IS NOT JUST BIOMECHANICS: ASSOCIATED BIOPSYCHOSOCIAL FACTORS IN LOWER LIMB AMPUTEES ***Watson, Fraje***
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D32	974	IMPACT OF ROTATOR CUFF TEARS ON MUSCLE FORCES IN WEIGHT-BEARING SHOULDERS ***Genter, Jeremy***
D33	993	EFFECTS OF SCOLIOSIS ON INTER-SEGMENTAL COORDINATION IN MIDDLE-AGE PERSON DURING OBSTACLE-CROSSING ***Lo, Wen-Horng***
D34	995	IMU-BASED IDENTIFICATION METHOD FOR JOINT AXES IN OPENSIM - A PROOF OF CONCEPT ***Wechsler, Iris***
D35	997	ENHANCING FEM MODELLING OF THE CERVICAL SPINE WITH NOVEL MODELING TECHNIQUES ***Pinto, Joana R.***
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D39	1052	EFFECT OF SUBTALAR ARTHROEREISIS ON WHOLE-BODY BALANCE CONTROL IN CHILDREN WITH FLATFOOT DURING SLOPED WALKING ***Lee, Tsung-Lin***
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D43	1148	A METHOD TO STANDARDIZE ACETABULAR BONE DEFECT IMPLEMENTATION FOR IN VITRO TESTS ***Schierjott, Ronja A.***

D44	1190	INFLUENCE OF MUSCULAR MECHANICAL FORCES IN THE HALLUX DEVELOPMENT OF BIRDS AND ITS EVOLUTION. ***Flores, Daniela Paz***
D45	1198	COMPARISON OF PELVIS AND HIP POSES IN DIFFERENT FULL-BODY MODELS IN VICON-NEXUS AND OPENSIM ***Centrone, Antonia***
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D49	1249	HOW TO USE FORWARD DYNAMIC ACTIVE HYBRID FE-MB MODELS WITH MUSCLE DRIVEN APPROACH TO STUDY SPINE BIOMECHANICS ***Remus, Robin***
D50	1274	MODIFYING THE THUMS MODEL TO INVESTIGATE CERVICAL SPINE SAGITTAL BALANCE IN FORWARD HEAD POSTURE ***Rios, Katterine***
D51	1284	ANTHROPOMETRY AND PLANTAR PRESSURE DISTRIBUTION DURING GAIT IN MALE SUBJECTS: A NOVEL APPROACH ***El Rich, Marwan***
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D53	1301	STRENGTHENING WEAK ABDOMINAL AND DORSAL MUSCLES - MODEL STUDIES ON WAYS TO REDUCE LUMBAR SPINE LOADS ***Nowakowska-Lipiec, Katarzyna***
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D58	739	ASSESSMENT OF USABILITY AND PERFORMANCE OF A LOW-COST HAND EXOSKELETON FOR ASSISTANCE ***Sancho-Bru, Joaquín L.***
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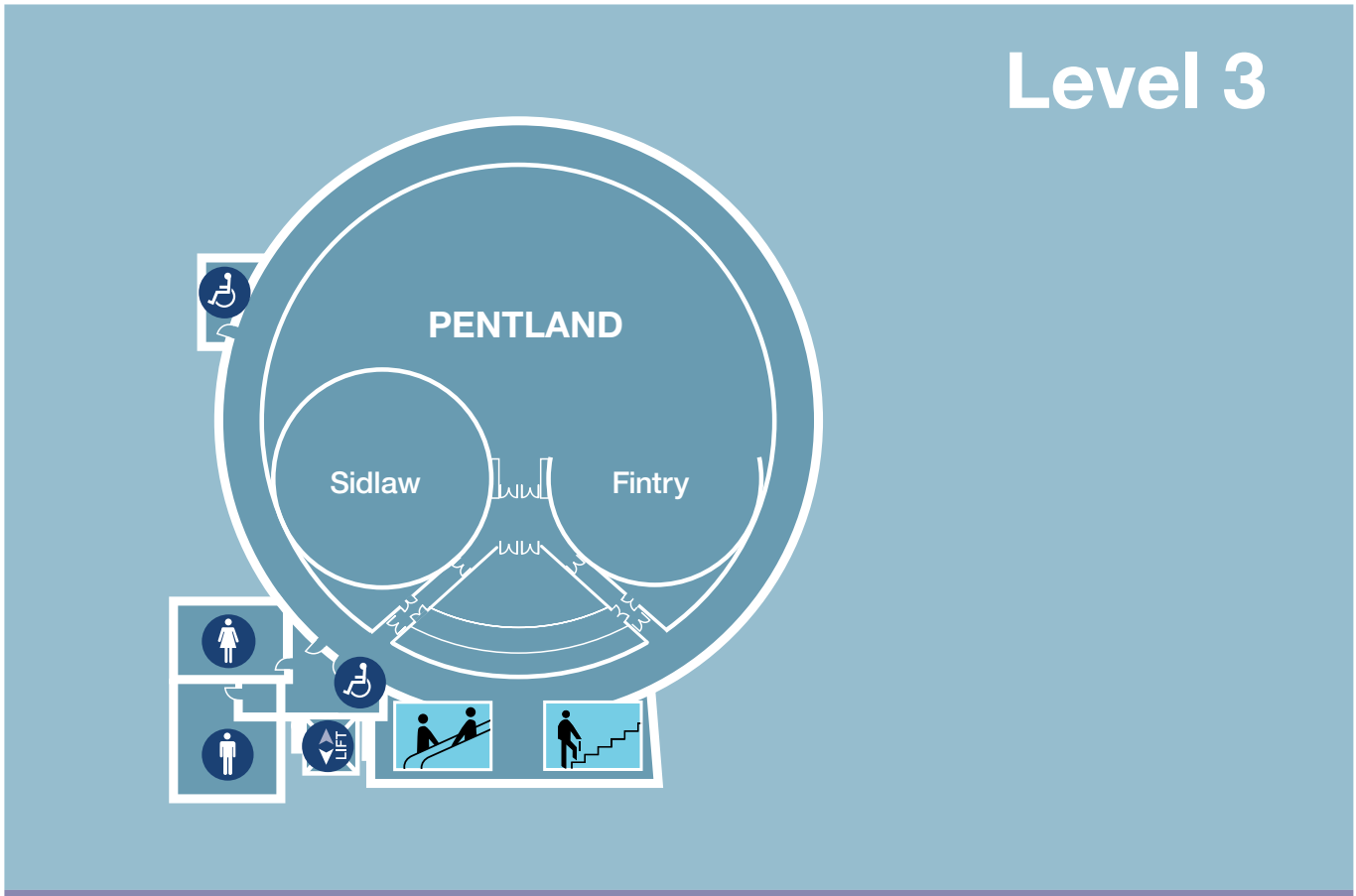

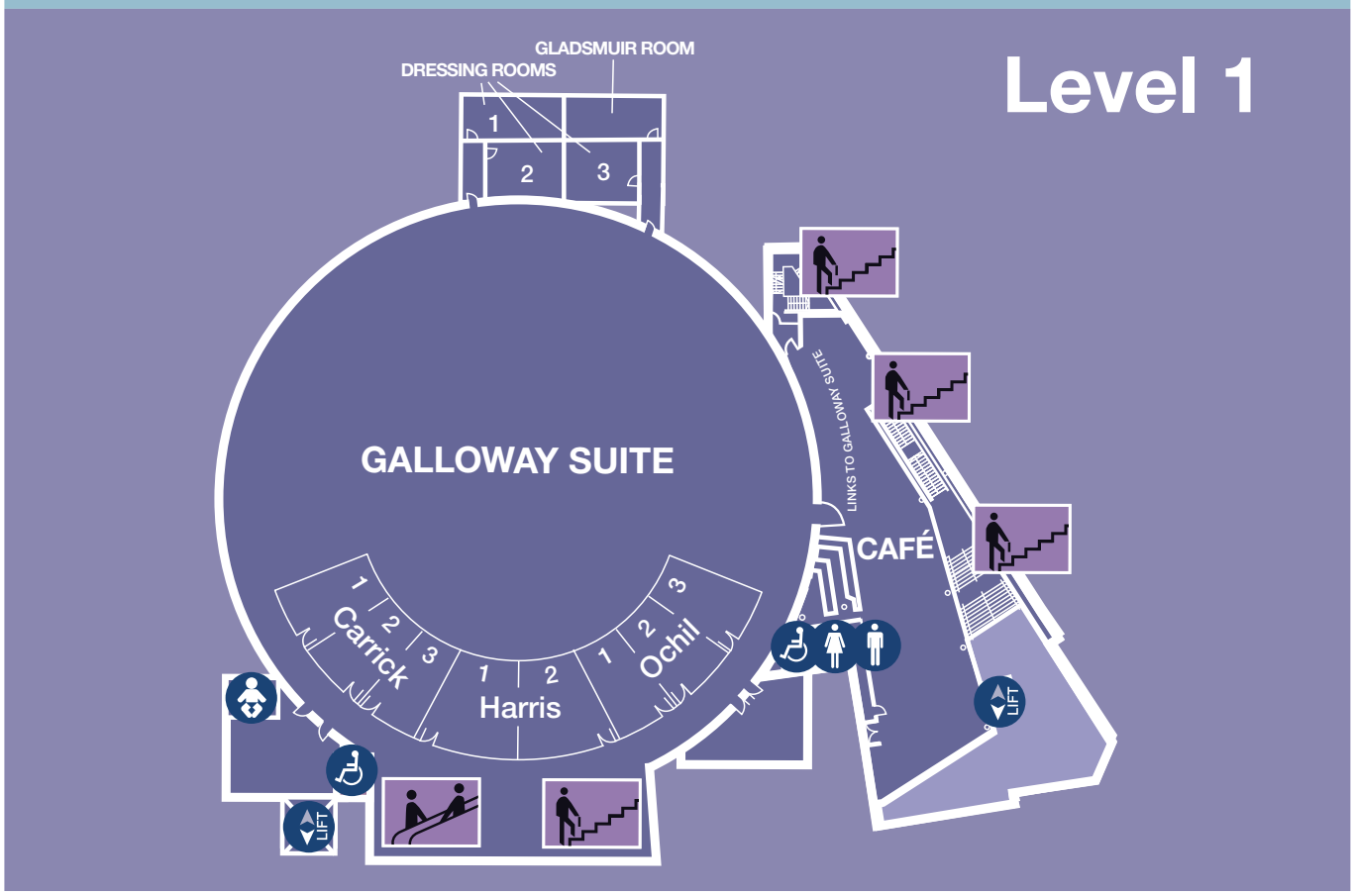

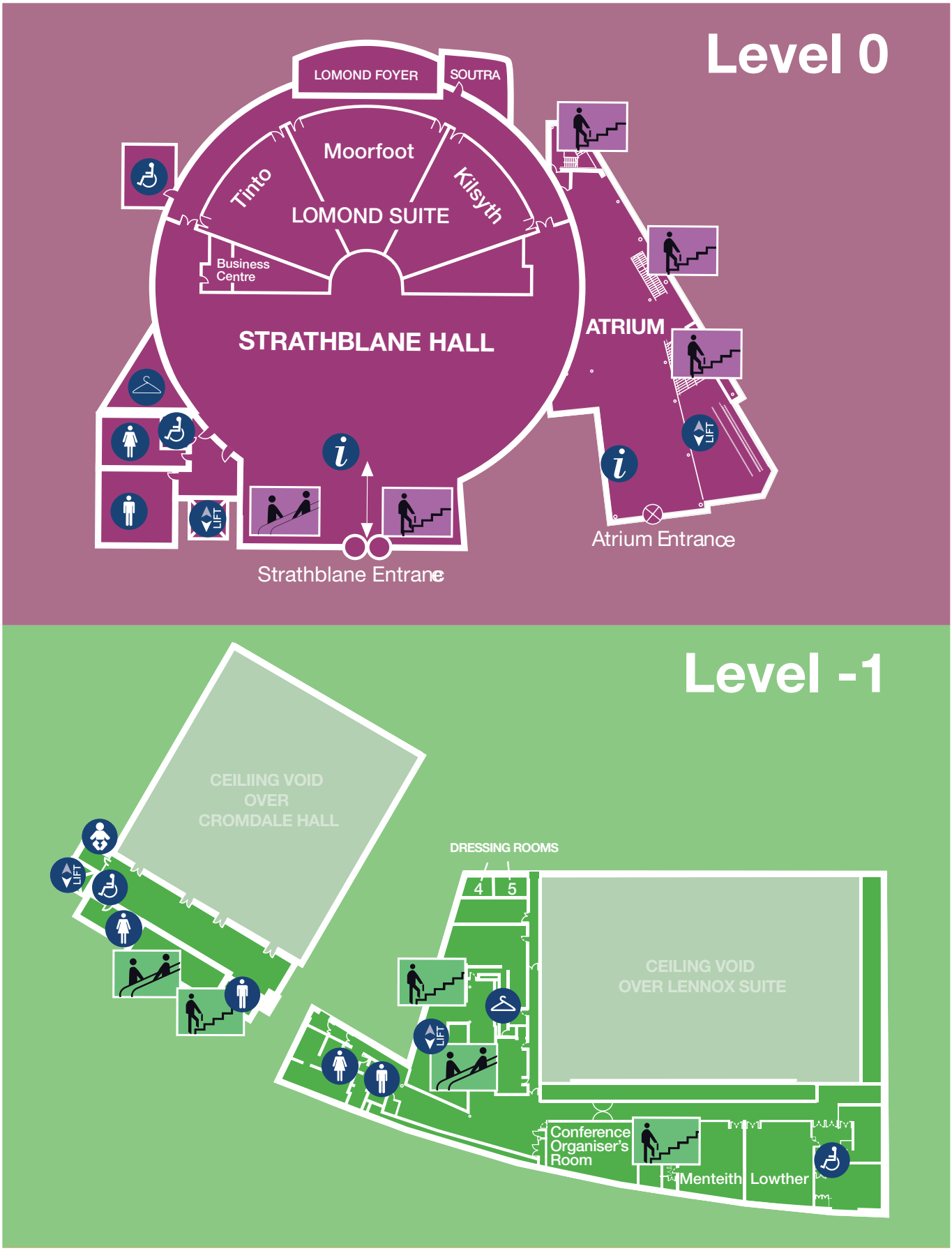
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LOMOND SUITE
Business Centre
STRATHBLANE HALL
ATRIUM
LIFT
Strathblane Entrance
Atrium Entrance
Level -1
CEILIING VOID OVER CROMDALE HALL
DRESSING ROOMS
4
5
CEILING VOID OVER LENNOX SUITE
LIFT
Conference Organiser's Room
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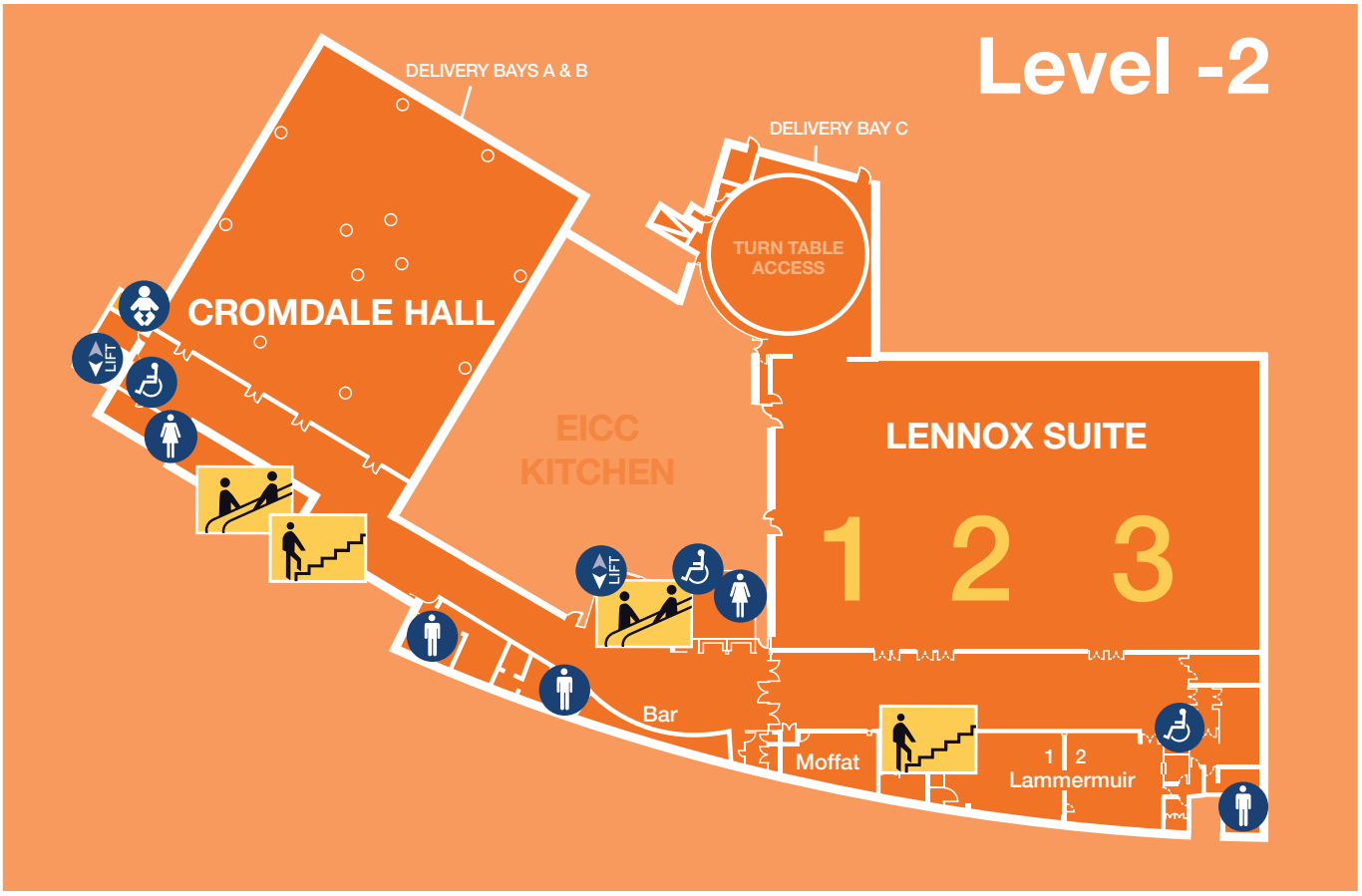
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Bar
Moffat
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