



Swedish Society of Biomechanics
7th Annual Conference, 27-28 May 2024
Belfragesalen, BMC D15, Klinikgatan 32, 222 42 Lund

Program

27 May 2024

10:30 – 11:15 Welcome coffee

11.15 – 11.40 Welcome, introduction

11.40 – 12.30 Oral Session 1: Imaging. Chair: Matilda Larsson

- Kunal Sharma: Multiscale Viscoelastic Response of Collagen in Rat Achilles Tendons by Simultaneous SAXS/WAXS
- Magnus Dustler: Mechanical imaging for efficient breast cancer diagnosis in conjunction with radiology
- Zaki Alomar: Innovative Mandibular Reconstruction Plate Design for Enhanced Durability
- Esra Yilmaz: Effects of Microfluidic Sorting on Cancer Cells
- Estelle Pitti: Assessment of Anisotropic Properties in Levator Ani Muscle Phantom Using Ultrasonic Rotational Shear Wave Elastography

12.30 – 13.30 Lunch and photo

13.30 – 14.30 Oral session 2: Cardiovascular and respiratory 1. Chair: Christian Gasser

- Elias Sundström: Blood Speckle Imaging as an emerging approach for perioperative evaluation in aortic valve-remodeling procedures
- Lea Christerson: Simulation of healthy patient-specific mitral valves using fluid-structure interaction: validation against in vivo data
- Hanna Hörwing: Exploring Femoro-Femoral Cannulation Performance in Extracorporeal Membrane Oxygenation using Large Eddy Simulations
- Emanuel Perra: In-vitro Physiological Control Assessment of Realheart Total Artificial Heart in Pulmonary Hypertension Patients
- Kyle Mudge: Development of Self-Sensing Aortic Phantoms to Replicate Aortic Baroreceptor Response
- Marco Laudato: Towards efficient multi-scale modelling of thrombosis

5-min leg stretch

14.35 – 15:15 Oral Session 3: Impact and tissue biomechanics 1. Chair: Anna Gustafsson

- Chiara Garavelli: Validation of metastatic vertebrae finite element models against digital volume correlation measurements
- Jenny Carlsson: Phase field simulation of fracture in cortical bone
- Jonas Östh: "Using Human Body Model Tissue Level Lumbar Spine Fracture Injury Risk Predictions to Improve Physical Crash Test Dummy Capabilities
- Alessandra Aldieri: Reconstruction of 3D Finite Element Models from 2D Dual-Energy X-Ray Absorptiometry

15.15 – 15.45 Fika

13.45 – 16.30 **Keynote lecture: Lisa Prah Wittberg**, KTH: "No life without fluid dynamics, minimizing complications in extracorporeal life support" Chair: Hanna Isaksson

16.30 – 17.00 Words from our sponsors

17.00 – 18.00 Poster session

19.00 Dinner: Tegnars Matsalar, Sandgatan 2, Lund

28 May 2024

8.30 – 8.40 Welcome/recap

8.40 – 9.25 **Keynote lecture: Michael Skipper Andersen**, Aalborg University: “Design and evaluation of orthopedic devices using musculoskeletal models”. Chair: Lanie Gutierrez-Farewik

9.25 – 9.55 Oral session 4: Musculoskeletal 1. Chair: Joakim Holmberg

- Morten Bilde Simonsen: Differences in Knee Force Profiles During Walking Among Patients with Knee Osteoarthritis
- Israel Luis: Optimal assistance informed by human-device simulations
- Daniel L Benoit: Improved functional performance following ACL reconstruction is associated with mechanical shielding of the injured limb

9.55 – 10.30 Fika

10.30 – 11.10 Oral session 5: Cardiovascular and respiratory 2. Chair: Elias Sundström

- EL JIRARI Imane: Numerical modeling to predict oxygenation and filtration rates in a miniaturized device artificially combining pulmonary and renal function in premature infants.
- Aurora Rosato: Beat-to-beat hemodynamics of synchronized walking
- Peng Li: Pulsatile breathing conditions effects on a simplified three-dimensional human soft palate
- Richard Thomas Deyhle Jr.: In-Vivo Synchrotron Phase-Contrast Imaging of Lung Tissue Biomechanics in a Rat Model of Ventilator and Bleomycin-Induced Injury

11.10 – 12.00 SSB Annual General Meeting. Chair: Lanie Gutierrez-Farewik

12.00 – 13.30 Lunch (with visit at MoRE Lab)

13.30- 14:10 Oral session 6: Musculoskeletal 2 Chair: Daniel Benoit

- Zhihao Duan: In vivo parameter and intrinsic properties estimation of motor units in neurologically impaired subjects.
- Minh Truong: Quantifying Factors Influencing Walking Performance in Persons with Spinal Cord Injury
- Xiaochen Zhang: The Immediate Effects of a Soft Ankle Exoskeleton on People with Dropfoot: A Feasibility Study
- Kalle Torniaainen: The effect of mechanical energy return of the shoe on running economy when running in Advanced Footwear Technology shoes

14.10- 14:50 Oral session 7: Impact and tissue biomechanics 2. Chair: Rodrigo Moreno

- Xiaogai Li: Biomechanics of Shaken Baby Syndrome Dilemma and Opportunity
- Shoab Attar: Investigating the correlation between peak bone strength and peak aBMD in healthy male subjects using subject-specific FE modeling



- Viktor Jönsson: Importance of Bone-Cartilage Interface Kinematics in Fe Simulation for Cartilage Mechanics
- Zhou Zhou: white matter fiber tract deforms most in the perpendicular direction during in vivo volunteer impacts

14.50 – 15.20 Short break for award winner tallying and coffee break

15.20 – 15.40 Awards. Chair: Caroline Öhman Mägi

15.40 – 15.55 Conclusions. Lanie Gutierrez-Farewik

Thanks to our sponsors for their kind support!

