ESB2022

27th Congress of the European Society of Biomechanics

26 - 29 June 2022, Porto, Portugal

Conference Agenda

Session Overview

Date: Sunday, 26/June/2022

10:00am - 12:00pm	**Pre Course "Ideation"** Location: **D. Maria Hall**
1:00pm - 5:00pm	**Registration**
1:30pm - 3:30pm	**Pre Course "The Basics of Mechanical Characterization of Soft Biological Tissue"** Location: **D. Maria Hall** Lecturers: Nele Famaey & Seyed Ali Elahi
4:00pm - 6:00pm	**Pre Course "Explainable Artificial Intelligence Methods in Biomedical Engineering for Supporting Medical Diagnosis"** Location: **D. Maria Hall** Lecturer: Angela Lombardi
7:30pm - 10:00pm	**Student Night** Venue: No Mercado restaurant, Market Ferreira Borges, R. da Bolsa 22

Date: Monday, 27/June/2022

8:30am - 9:45am

TR01.1: Cardiovascular biomechanics I: Developmental biomechanics and mechanobiology

Location: Archive Hall
Chair: Selda Sherifova
Chair: Stéphane Avril

8:30am - 8:55am

PHYLOGENIC AND ONTOGENIC DETERMINANTS OF MECHANOTRANSDUCTION IN THE HUMAN AORTA

J.-B. Michel

8:55am - 9:07am

FLUID MECHANICS OF THE ZEBRAFISH EMBRYONIC HEART TRABECULATION

A. G. Cairelli, R. W. Chow, J. Vermot, C. H. Yap

9:07am - 9:19am

Fluid Mechanics of Fetal Aortic Valvuloplasty in Fetal Aortic Stenosis and Evolving HLHS

H. S. Wong, H. Wiputra, A. Tulzer, G. Tulzer, C. H. Yap

9:19am - 9:31am

Biomechanical modelling of the aorta in adult zebrafish

M. Van Impe, M. Stampanoni, P. Sips, J. De Backer, P. Segers

9:31am - 9:43am

HEMODYNAMICS-DRIVEN AORTIC GROWTH FOR GENETICALLY MODIFIED MICE MODELS

M. S. Bazzi, J. E. Wagenseil, V. H. Barocas

TR02.1: Implants / orthotics / prosthetics / devices I: Craniomaxillofacial

Location: Infante Hall
Chair: Harry van Lenthe
Chair: Dennis Janssen

8:30am - 8:42am

An instrumented orthosis prototype for cranial correction

B. Garate, A. Zabala, A. Elawadly, S. Taylor, O. Jeelani, D. Dunaway, G. James, S. Schievano, A. Borghi

8:42am - 8:54am

TOWARDS THE DESIGN OF A NOVEL NITINOL DISTRACTOR FOR CRANIOFACIAL SURGERY

L. Zabalza, N. Rodriguez-Florez, D. Silva, O. Jeelani, G. James, D. Dunaway, J. Ong, S. Schievano, A. Borghi

8:54am - 9:06am

A NOVEL METHOD TO MEASURE DISTRACTION FORCES DURING MID-FACE ADVANCEMENT

A. Zabala Monasterio, B. Garate Andikoetxea, S. Taylor, J. Ong, D. Dunaway, O. Jeelani, S. Schievano, A. Borghi

9:06am - 9:18am

FINITE ELEMENT MODELLING OF A CRANIAL IMPLANT DURING IMPACT

R. Alves de Sousa, P. Santos, F. Fernandes

9:18am - 9:30am

Finite Element Modelling of Acoustic Emissions for Dental Implant monitoring

G. Boron, R. Reuben, U. Wolfram

9:30am - 9:42am

ON THE BIOMECHANICS OF RECONSTRUCTED MANDIBLES WITH CAD/CAM FIXATION DEVICES

G. Biesso, V. Orassi, C. Janka, C. Rendenbach, S. Checa

TR03.1: Biomechanics of movement and posture I: Sensor-based evaluation of movement

Location: D. Maria Hall
Chair: William R. Taylor
Chair: Erica Beaucage-Gauvreau

8:30am - 8:55am

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

C. Mazzà

8:55am - 9:07am

VALIDATION OF AN INERTIAL-BASED GAIT ANALYSIS SYSTEM USING A SIX DEGREES-OF-FREEDOM JOINT SIMULATOR

A. Ortigas Vásquez, A. Maas, W. R. Taylor, T. M. Grupp

9:07am - 9:19am

BIOMECHANICS IN THE WILD: VALIDATION OF A WEARABLE KINETIC MEASUREMENT SYSTEM

H. Wang, A. Basu, G. Durandau, M. Sartori

9:19am - 9:31am

SINGLE IMU BASED OPEN-SOURCE AND LOW-COST GAIT EVENT DETECTION WEARABLE DEVICE

N. Breitman, A. Fischer

9:31am - 9:43am

Kinematic changes during walking with whole-body vibration and psychomotor testing

A. P. Moorhead, A. Mazzoleni, A. Goggi, S. Marelli, G. Lorenzini, M. Tarabini

TR04.1: Mechanobiology I: Tools

Location: D. Luis Hall
Chair: Hans Van Oosterwyck
Chair: Daphne Weihs

8:30am - 8:55am

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

H. Van Oosterwyck

8:55am - 9:07am

Quantitative phase microscopy-based cell viscoelasticity measurement by shear stress

J. Gumulec, T. Vicar, J. Chmelik, J. Navratil, J. Balvan, R. Kolar, L. Chmelikova, V. Cmiel, M. Masarik

9:07am - 9:19am

PHOTO-SWITCHABLE BIO-INTERFACES FOR DYNAMIC CELL CULTURES

F. Mauro, C. Natale, V. Panzetta, P. A. Netti

9:19am - 9:31am

MECHANOREGULATION OF CRISPR/CAS9 MEDIATED BONE CELL REPORTER MICE UNDER CYCLIC MECHANICAL LOADING

D. Yilmaz, F. Correia Marques, E. Wehrle, G. A. Kuhn, R. Müller

TR05.1: Soft tissue biomechanics I

Location: Porto Hall
Chair: Maria José Gómez-Benito
Chair: José Felix Rodriguez Matas

8:30am - 8:42am

FRACTURE TOUGHNESS DETERMINATION OF MUSCLE TISSUE BASED ON AQLV MODEL DERIVED VISCOUS DISSIPATED ENERGY

O. J. Aryeetey, M. Frank, A. Lorenz, D. H. Pahr

8:42am - 8:54am

Mechano-structural maturation of the bone callus tissue under distraction

P. Blázquez-Carmona, J. A. Sanz-Herrera, J. Mora-Macías, J. J. Toscano, J. Morgaz, J. Domínguez, E. Reina-Romo

8:54am - 9:06am

ADVANTAGES OF ESTIMATING BIOMECHANICAL PROPERTIES OF THE CORNEA USING TORSIONAL WAVE ELASTOGRAPHY

I. H Faris, J. Torres, A. Callejas, G. Rus

9:06am - 9:18am

Mechanical measurements for clinical assessment of compartment syndrome

C. Tacchella, E. Clutton, Y. Chen, M. Crichton

9:18am - 9:30am

THE IN-VITRO TEST CONDITIONS INFLUENCE THE BIOMECHANICAL PROPERTIES OF DEGENERATED LATERAL MENISCI

TR06.1: Biomaterials I

Location: Arrabida Hall

8:30am - 8:42am

BIOREACTOR EVALUTION OF AN ANTIBACTERIAL AND OSTEOGENIC SILICON NITRIDE REINFORCED CRYOGEL SYSTEM

S. S. Lee, L. Laganenka, X. Du, W.-D. Hardt, S. J. Ferguson

8:42am - 8:54am

Corroded magnesium-based scaffolds fatigue strain accumulation and mechanical behaviour under cyclic loading

R. Bonithon, S. Davis, M. Morgan, G. Blunn, A. Karali

8:54am - 9:06am

MULTISCALE PERFORMANCES OF ELECTROSPUN BIOSTABLE DEVICES FOR TENDON AND LIGAMENT REPLACEMENT

A. Sensini, C. Gotti, C. Gualandi, M. V. Ricioppo, G. Marchiori, N. Sancisi, M. Fini, M. L. Focarete, L. Cristofolini, A. Zucchelli

9:06am - 9:18am

DYNAMIC MECHANICAL ANALYSIS OF COLLAGEN FIBRILS AND ELECTROSPUN PLLA NANOFIBERS

M. Nalbach, A. Sensini, N. Motoi, M. Rufin, O. Andriotis, A. Zucchelli, G. Schitter, L. Cristofolini, P. Thurner

9:18am - 9:30am

NATURE-INSPIRED MEMBRANES FOR ARTIFICIAL RESPIRATION –

TR07.1: Computer aided diagnosis, planning and surgery I

Location: Miragaia Hall
Chair: Jérôme Noailly
Chair: Miguel Ángel Ariza Gracia

8:30am - 8:55am

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

M. A. Perez Anson

8:55am - 9:07am

AN INVESTIGATION OF SPARSE 3D POINT CLOUD REGISTRATION COST FUNCTIONS FOR ESTIMATING 3D POSE OF HUMAN BONE

D. A. Christie, R. Fluit, G. V. Durandau, M. Sartori, N. J. J. Verdonschot

9:07am - 9:19am

PREDICTION OF GUIDEWIRE INDUCED AORTIC DEFORMATIONS DURING EVAR: FEA AND IN VITRO STUDY

M. Emendi, K.-H. Støverud, G. Tangen, H. Ulsaker, S. K. Dahl, V. E. Prot, T. Langø

9:19am - 9:31am

IN-SILICO BIOMECHANICAL DESCRIPTORS TO STRATIFY REAL WORLD CASES OF PROXIMAL JUNCTION FAILURE IN SPINE SURGERY

M. Rasouligandomani, A. del Arco, F. Pellisé, M. González Ballester, F. Galbusera, J. Noailly

TR08.1: Dental biomechanics

Location: S. Joao Hall
Chair: Christoph Bourauel
Chair: Benedikt Sagl

8:30am - 8:42am

Differences in TMJ loading between Mediotrusive and Laterotrusive Tooth Grinding

B. Sagl, M. Schmid-Schwap, E. Piehslinger, X. Rausch-Fan, I. Stavness

8:42am - 8:54am

IMPACT OF SIMULATED TOOTHBRUSHING AND THERMOCYCLING ON SURFACE ROUGHNESS OF CAD/CAM RESIN MATRIX CERAMICS

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

8:54am - 9:06am

Numerical and Experimental Assessment of Multirooted Root Analog Implants

M. Aldesoki, L. Keilig, I. Dörsam, C. Bourauel

9:06am - 9:18am

THE EFFECT OF TRIMMING LINE GEOMETRY ON FORCE TRANSMISSION BY ORTHODONTIC ALIGNERS (A FINITE ELEMENT STUDY)

T. Elshazly, L. Ludger, A. Ghoneima, M. Abuzayda, C. Bourauel

9:18am - 9:30am

L. de Roy, O. Piquet, G. Teixeira, M. Weiske, H. Mayr, M. Seidenstücker, A. Seitz

9:30am - 9:42am

TISSUE INTERNAL STRAINS COMPUTED BY A FINITE ELEMENT MODEL OF THE HUMAN HEEL AND MEASURED FROM MR IMAGES

A. Trebbi, M. Bailet, A. Perrier, Y. Payan

PRODUCTION OF MICRO-STRUCTURED POLYMER HOLLOW FIBERS

M. Pekovits, P. Ecker, F. Imran, J. A. Kalarus, M. Harasek, M. Gföhler

9:30am - 9:42am

Nanofibre capped melt electrowritten grid structures mimicking he architecture of articular surfaces

M. Santschi, L. Bienz, M. Leunig, S. Ferguson

DESIGN EVALUATION OF SIMPLIFIED CERAMIC CANTILEVER SINGLE-RETAINER RESIN-BONDED FIXED DENTAL PROSTHESES USING FEA

N. Hjort, P. Boitelle, I. Sailer, J.-P. Attal, A. Benoit

9:30am - 9:42am

EFFICENCY AND LEARNABILITY OF MAGNETIC MALLET AS A RETRIEVAL TOOL FOR DENTAL CROWNS: A PRELIMINARY STUDY

A. T. Lugas, G. Caraceni, G. Schierano, A. L. Audenino, D. Baldi, C. Bignardi, M. Terzini

9:45am - 10:15am

Coffee Break
Location: West Ground floor

10:15am - 11:40am

TR01.2: Cardiovascular biomechanics II: Material characterization

Location: Archive Hall
Chair: Selda Sherifova
Chair: Stéphane Avril

10:15am - 10:27am

Aortic media under radial tension: Global and local effects of relaxation

S. Sherifova, S. Avril, G. A. Holzapfel

10:27am - 10:39am

Characterising dissection in aortic tissue: Effect of location and dissected layer

I. Ríos-Ruiz, M. Á. Martínez, E. Peña

10:39am - 10:51am

GLOBAL AND LOCAL STIFFENING OF HUMAN THORACIC AORTAS UNDERGOING TEVAR IN VITRO: A MOCK-LOOP STUDY"

E. Agrafiotis, G. Sommer, C. Mayer, M. Grabenwöger, P. Regitnig, H. Mächler, G. A. Holzapfel

10:51am - 11:03am

Local Rupture Analysis of Atherosclerotic Human Carotid Plaques by Structural Imaging, DIC and Uniaxial Testing

S. Guvenir Torun, P. de Miguel Munoz, H. Crielaard, H. J. Verhagen, A. van der Lugt, G. J. Kremers, A. C. Akyildiz

11:03am - 11:15am

MECHANICAL CHARACTERIZATION OF PASSIVE MYOCARDIAL TISSUE PROPERTIES IN HEALTHY AND INFARCTED PORCINE HEARTS

N. Laita, M. Á. Martínez, M. Doblaré, E. Peña

11:15am - 11:27am

NON-HOMOGENEOUS GEOMETRICAL INFLUENCE ON RING-OPENING STRESS RECONSTRUCTION

A. Utrera, M. Inostroza, E. Rivera, D. Celentano, C. Garcia-Herrera

11:27am - 11:39am

Investigating local properties of atherosclerotic plaque caps using a tissue-engineered model

H. Crielaard, T. B. Wissing, S. Guvenir Torun, P. de Miguel, R. M. Hengst, G. Kremers, F. J. H. Gijsen, K. van der Heiden, A. C. Akyildiz

TR02.2: Implants / orthotics / prosthetics / devices II: 3D Technology

Location: Infante Hall
Chair: Harry van Lenthe
Chair: Vasja Plesec

10:15am - 10:40am

Harnessing 3D Printing to Optimise Medical Device Interaction with Soft Tissue

E. O'Cearbhaill

10:40am - 10:52am

3D PRINTED SOFT METAMATERIAL FORCE SENSORS FOR GAIT MONITORING USING TPU-GRAPHENE COMPOSITES

I. Sanz-Pena, N. Rubio Carrero, H. Xu, M. Hopkins

10:52am - 11:04am

AN EXPERIMENTAL AND COMPUTATIONAL STUDY ON A PATIENTSPECIFIC 3D PRINTED TI6AL4V HEMIPELVIS PROSTHESIS

L. Ciriello, F. Danielli, R. Verga, F. Alemani, M. Cicero, J. F. M. Rodriguez, G. Pennati, L. La Barbera

11:04am - 11:16am

CAN 3D-PRINTED VORONOI STRUCTURES REDUCE FRICTION IN ORTHOPAEDIC IMPLANTS?

C. Hou, I. Nemes-Károly, L. Pastrav, B. Vrancken, G. Kocsis, K. Denis, G. Szebényi

11:16am - 11:28am

Additively manufactured microlattice structures for an innovative intervertebral device

F. Distefano, G. Epasto, E. Guglielmino, R. Mineo

TR03.2: Biomechanics of movement and posture II: Modelling and simulation of movement

Location: D. Maria Hall
Chair: Seyyed Hamed Hosseini Nasab
Chair: Lennart Scheys

10:15am - 10:27am

PATELLAR TENDON LOADING AND STIFFNESS DERIVED FROM IN VIVO LOADS AND KINEMATICS

P. F. Kneifel, P. Moewis, P. Damm, P. Schütz, J. Dymke, W. R. Taylor, G. N. Duda, A. Trepczynski

10:27am - 10:39am

The effect of foot orientation modifications on knee joint biomechanics during different activities

Y. Wan, L. Wade, P. McGuigan, J. Bilzon

10:39am - 10:51am

CAN WALKING SPEED BE ACCURATELY ESTIMATED USING A MARKER-BASED GAIT EVENT DETECTION METHOD?

T. Bonci, F. Salis, K. Scott, L. Alcock, C. Becker, A. Cereatti, E. Gazit, C. Hansen, J. Hausdorff, W. Maetzler, P. Luca, L. Rochester, B. Sharrack, I. Vogiatzis, C. Mazzà

10:51am - 11:03am

Assessing the impact of a rehabilitation treatment with exoskeleton in pd: a musculoskeletal modelling approach

M. Romanato, F. Fichera, F. Spolaor, D. Volpe, Z. Sawacha

11:03am - 11:15am

A Quality Check to Enable Reliable Multicentric Stereophotogrammetric Data Collection

K. Scott, T. Bonci, L. Alcock, C. Hansen, L. Schwickert, E. Gazit, A. Cereatti, C. Mazzà

11:15am - 11:27am

MUSCLE CONTRIBUTIONS TO CENTER OF MASS ACCELERATION IN SIMULATED CROUCH GAIT BY HEALTHY CHILDREN

C. Cardadeiro, F. João, R. Mateus, A. P. Veloso

11:27am - 11:39am

PROPRIOCEPTION, MUSCLE ACTIVITY AND TIBIAL TRANSLATION DURING HEEL STRIKE IN RUNNING: ROLE OF ACL SURGERY TYPE

L. Bühl, N. Bleichner, C. Nüesch, S. Müller, G. Pagenstert, C. Egloff, A. Mündermann

TR04.2: Mechanobiology II: In vitro / In silico

Location: D. Luis Hall
Chair: Hans Van Oosterwyck

10:15am - 10:27am

Mechanobiology-Based Rapid Diagnosis and Early Prognosis of Metastatic Risk in Cancer

D. Weihs

10:27am - 10:39am

NANOMECHANICAL SIGNATURE OF FIBROSARCOMA: FROM SINGLE CELLS TO TISSUE LEVEL

A. Stylianou, K. Polemidiotou, F. Mpekris, T. Stylianopoulos

10:39am - 10:51am

Experimental investigation of Tropocollagen mechancis

A. Rohatschek, P. Steinbauer, S. Baudis, P. Thurner

10:51am - 11:03am

Theoretical and Experimental Modelling of Cell and Tumour Growth

B. Huxford, V. Kumar, L. McNamara, E. McEvoy

11:03am - 11:15am

COMBINED EXPERIMENTAL AND COMPUTATIONAL STUDY OF TENSIONAL HOMEOSTASIS IN CELL-SEEDED TISSUE-EQUIVALENTS

D. Paukner, J. F. Eichinger, J. D. Humphrey, C. J. Cyron

11:15am - 11:27am

CREEP BEHAVIOR OF INDIVIDUAL COLLAGEN FIBRILS IN TENSION IS DEPENDENT ON CROSS-LINKING

M. Nalbach, N. Motoi, M. Rufin, O. Andriotis, G. Schitter, P. Thurner

11:27am - 11:39am

PERFORMANCE OF LINEAR AND NONLINEAR APPROACHES IN TRACTION FORCE MICROSCOPY FOR COLLAGEN HYDROGELS

A. Apolinar-Fernández, J. Barrasa-Fano, M. Cóndor, H. Van Oosterwyck, J. A. Sanz-Herrera

TR05.2: Soft tissue biomechanics II

Location: Porto Hall
Chair: Dulce Oliveira
Chair: José Felix Rodriguez Matas

10:15am - 10:27am

Inter-donor variability in the tensile and compressive behaviour of in vitro

TR06.2: Computational biology I

Location: Arrabida Hall
Chair: Maria Angeles Perez Anson
Chair: Aurélie Carlier

10:15am - 10:40am

COMPUTATIONAL SIMULATIONS TO UNRAVEL CELL

TR07.2: Computer aided diagnosis, planning and surgery II

Location: Miragaia Hall
Chair: Jérôme Noailly
Chair: Miguel Ángel Ariza Gracia

10:15am - 10:27am

TR08.2: Experimental biomechanics I

Location: S. Joao Hall
Chair: Luca Cristofolini
Chair: Ingmar Fleps

10:15am - 10:27am

DIGESTION OF COLLAGEN FIBRILS TROUGH MMP-1: LIVE

human thrombi
R. Cahalane, J. de Vries, M. de Maat, K. van Gaalen, H. van Beusekom, A. van der Lugt, A. Akyildiz, F. Gijsen

10:27am - 10:39am
A Bayesian constitutive model selection framework for biaxial mechanical testing of planar soft tissues: application to porcine aortic valves
A. Aggarwal, L. T. Hudson, D. W. Laurence, C.-H. Lee, S. Pant

10:39am - 10:51am
MECHANICAL PROPERTIES OF PLANTAR TISSUES: A COUPLED EXPERIMENTAL AND NUMERICAL APPROACH
S. Pettenuzzo, A. Berardo, E. Belluzzi, A. Pozzuoli, P. Ruggieri, R. Boscolo Berto, R. De Caro, E. L. Carniel, C. G. Fontanella

10:51am - 11:03am
OPTIMIZATION OF SINGLE-SIDED NMR AND INDENTATION PROTOCOLS IN EVALUATING CARTILAGE STRUCTURE AND MECHANICS
M. Berni, C. Golini, C. Testa, N. F. Lopomo, L. Brizi, M. Baleani

11:03am - 11:15am
Structural mechanisms in soft fibrous tissues: Lessons from biomimetics
M. Sharabi

11:15am - 11:27am
VISCOELASTIC PROPERTIES OF TUMOUR TISSUE: RELATION WITH STRUCTURE AND COMPOSITION
A. Levillain, C. B. Confavreux, M. Decaussin-Petrucci, E. Durieux, P. Paparel, K. Le-Bail Carval, L. Maillard, F. Bermond, D. Mitton, H. Follet

11:27am - 11:39am
Uniaxial tensile tests on human Fascia Lata: stress relaxation and failure phenomena from frozen cadavers
L. Bonaldi, C. G. Fontanella, C. Stecco, A. Berardo

MECHANOTRASDUCTION IN PATHOLOGICAL AND PHYSIOLOCIGAL PROCESSES
M. J. Gómez-Benito

10:40am - 10:52am
MODELLING THE MECHANO-INFLAMMATORY REGULATION OF CHONDROCYTE IN EARLY OSTEOARTHRITIS
M. Segarra-Queralt, G. Piella, J. Noailly

10:52am - 11:04am
A NOVEL TOP-DOWN NETWORK MODELLING APPROACH TO ESTIMATE CELL ACTIVITY IN MULTIFACTORIAL ENVIRONMENTS
L. Baumgartner, M. Á. González Ballester, J. Noailly

11:04am - 11:16am
IN SILICO ANALYSIS OF THE INFLUENCE OF THE SUBSTRATE STIFFNESS ON THE EVOLUTION OF 3D CULTURES OF GLIOBLASTOMA
M. Pérez-Aliacar, L. Palos, C. Bayona, J. Ayensa-Jiménez, I. Ochoa, M. Doblaré

11:16am - 11:28am
Simulation of piezoelectric scaffold for bone regeneration
V. Badali, M. Mohammadkhah, S. Checa, M. M.Zehn

11:28am - 11:40am
CELLULAR SENESCENCE IN A MECHANOBIOLOGICAL MODEL OF LONGITUDINAL BONE GROWTH OF THE FEMUR
A. Lipphaus, A. Wegener-Panzer, R.-B. Tröbs, U. Witzel

A numerical study of the impact on graft longevity from coronary artery bypass grafts' bulk-body geometry
C. J. Bright, A. Deyranlou, S. Grant, A. Keshmiri

10:27am - 10:39am
TOLERANCE ANGLE DETERMINATION FOR PEDICULAR SCEW INSERTION
L. Leblond, Y. Godio-Raboutet, Y. Glard, M. Evin

10:39am - 10:51am
A web platform for data-driven real-time modeling and visualizing cardiovascular problems
N. Demo, P. Siena, M. Girfoglio, M. Conti, G. Rozza, F. Auricchio

10:51am - 11:03am
A BONE-REMODELING DRIVEN NUMERICAL FRAMEWORK FOR HIP PROSTHESIS DESIGN
F. Rotini, S. Marconi, G. Alaimo

11:03am - 11:15am
EVALUATION OF PHARMACOLOGICAL TREATMENTS FOR OSTEOPOROSIS USING DXA-BASED 3D FINITE ELEMENT MODELS
C. Ruiz Wills, M. Qasim, R. Winzenrieth, S. Di Gregorio, L. Del Río, L. Humbert, J. Noailly

11:15am - 11:27am
INFLUENCE OF PLATE DESIGN ON SUBCONDYLAR FRACTURE FIXATION: A COMPARATIVE FINITE ELEMENT ANALYSIS
A. GUPTA, A. DUTTA, K. MUKHERJEE

11:27am - 11:39am
Left Ventricular Assist Device surgical optimisation using Computational Fluid Dynamics
G. B. López-Santana, A. De Rosis, A. Keshmiri

TRACKING OF MECHANICS THROUGH NANOINDENTATION
M. Rufin, S. Jaritz, G. J. Schütz, P. J. Thurner, O. G. Andriotis

10:27am - 10:39am
Experimental validation of a mechanistic model of the Berlin Heart EXCOR using a mock circulation loop
V. Yuan, L. Rompani, F. De Gaetano, M. L. Costantino

10:39am - 10:51am
Reproducible generation of predefined tibia fractures
K. Wickert, M. Roland, A. Andres, S. Diebels

10:51am - 11:03am
How does kinematic alignment influence femorotibial kinematics in medial stabilised TKA compared to mechanical alignment?
L. Bauer, M. Woiczinski, C. Thorwächter, P. Müller, B. Holzapfel, T. Niethammer, J.-M. Simon

11:03am - 11:15am
DESIGN OF BIOMECHANICAL TESTING DEVICE FOR THE PELVIS INCLUDING GAIT MUSCLE FORCES
A. Soliman, P.-L. Ricci, S. Kedziora, J. Kelm, T. Gerich, S. Maas

11:15am - 11:27am
Development of a physical twin for cardiovascular life-support devices analysis and comparison
E. Vignali, E. Gasparotti, F. Bardi, S. Prizio, D. Haxhiademi, P. Del Sarto, S. Celi

11:27am - 11:39am
Mechanical performance of hybrid fibrous structures for tendon repair
T. Peixoto, M. A. Lopes, R. Fangueiro, R. M. Guedes

11:45am - 12:30pm
Keynote lecture 1: Personalized modeling of Alzheimer's disease, Ellen Kuhl
Location: Archive Hall
Chair: Harry van Lenthe
Chair: Joao Manuel R.S. Tavares

12:30pm - 1:15pm
Lunch Break
Location: West Ground floor

1:15pm - 2:00pm
Poster sessions PS1 - PS6
Location: West Ground floor

SIMUALTION OF CELLULAR PROLIFERATION USING THE RPIM MESHLESS METHOD
M. I. Araújo Barbosa, J. A. O. Pinto Belinha, R. Natal Jorge, A. Xavier de Carvalho

BIOMECHANICAL FINITE ELEMENT METHOD MODEL OF THE PROXIMAL CARPAL ROW AND EXPERIMENTAL CHARACTERIZATION OF THE INTEROSSEOUS
R. Marqués, J. Melchor, G. Rus, P. Hernández, O. Roda, I. Sánchez-Montesinos

A NUMERICAL APPROACH TO THE CALLUS FORMATION IN BONE FRACTURE HEALING
J. M. Naveiro, L. Gracia, J. Rosell, S. Puértolas

Intracranial Aneurysm Predictions With The Use Of Morphometric Features In a Machine Learning Approach
N. Aristokleous, K. G. Achilleos, M. Hadjicharalambous, A. S. Anayiotos, C. S. Pattichis, V. Vavourakis

OVERCOMING A "FORBIDDEN PHENOTYPE": THE PARROT'S HEAD SUPPORTS, PROPELS, AND POWERS TRIPEDAL LOCOMOTION
M. W. Young, E. Dickinson, N. D. Flaim, M. C. Granatosky

On the hindlimb biomechanics of the avian take-off leap
E. Meilak, P. Provini, C. Palmer, N. J. Gostling, M. O. Heller

SALBUTAMOL TRANSPORT AND DEPOSITION IN THE CAT AIRWAYS UNDER DIFFERENT BREATHING CONDITIONS AND PARTICLE SIZES
R. Fernandez-Parra, C. Reinero, P. Pey, M. Malve

Evaluation of trunk muscle antagonism predictions by multi-body models
A. Caimi, S. J. Ferguson, D. Ignasiak

ASSESSMENT OF SAGITTAL BALANCE IN THE DISTAL JUNCTIONAL PATHOLOGY IN THE LUMBAR SPINE: A RETROSPECTIVE ANALYSIS
S. Montanari, C. Griffoni, L. Cristofolini, G. Barbanti Brodano

THE INFLUENCE OF THE GRADE OF DISC DEGENERATION ON THE BIOMECHANICAL RESPONSE OF LUMBAR SPINE
K. Khalaf, Z. Khoz, M. Nikkhoo

Recreating articular cartilage's zonal fibre alignment on 3D electrospun scaffolds
A. Semitela, A. L. Pereira, A. Capitão, A. F. Mendes, P. A. A. P. Marques, A. Completo

BIOMECHANICAL CHARACTERIZATION OF TPMS SCAFFOLDS FOR BONE AND CARTILAGE TISSUE ENGINEERING
J. E. Santos, A. Lombard, T. Pires, A. P. G. Castro, P. R. Fernandes

DESIGN AND EXPERIMENTAL STUDY OF TORSIONAL WAVE BIOREACTOR TO EVALUATE EFFECT ON MELANOMA STEM CELL
M. Hurtado, C. Griñán-Lisón, G. Jiménez, E. López, D. Martínez-Moreno, M. J. Jiménez, J. A. Marchal, J. M. Melchor, G. Rus

Hybrid membrane as innovative materials for biomedical applications
M. Todesco, A. Martella, S. Imran, M. Casarin, G. Gerosa, C. G. Fontanella, A. Bagno

A BIOINSPIRED ORTHOPAEDIC BIOMATERIAL WITH TUNABLE MECHANICAL PROPERTIES BASED ON SINTERED TITANIUM FIBRES
M. Rüger, A. Seitz, K. Nuss, B. von Rechenberg, D. Seitz, C. Kostmann, P. Quadbeck, O. Andersen, C. Collins

EFFECTS OF POLOXAMER ADDITIVES ON STRENGTH, INJECTABILITY OF BETA-TRICALCIUM PHOSPHATE CEMENT
Y. Kim, K. Hamada

Gelatin/cellulose nanofibril composite: a promising formulation for injection and bioprinting purposes
S. Nejati, L. Mongeau

EFFECT OF CONDUCTION GAPS AND INCREASED COLLECTOR ROTATION SPEED ON ELECTROSPUN PCL MATRICES
E. G Bissacco, A. Amicone, M. X T Santschi, S. J Ferguson

BIOLOGICAL AND MECHANICAL PROPERTIES OF AN EXPERMINTAL DENTAL ALGINATE MODIFIED FOR SELF DISINFECTION
L. Singer, C. Szekat, G. Bierbaum, C. Bourauel

PRELIMINARY APPROACH OF AN ALTERNATIVE SOLUTION FOR THE BREAST IMPLANT SHELL
A. M. Teixeira, A. D. André, B. Areias, P. Martins

Evaluation of marker-based motion capturing to characterize basic hand movements in rheumatic patients
B. L. Coppers, S. Heinrich, U. Puthane, D. Berisha, K. Tascilar, A. Kleyer, D. Simon, J. Bräunig, J. Penner, M. Vossiek, V. Schönau, S. Bayat, G. Schett, S. Leyendecker, A.-M. Liphardt

QUANTIFICATION OF POST-OPERATIVE CORRECTION OF FOOT POSTURE THROUGH NEW ANATOMICAL REFERENCE SYSTEMS
M. Conconi, A. Pompili, N. Sancisi, A. Leardini, S. Durante, C. Belvedere

THE KINEMATICS OF THE FOOT DURING DROP JUMPS: A SIX-SEGMENT FOOD MODEL APPROACH
L. Fennen, R. Dubbeldam, H. Wagner

TIGHTLY COUPLED INERTIAL AND RADIO-BASED FOOT-WORN SENSORS FOR AMBULATORY SPATIAL GAIT ANALYSIS
F. J. Wouda, I. Bilal, U. Sakthivelu

EFFECTS OF HANDLE-HEIGHT ON GAIT KINETICS IN OLDER ADULTS WHILE WALKING WITH A ROLLATOR
M. A Avalos, Y.-H. Kwon, K. Tulching-Francis, D. Nichols, J. Zhang, N. Tuttle

EFFECT OF SENSOMOTORIC INSOLES ON POSTURAL STABILITYINKIDS WITH CEREBRAL PALSY
S. Bartošová, V. Nováček

ULTRASOUND IMAGING OF BONE CORTEX: BEAMFORMING OPTIMIZATION FOR OSTEOPOROTIC BONES
A. Sall Dia, G. Renaud, Q. Grimal

ESTIMATION OF WALL VISCOELASTIC PARAMETERS FROM THE PRESSURE AND DIAMETER CURVE OF A CAROTID ARTERY
K. Rhee, J. Shin

USING HYPER- OR LINEAR- PROPERTIES DOES NOT AFFECT PREDICTIVE CAPABILITY OF VULNERABLE CORONARY PLAQUES
M. Stefanati, G. Dubini, M. R Bennett, Z. Teng, J. F. Rodriguez Matas

Analysis of the influence of plaques composition and geometry on drug transport from drug eluting stents
J. Escuer, E. Peña, E. Pina, M. A. Martínez

Numerical study of non-Newtonian effects on thrombus formation under venous flow conditions
V. Dušková, A. Jonášová, S. Plánička, J. Vimmr

The effect of tissue preservation on the mechanical behavior of porcine aorta
H. Fehervary, K. Vander Linden, M. Pétré, N. Famaey

NUMERICAL ANALYSIS OF THE HEMODYNAMICS AND PERFORMANCE OF A MINIATURE VENTRICULAR ASSIST DEVICE
Y. Gabso, M. Rosenfeld, I. Avrahami

CHANGES IN NUCLEAR MORPHOLOGY CORRELATE WITH INVASIVENESS IN BREAST CANCER CELLS
B. Zbiral, A. Weber, M. d. Vivanco, J. L. Toca-Herrera

CULTURE OF PORCINE BONE EXPLANTS UNDER COMPRESSIVE LOADING
E. E. A. Cramer, L. M. Kock, D. Wanders, K. Ito, S. Hofmann

COMPUTATIONAL MODELING REVEALS ROLE OF PROXIMITY-DRIVEN, NONCONTACT CELL-CELL INTERACTIONS IN CANCER INVASIVENESS
M. Tulchinsky, D. Weihs

Cell's Sense of Slope
C. Frascogna, V. Panzetta, P. A. Netti

MICROFLUIDIC PLATFORM TO STUDY THE ROLE OF DYNAMIC MECHANICAL LOADING ON CELL FATE AND BEHAVIOR
S. Saporito, V. Panzetta, P. A. Netti

Large-scale quantification of osteocyte morphometry and protein expression from murine bone histology
F. Correia Marques, D. Yilmaz, E. Wehrle, R. Müller

MECHANICAL ASPECTS OF DRUG-COATED BALLOON ANGIOPLASTY DETERMINING THE EFFICIENCY OF THE COATING TRANSFER
E. Stratakos, L. Petrini, G. Pennati

PROXIMAL FEMUR BONE MINERAL DENSITY IN OSTEOPOROTIC PATIENTS: A REVIEW OF PLACEBO GROUPS IN CLINICAL TRIALS
S. Oliviero, M. Viceconti

Growth orientation, and not heterogeneous growth rates, dominates zebrafish jaw joint morphogenesis
J. Godivier, E. A. Lawrence, C. L. Hammond, N. C. Nowlan

NETWORK MODELLING FOR NUCLEUS PULPOSUS CELL ACTIVITY IN EARLY INTERVERTEBRAL DISC DEGENERATION
S. Tseranidou, M. Segarra-Queralt, J. Piñero, J. Noailly

Plantar pressure data reconstruction based on reduced data using compressive sensing technique
Z. Kamal, E. Hekman, G. Verkerke

COMPARISON BETWEEN TRANSTIBIAL AND ANTEROMEDIAL PORTAL ACL RECONSTRUCTION THROUGH FINITE ELEMENT ANALYSIS
K. Risvas, K. Moustakas

NON-INVASIVE METHOD OF FRACTIONAL FLOW RESERVE ESTIMATION IN PATIENTS SUFFERING FROM ISCHEMIC HEART
K. Jankowski, A. Nieroda, M. Pawlikowski

THE INFLUENCE OF THE IMPLANT GEOMETRY CONCEPTS IN BONE STRAINS DISTRIBUTION
C. Gomes, M. Mesnard, A. Ramos

Precision Rehabilitation: Targeted assistance of individual muscles via exoskeletons
T. Rodrigues, J. Ferreira, H. van der Kooij, M. Sartori, G. Durandau

In Vitro Ovine Model Confirms Importance of Screw Positioning for Stability of Bone-Fracture Treatment
T. Zumbrunn, S. Comtesse, A. von Keudell, S. J. Ferguson

DEVELOPMENT AND VALIDATION OF CUSTOM-MADE MARKER SETS FOR MICRO-MOVEMENT ANALYSIS
M. Sukopp, J. Schwer, L. de Roy, A. Ignatius, A. M. Seitz

An inverse dynamic active hybrid model to predict effects of the intra-abdominal pressure on the lumbar spine
R. Remus, A. Lipphaus, A. Hoffmann, M. Neumann, B. Bender

Forward dynamic simulation of a detailed thoracolumbar spine model under gravitational load
M. Hammer, L. Meszaros-Beller, J. M. Riede, S. Schmitt

VERTEBRAL BODY TETHERING VS SPINAL FUSION: LOOKING BEYOND THE RADIOGRAPHICAL OUTCOME
T. Ackermans, S. Schelfaut, P. Severijns, A. Van Campenhout, L. Moke, P. Moens, L. Scheys

ASSESSING BONE ULTRASTRUCTURE VIA NANOSCALE X-RAY COMPUTED TOMOGRAPHY AND QUANTITATIVE POLARIZED RAMAN SPECTROSCOPY
T. Kochetkova, T. Kormilina, S. Englisch, D. Drobek, J. Wirth, B. Apeleo Zubiri, O. Braun, M. Calame, S. Remund, B. Neuenschwander, J. Michler, P. Zysset, E. Spiecker, J. Schwiedrzik

THE EFFECT OF MICROSTRUCTURAL ANISOTROPY ON LOAD-BEARING CAPACITY OF THE ENTIRE HUMAN FEMUR
M. Branni, M. Taylor, E. Perilli, S. Martelli

Internal Strain Field of a Human Tibia with Titanium Tibial Tray during Stair Descent: A micro-CT and DVC Analysis
L. S Wearne, S. Rapagna, M. Awadalla, M. Taylor, E. Perilli

UNDERSTANDING BONE MATURITY: PROPERTIES AT THE INTERSTITIAL AND OSTEONAL LAMELLAR LEVEL
A. Bonicelli, H. McGivern, E. F. Kranioti, B. Xhemali, P. Zioupos

Graft positioning during the Latarjet procedure: computational analysis of shoulder stability and contact
R. Martins, C. Quental, J. Folgado, C. de Campos Azevedo, A. C. Ângelo

EFFICACY OF KARTING NECK BRACES IN REDUCING NECK INJURIES IN ROLLOVER ACCIDENTS: A FINITE ELEMENT STUDY
W. WEI, M.-H. Beauséjour, N. Bailly, M. Llari, Z. Xiao, P. Panichelli, P.-J. Arnoux

BIOMECHANICAL ANALYSIS OF THE CORRELATION BETWEEN MID-SHAFT ATYPICAL FEMORAL FRACTURE AND VARUS DEFORMATION
M. Severyns, D. Belaid, K. Aubert, T. Vendeuvre, A. Germaneau

COMPARISON OF THE LOWER EXTREMITY DYNAMICS OF THE ELDERLY FEMALE, HIII 50TH MALE AND HIII 5TH FEMALE DUMMIES
A. Schäuble, F. Zippel, T. Wackenroder, P. Rücker, T. Kinsky

Numerical simulation of stress-shielding at the bone-implant interface under shear loading
Y. Hériveaux, S. Le Cann, M. Fraulob, E. Vennat, V.-H. Nguyen, G. Haïat

BIOMECHANICAL ANALYSIS OF SEVERAL HINGED TKA FEATURES IN WELL-ALIGNED AND VALGUS/VALGUS KNEE
E. Bori, F. Armaroli, L. Maestripieri, B. Innocenti

Intramedullary nails vs. bone plate at the proximal humerus - Computersimulation
S. Lehner

FORCE AND SWIMMING PERFORMANCE: POOL AND OPEN WATER
P. CHAINOK, R. Masjuir, N. Phewkham, P. Tumnark, R. Zacca

Musculoskeletal analysis of elbow stability for common injury patterns
M. Melzner, C. Pfeifer, F. Süß, S. Dendorfer

FEASIBILITY STUDY TO TRANSFER MUSKULOSKELETAL MODEL DATA TO A 6 DOF JOINT SIMULATOR
P. Henke, L. Ruehrmund, M. Kebbach, J.-O. Sass, I. Soodmand, E. Kleist, C. Woernle, R. Bader

Effect of coracoacromial ligament release in shoulder biomechanics: a preliminary in-vitro study
I. Santos, K. Borst, S. Hoffmann, Y. Chevalier, H. Traxler, P. E. Müller, M. Pietschmann

Implementation of an automated method for the selection of subject-specific muscle insertion points
V. Maioli, G. Biesso, I. Fleps, S. Ferguson, P. Vena, B. Helgason, A. Baker

A PIPELINE TO CONVERT OPENSIM MUSCULOSKELETAL MODELS INTO MUJOCO PRESERVING ANATOMICAL CONSISTENCY
H. Wang, V. Caggiano, G. Durandau, V. Kumar, M. Satori

Modelling the eye lens: influence of capsular thickness on lens accommodation
L. Ye, K. P. Barbara

CHARACTERIZATION OF CORNEAL VISCOSITY USING TORSIONAL WAVES
J. M. Cortés Cortés, A. M. Callejas Zafra, I. Hatem Faris, G. Rus Carlborg

BIOMECHANICAL CHARACTERIZATION AND MODELING OF HUMAN LENTICULES
M. H. Nambiar, L. Liechti, H. Studer, A. S. Roy, T. G. Seiler, P. Büchler

A MESHLESS METHOD TO STUDY THE EFFECT OF VEGF DIFFUSION IN CAPILLARY NETWORK MORPHOLOGY
T. Sousa, A. Guerra, J. Belinha, R. Natal Jorge

UNUSUAL PHALANGEAL PROPORTIONS IMPROVE GRASPING POTENTIAL IN BIRDS, MAMMALS, AND BIOINSPIRED DESIGN
M. Granatosky, M. Young, N. Flaim, L. Faltings, M. Singh, E. Dickinson

DESIGN AND EXPERIMENTAL STUDY OF ULTRASONIC WAVE BIOREACTOR TO EVALUATE EFFECT ON TUMORS
M. Hurtado, C. Griñán-Lisón, G. Jiménez, E. López, D. Martínez-Moreno, J. A. Marchal, J. M. Melchor, G. Rus

NUMERICAL AND EXPERIMENTAL EVALAUTION OF THE BULGE TEST IN THE CHARACTERISATION OF THE BIOLOGICAL SOFT TISSUES
E. Gasparotti, S. Quartieri, E. Vignali, F. Bardi, R. Lazzeri, S. Celi

ADAPTIVE QUASI-LINEAR MODEL – UNIVERSAL MATERIAL PARAMETERS OF LIVER TISSUE FOR DIFFERENT LOAD CASES?
M. Frank, O. J. Aryeetey, S.-J. Esterman, D. H. Pahr

ESTIMATION OF TIBIA AXES ON PARTIAL DISTAL SCANNER IMAGES : A NOVEL APPROACH IN THREE DIMENSIONS
M. S. Dufrenot, S. Siegler, M. Donnez, M. Donnez, F. Lintz, P. Chabrand

BIOMECHANICAL ANALYSIS OF RUNNING AND ASSOCIATED INJURES BASED ON A LITERATURE REVIEW
M. L. Martínez Pinedo, L. D. Parra Gómez, C. Cifuentes-De La Portilla

2:00pm - 3:30pm

TR01.3: Clinical Biomechanics Awards Session

Location: Archive Hall
Chair: Markus Heller
Chair: Michele Conti

2:00pm - 2:12pm

BIOMECHANICS INDEX FOR DIABETIC FOOT RISK CLASSIFICATION
A. Guiotto, G. Bortolami, A. Ciniglio, F. Spolaor, G. Guarneri, A. Avogaro, F. Cibin, F. Silvestri, Z. Sawacha

2:12pm - 2:24pm

Biomechanical Evaluation of Diagnostic Tests for Rotator Cuff Lesions
J. Menze, T. Rojas, M. A. Zumstein, S. J. Ferguson, K. Gerber

2:24pm - 2:36pm

TR02.3: Implants / orthotics / prosthetics / devices III: Fracture repair

Location: Infante Hall
Chair: Marlene Mengoni
Chair: Maikel Timmermans

2:00pm - 2:25pm

MODELLING MECHANICAL DEMANDS ARISING FROM CLINICAL REQUIREMENTS FOR FRACTURE FIXATION
P. Pankaj

2:25pm - 2:37pm

Light-Curable Fixation Comparable with Plates in Torsion
P. Schwarzenberg, T. Colding-Rasmussen, D. J. Hutchinson, D. Mischler, P. Horstmann, M. Moerk Peterson, M. Malkock, C. Wong, P. Varga

2:37pm - 2:49pm

TR03.3: Hard tissue I: Tissue interactions

Location: D. Maria Hall
Chair: Uwe Wolfram
Chair: Pia Stefanek

2:00pm - 2:25pm

MINERALIZED FIBROCARTILAGE AS A HIGHLY TUNABLE TISSUE ALLOWING THE INTEGRATION OF TENDON INTO BONE
D. Ruffoni

2:25pm - 2:37pm

COLD-WATER CORALS RETAIN OUTSTANDING TISSUE STRENGTH BUT LOSE TISSUE STIFFNESS IN ACIDIFIED WATERS
U. Wolfram, M. Peña Fernández, S. McPhee, E. Smith, R. Beck, J. Shephard, M. Roberts, S. Hennige

2:37pm - 2:49pm

TR04.3: Musculoskeletal biomechanics I: Multiple topics

Location: D. Luis Hall
Chair: Vee San Cheong
Chair: Enrico Dall'Ara

2:00pm - 2:25pm

MECHANOSENSING IN BONE USING FLUID FLOW THROUGH NETWORKS
R. Weinkamer

2:25pm - 2:37pm

A REPRESENTATIVE VOLUME ELEMENT FOR BONE EXTRACELLULAR MATRIX
E. Alizadeh, D. Casari, J. Michler, J. Schwiedrzik, P. Zysset

2:37pm - 2:49pm

TEMPORAL CHANGES IN THE BONE MICROENVIRONMENT PRIOR TO AND FOLLOWING

EFFECT OF ALENDRONATE ON BONE FRACTURE TOUGHNESS IN OSTEOGENESIS IMPERFECTA
A. Muñoz, A. Carriero

2:36pm - 2:48pm
APPLICATION OF COG THREADS FOR VAGINAL WALL PROLAPSE REPAIR: EX-VIVO STUDY
R. Rynkevic, C. Soares, L. Hympanova, E. Silva, T. Mascarenhas, P. Martins

Articular contact vs. embedding: The effect of boundary conditions on volar plate fixation at the distal radius
L. Berger, D. H. Pahr, A. Synek

2:49pm - 3:01pm
AFFORDABLE SOLUTION FOR LOW AND MIDDLE-INCOME COUNTRIES: UNILATERAL EXTERNAL FIXATOR
M. Saeidi, S. Barnes, M. Berthaume, S. R Holthof, A. M J Bull, J. Jeffers

3:01pm - 3:13pm
BIOMECHANICAL ANALYSIS OF HELICAL VERSUS STRAIGHT PLATING OF PROXIMAL THIRD HUMERAL SHAFT FRACTURES
I. Zderic, T. Pastor, K. van Knegsel, B.-C. Link, F. J. Beeres, F. Migliorini, R. Babst, S. Nebelung, B. Ganse, C. Schoeneberg, B. Gueorguiev, M. Knobe

DEGREE OF MINERALIZATION AND MINERALIZED COLLAGEN FIBRE ORIENTATION PREDICTS THE ELASTIC MODULUS OF BONE IN OSTEOGENESIS IMPERFECTA
M. Indermaur, T. Kochetkova, D. Casari, B. Willie, J. Michler, J. Schwiedrzik, P. Zysset

2:49pm - 3:01pm
Thermal Activation Analysis of Hydrated Lamellar Ovine Bone
C. R. P. Peruzzi, T. Kochetkova, S. Remund, B. Neuenschwander, J. Michler, J. Schwiedrzik

3:01pm - 3:13pm
Mineral content and biomechanical properties of fibrolamellar bone
A. Cantamessa, P. Muraro, Y. Delaunois, P. Compère, S. Blouin, M. A Hartmann, D. Ruffoni

3:13pm - 3:25pm
OPTIMISING METHODS OF MODELLING OSTEOCHONDRAL GRAFTS IN HUMAN TIBIOFEMORAL JOINTS
G. A. Day, A. C Jones, M. Mengoni, R. K Wilcox

OVERT BREAST-CANCER OSETOLYSIS
A. S. Verbruggen, R. M. Dwyer, E. C. McCarthy, L. M. McNamara

2:49pm - 3:01pm
Towards an in silico bioregulatory model of osteogenesis and sprouting angiogenesis in 3D
L. Lafuente-Gracia, M. Barzegari, L. Geris

3:01pm - 3:13pm
Altered mechanical loading in amputees results in mild signs of knee degeneration 8 years post trauma
F. P. Behan, A. N. Bennett, A. M. J. Bull

3:13pm - 3:25pm
FATIGUE ANALYSIS USING ELECTROMYOGRAPHY DRIVEN MUSCULOSKELETAL TRUNK MODELS
M. I. Mohamed Refai, H. Wang, A. Moya-Esteban, M. Sartori

TR05.3: Soft tissue biomechanics III
Location: Porto Hall
Chair: José Felix Rodriguez Matas
Chair: Maria José Gómez-Benito

2:00pm - 2:12pm
HIGH FIDELITY SIMULATION OF CEREBRAL ANEURYSM WITH FLOW-DIVERTER
E. Hachem

2:12pm - 2:24pm
A COMPUTATIONAL METHODOLOGY FOR STUDYING THE MURINE BLOOD-BRAIN BARRIER HEMODYNAMICS
S. Mañosas, A. Sanz, C. Ederra, A. Urbiola, E. Rojas de Miguel, A. Ostiz, I. Cortés, N. Ramírez, C. Ortiz de Solórzano, A. Villanueva, M. Malve

2:24pm - 2:36pm
HOW MACROSCOPIC TISSUE DEFORMATION AFFECTS THE BRAIN'S MICROSTRUCTURE
N. Reiter, F. Paulsen, S. Budday

2:36pm - 2:48pm
Characterization of Mechanical Damage on the Esophageal Wall of Chronic-hypoxic Lambs
A. Bezmalinovic, C. García-Herrera

2:48pm - 3:00pm
Non-linear homogenization of soft tissues: application to tendons and arteries
C. Morin, C. Hellmich, S. Avril

3:00pm - 3:12pm
MESH ANCHORING TECHNIQUE IN UTERINE PROLAPSE REPAIR SURGERY: A FINITE ELEMENT ANALYSIS
E. Silva, R. Rynkevic, S. Brandão, T. Mascarenhas, A. Augusto Fernandes

3:12pm - 3:24pm
PORCINE KNEE CARTILAGE MAPS DETERMINED WITH AUTOMATED INDENTATION AND CHARACTERIZED BY MACHINE LEARNING
E. Hamsayeh Abbasi Niasar, L. Li

TR06.3: Computational biology II
Location: Arrabida Hall
Chair: Maria Angeles Perez Anson
Chair: Richie Gill

2:00pm - 2:12pm
COMPUTATIONAL EVIDENCE FOR A MULTI-LAYER CROSSTALK BETWEEN CADHERIN-11 AND PDGFR SIGNALING
Z. Karagöz, F. Passanha, L. Robeerst, M. van Griensven, V. L. S. LaPointe, A. Carlier

2:12pm - 2:24pm
Unravelling the impact of prenatal muscle forces on the dynamic cell behaviours driving joint growth in mice
J. Godivier, Y. Huang, A. J. Bodey, C. L. Hammond, H. Isaksson, N. C. Nowlan

2:24pm - 2:36pm
Agent-based simulations of bone remodelling including osteomorphs predict rapid bone loss post denosumab
C. Ledoux, D. Boaretti, J. J. Kendall, R. Müller, C. J. Collins

2:36pm - 2:48pm
A Multiscale, Mechanobiological Model of Cortical Bone Adaptation due to PTH and Mechanical Loading
C. J. Miller, E. Pickering, E. Dall'ara, V. S. Cheong, P. Pivonka

2:48pm - 3:00pm
Agent-based in-silico model for Multiple Myeloma tumor growth analysis
P. Urdeitx, M. H. Doweidar

3:00pm - 3:12pm
IN SILICO IMMUNOFLUORESCENCE: A NOVEL APPROACH TO CALIBRATE MECHANOREGULATORY MODELS OF EARLY BONE FRACTURE HEALING
E. Borgiani, G. Nasello, C. Schlundt, K. Schmidt-Bleek, L. Geris

3:12pm - 3:24pm
Umbrella Sampling for the estimation of the free energy barrier of Pi release in myosin
R. Manevy, M. Caruel, F. Detrez, I. Navizet

TR07.3: Ocular biomechanics I
Location: Miragaia Hall
Chair: Miguel Angel Ariza Gracia
Chair: Philippe Buechler

2:00pm - 2:25pm
The biomechanics of the eye lens and accommodative system: clinical opportunities and biomechanical challenges
B. Pierscionek, K. Wang

2:25pm - 2:37pm
TISSUE BIOMECHANICS AND PARAMETER IDENTIFICATION OF EX VIVO PORCINE CORNEAL TISSUE
M. H. Nambiar, L. Liechti, F. Mueller, W. Bernau, T. G. Seiler, P. Büchler

2:37pm - 2:49pm
A MECHANICAL MODEL OF EXUDATIVE MACULAR OEDEMA
A. Ruffini, M. Dvoriashyna, R. Repetto

2:49pm - 3:01pm
Mechanical Modeling Of Localized Cross-Linking Pattern In Human And Porcine Corneas
M. Frigelli, P. Büchler, S. Kling

3:01pm - 3:13pm
A THEORETICAL MODEL OF AQUEOUS HUMOUR PRODUCTION
M. Dvoriashyna, A. J. E. Foss, E. A. Gaffney, R. Repetto

3:13pm - 3:25pm
DOES CORNEAL STIFFNESS PLAY A ROLE IN POST-SURGICAL CORNEAL ECTASIA?
B. Fantaci, B. Calvo Calzada, J. Grasa Orús, M. A. Ariza Gracia

TR08.3: 3D printing in biomedicine
Location: S. Joao Hall
Chair: Henrique Amorim Almeida

2:00pm - 2:12pm
MECHANICAL PROPERTIES OF 3D-PRINTED GLASS-CERAMIC SCAFFOLDS ASSESSED THROUGH MICRO-CT-BASED FINITE ELEMENT MODELS
L. D'Andrea, F. Baino, E. Verné, D. Gastaldi, P. Vena

2:12pm - 2:24pm
3D BIOPRINTING OF ECM-BASED MULTI-LAYERED SEGMENTS OF TUBULAR CONSTRUCTS
F. Potere, G. A. Croci, P. Petrini, F. Boschetti, S. Mantero

2:24pm - 2:36pm
DESIGN AND FUNCTIONAL EVALUATION OF A 3D PRINTABLE CUSTOM PROSTHESIS FOR TALUS REPLACEMENT
F. Danielli, F. Berti, L. La Barbera, A. Nespoli, C. G. Fontanella, S. Pettenuzzo, T. Villa, L. Petrini

2:36pm - 2:48pm
MATRIGEL COAXIAL BIOPRINTING FOR IN VITRO CANCER MODELS
P. DE STEFANO, E. BIANCHI, M. BASHA, R. BIANCHI, G. DUBINI

2:48pm - 3:00pm
MECHANICAL REPLICA OF SOFT TISSUES: A STRUCTURAL APPROACH
V. Serantoni, C. Rouby, J. Boisson

3:00pm - 3:12pm
An in-silico model for cells extrusion in bioprinting
G. Santesarti, G. Vairo, F. Viola, R. Verzicco, M. Marino

3:12pm - 3:24pm
BIOMECHANICAL FAILURE BEHAVIOUR OF 3D PRINTED FEMORAL BONES COMPARED TO ARTIFICIAL AND HUMAN BONES
K. Nägl, A. Reisinger, D. H. Pahr

3:24pm - 3:36pm
FINITE ELEMENT MODELING OF BIPHASIC CALCIUM PHOSPHATE BONE SCAFFOLDS: AN EXPLORATORY STUDY

N. Rosa, S. Olhero, P. Torres, R. Natal, M. Parente

3:30pm - 4:00pm

Coffee Break
Location: West Ground floor

4:00pm - 5:00pm

ESB Student Award
Location: Archive Hall
Chair: **Markus Heller**
Chair: **Aurélie Carlier**

4:00pm - 4:12pm

Assessing the performance of thrombectomy devices with in silico models
S. Bridio, G. Luraghi, P. R. Konduri, N. Arrarte Terreros, H. A. Marquering, C. B. Majoie, J. F. Rodriguez Matas, F. Migliavacca

4:12pm - 4:24pm

Predicting surgical outcomes across nine corrective techniques for sagittal craniosynostosis
C. Cross, R. H Khonsari, G. Patermoster, E. J Arnaud, D. Larysz, L. Kölby, D. Johnson, Y. Ventikos, M. Moazen

4:24pm - 4:36pm

ANGIOGRAPHY-DERIVED WALL SHEAR STRESS TOPOLOGICAL SKELETON VARIABILITY PREDICTS MYOCARDIAL INFARCTION
M. Lodi Rizzini, A. Candreva, D. Gallo, J.-P. Aben, C. Chiastra, C. Collet, U. Morbiducci

4:36pm - 4:48pm

Biomechanics and mechanobiology of mineralized fibrocartilage at the tendon-bone attachement
A. Tits, S. Blouin, M. Rummler, J.-F. Kaux, P. Drion, G H. van Lenthe, R. Weinkamer, M. A Hartmann, D. Ruffoni

5:00pm - 6:00pm

TR01.4: Cardiovascular biomechanics III: Treatment design & clinical outcome
Location: Archive Hall
Chair: **Nele Famaey**
Chair: **Mathias Peirlinck**

5:00pm - 5:12pm

Myocardial Biomechanics of Left Atrial Ligation Chick Embryonic Model of Hypoplastic Left Heart Syndrome
S S. Lashkarinia, W. X. Chan, Z. Yu, H. B. Siddiqui, M. Coban, B. Sevgin, K. Pekkan, C. H. Yap

5:12pm - 5:24pm

Finite element simulations of the Cardioband procedure for the treatment of the regurgitant mitral valve
E. Gasparotti, E. Vignali, M. Mariani, S. Berti, S. Celi

5:24pm - 5:36pm

ON THE RELATIONSHIP BETWEEN KINETIC ENERGY AND HELICITY IN PROSTHETIC HEART VALVES HEMODYNAMICS
D. Gallo, M. D. De Tullio, U. Morbiducci

5:36pm - 5:48pm

A PHENOMENOLOGICAL DEGRADATION MODEL TO PREDICT THE LONG-TERM PERFORMANCE OF A POLYMERIC SCAFFOLD
C. J. Fiuza, K. Polak-Krasna, G. Poletti, L. Antonini, G. Pennati, W. Ronan, T. J Vaughan

5:48pm - 6:00pm

A NOVEL MODEL FOR THE HEMODYNAMICS OF CEREBRAL ANEURYSMS TREATED WITH ENDOVACULAR COILS BASED ON SYNCHROTRON IMAGING AND EXPERIMENTAL VALIDATION
J. Romero Bhathal, S. Faisal, F. Chassagne, L. Marsh, M. Levitt, C. Geindreau, A. Aliseda

TR02.4: Implants / orthotics / prosthetics / devices IV: Total hip arthroplasty
Location: Infante Hall
Chair: **Dennis Janssen**
Chair: **Corina Nüesch**

5:00pm - 5:12pm

A FINITE ELEMENT MODEL TO PREDICT THE RISK OF INTRAOPERATIVE FRACTURES IN NEW CEMENTLESS HIP STEM DESIGNS
M. Petrucci, A. A. La Mattina, C. Curreli, M. Viceconti

5:12pm - 5:24pm

Combined multibody and finite element analyses for the evaluation of the taper junction in THA
G. Putame, F. A. Bologna, M. Terzini, A. L. Audenino

5:24pm - 5:36pm

Femoral Fracture Prevention via Vibration Analysis during Total Hip Arthroplasty
G. Athanassoulis Makris, M. Timmermans, L. Pastrav, Q. Goossens, M. Mulier, G. Vles, W. Desmet, K. Denis

5:36pm - 5:48pm

DVC: A NEW DIAGNOSIS METHOD FOR MICROMOTION AND REMAINING ATTACHMENT LOOSENING OF HIP ARTHROPLASTY
M. Severyns, K. Aubert, V. Valle, T. Vendeuvre, A. Germaneau

5:48pm - 6:00pm

Advances in Fixation Strength of Reorientating Rectangular Triple Pelvic Innomate Osteotomy
J. Richter, D. Ciric, K. Kalchschmidt, C. D'Aurelio, A. Pommer, J. Dauwe, B. Gueorguiev

TR03.4: Patient-specific modelling I
Location: D. Maria Hall
Chair: **Sebastian Laporte**
Chair: **Linda Bühl**

5:00pm - 5:12pm

COMPARATIVE VALIDATION OF TWO PATIENT-SPECIFIC MODELLING PIPELINES FOR PREDICTIVE KNEE JOINT FORCES
D. Princelle, G. Davico, M. Viceconti

5:12pm - 5:24pm

SIGNATURE OF DISEASE PROGRESSION IN KNEE OSTEOARTHRITIS: INSIGHT FROM AN INTEGRATED MULTI-SCALE MODELING APPROACH
I. Mohout, A. Esrafilian, S. A. Elahi, B. A. Killen, R. K. Korhonen, S. Verschuere, F. Luyten, I. Jonkers

5:24pm - 5:36pm

SHOULD ROBOTIC-ASSISTED TKA RECONSTRUCT PREMORBID STAGE? THE EFFECTS OF OSTEOPHYTES ON KNEE FUNCTIONALITY
P. Tzanetis, K. de Souza, S. Robertson, R. Fluit, B. Koopman, N. Verdonschot

5:36pm - 5:48pm

Intra-subject variability of femoral growth simulations based on personalized finite element models
W. Koller, A. Baca, H. Kainz

5:48pm - 6:00pm

SUBJECT SPECIFIC LOWER LIMB ANTHROPOMETRIC REGRESSION WITH LONG, SHORT AND NO COUNTERMOVEMENT PERFORMANCE
C. Rodrigues, M. Correia, J. Abrantes, M. Benedetti, J. Nadal

TR04.4: Musculoskeletal biomechanics II: Upper limb
Location: D. Luis Hall
Chair: **Massimo Sartori**
Chair: **Mohamed Irfan Mohamed Refai**

5:00pm - 5:12pm

Effect of shape and size of supraspinatus tears in rotator cuff strain distribution: an in-vitro study
I. Santos, L. Pichler, C. Thorwächter, M. Saller, H. Traxler, P. E. Müller

5:12pm - 5:24pm

SHOULDER POSITIONING DURING SUPERIOR CAPSULAR RECONSTRUCTION: A COMPUTATIONAL ANALYSIS
M. Antunes, C. Quental, J. Folgado, C. de Campos Azevedo, A. C. Ângelo

5:24pm - 5:36pm

THE POSITION OF THE SCAPULA INFLUENCES THE DISTANCE BETWEEN LIGAMENTOUS INSERTION OF THE AC AND CC LIGAMENTS
J. C. Katthagen, J. Sußiek, M. J. Raschke, E. Herbst, F. Dyrna, O. Riesenbeck, J. Wermers, S. Oenning

5:36pm - 5:48pm

GLENOHUMERAL JOINT FORCE PREDICTION WITH MACHINE LEARNING
P. Eghbali, F. Becce, P. Goetti, P. Büchler, D. Pioletti, A. Terrier

5:48pm - 6:00pm

Personalised approach to restoration of arm function in people with tetraplegia: identifying muscle weakness
M. Seyres, D. Blana, N. Postans, R. J. O'Connor, S. Pickard, E. K. Chadwick

TR05.4: Soft tissue biomechanics IV
Location: Porto Hall
Chair: **Dulce Oliveira**
Chair: **Maria José Gómez-Benito**

5:00pm - 5:12pm

In vivo unloading of rat Achilles tendons leads to a delayed collagen structural response to in situ loading
I. Silva Barreto, M. Pierantoni, M. Hammerman, A. Diaz, J. Engqvist, P. Eliasson, H. Isaksson

5:12pm - 5:24pm

Development of a finite element model to simulate childbirth-related injuries

TR06.4: Round table on Technology Transfer in Biomechanics
Location: Arrabida Hall
Mrs. Tine Van Lommel, Leuven Research and Development Mrs. Maria Oliveira, IPTEC Porto Ir. Patricia Lopes, Materialise NV Markus Windolf, AO Foundation Prof. Wafa Skalli, ParisTech Ricardo Moura, CEO Wisify Tech Solutions

TR07.4: Ocular biomechanics II
Location: Miragaia Hall
Chair: **Miguel Ángel Ariza Gracia**
Chair: **Philippe Buechler**

5:00pm - 5:12pm

A detailed methodology to model the non contact tonometry: a fluid-structure interaction study.
E. Redaelli, J. Grasa Orùs, J. F. Rodriguez Matas, B. Calvo Calzada, G. Luraghi

5:12pm - 5:24pm

A NOVEL TECHNIQUE FOR RETINA BIOMECHANICAL CHARACTERIZATION
B. Belgio, F. Berti, S. Mantero, F. Boschetti

TR08.4: Experimental biomechanics II
Location: S. Joao Hall
Chair: **Luca Cristofolini**
Chair: **Ingmar Fleps**

5:00pm - 5:12pm

Combining numerical and experimental approaches to assess the tangential debonding of coin-shaped implants
Y. Hériveaux, S. Le Cann, K. Immel, E. Vennat, V.-H. Nguyen, R. A. Sauer, G. Haïat

5:12pm - 5:24pm

Spatially-Resolved Proteomics and Micromechanics of Human Menisci

	R. Moura, D. Oliveira, M. Parente, T. Mascarenhas, R. Natal Jorge 5:24pm - 5:36pm **Mechanical characterization of the fetal membrane as a bilayer structure** D. Fidalgo, D. Oliveira, K. Myers, E. Malanowska, M. Parente, R. Natal 5:36pm - 5:48pm **MECHANICAL LOADING PROMOTES ANGIOGENESIS: A COMPUTATIONAL APPROACH** A. Guerra, J. Belinha, R. Natal Jorge		5:24pm - 5:36pm **Computational study of retinal blood flow coupled to a global circulation model** A. Casalucci, L. O. Muller, A. Siviglia, E. Toro, R. Repetto	M. Handelshauser, O. G. Andriotis, M. Marchetti-Deschmann, P. J. Thurner 5:24pm - 5:36pm **Primary stability of a press-fit cup combined with impaction grafting in an acetabular defect model** R. A. Schierjott, G. Hettich, M. Baxmann, F. Morosato, L. Cristofolini, T. M. Grupp 5:36pm - 5:48pm **Permeability Test Bench for Characterizing Hard and Soft Scaffold for Tissue Engineering Applications** B. Masante, S. Gabetti, C. Massini, R. Tassi, F. Mochi, C. Del Gaudio, A. Schiavi, D. Massai 5:48pm - 6:00pm **INTEGRATING µCT AND INDENTATION PROTOCOLS TO ASSESS STRUCTURE AND MECHANICS OF ARTIFICIAL MENISCUS IMPLANTS** M. Berni, G. Marchiori, M. Fini, M. Zingales, C. Trombino, S. Di Paolo, S. Zaffagnini, N. F. Lopomo, M. Baleani
6:00pm - 7:00pm	**Women in Biomechanics with Apero** Location: **Archive Hall** - Greet Kerckhofs, from UCLouvain and KULeuven, Belgium - Marlène Mengoni, from University of Leeds, United Kingdom - Barbara Pierscionek, from Anglia Ruskin University, United Kingdom - Areti Papastavrou, from Nuremberg Institute of Technology, Germany			
7:00pm - 9:30pm	**Welcome Reception**			

Date: Tuesday, 28/June/2022

7:30am - 8:15am

Meet the PI - Student Breakfast networking event
Location: West Ground floor

8:30am - 9:45am

TR01.5: Implants / orthotics / prosthetics / devices V: Total knee arthroplasty
Location: Archive Hall
Chair: **William R. Taylor**
Chair: **Corine Post**

8:30am - 8:42am
IN VIVO CONTACT MECHANICS IN TOTAL KNEE ARTHROPLASTY IS GOVERENED BY THE IMPLANT CONFORMITY
S. H. Hosseini Nasab, B. Szazi, C. Smith, P. Schütz, B. Postolka, W. R. Taylor

8:42am - 8:54am
Cruciate retaining total knee arthroplasty systems may be unsuccesful in avoiding anterior femoral shift despite different bearing geometry.
P. Moewis, H. Hommel, A. Trepczynski, L. Krahl, G. Duda

8:54am - 9:06am
BIOMECHANICAL ANALYSIS OF FLEXIBLE FEMORAL CONES IN HINGED TOTAL KNEE ARTHROPLASTY
B. Innocenti

9:06am - 9:18am
DYNAMIC KNEE JOINT LINE ORIENTATION IS NOT A RELIABLE PREDICTOR OF CONTACT LOAD DYNAMICS IN VIVO
A. Trepczynski, P. Moewis, P. Damm, P. Schütz, J. Dymke, H. Hommel, W. R. Taylor, G. N. Duda

9:18am - 9:30am
UNDERSTANDING KNEE STABILITY AFTER TKA BY MEANS OF DYNAMIC VIDEOFLUOROSCOPY
L. Rao, N. Meister, N. Horn, W. R. Taylor, B. Postolka, S. Preiss, P. Schütz

9:30am - 9:42am
BIOMECHANICAL ANALYSIS OF DIFFERENT LEVEL OF CONSTRAINT IN TOTAL KNEE ARTHROPLASTY DURING DAILY ACTIVITIES
E. Bori, S. Pianigiani, L. Rapallo, G. Innocenti, B. Innocenti

TR02.5: Cardiovascular biomechanics IV: Computational methods
Location: Infante Hall
Chair: **Selda Sherifova**
Chair: **Stéphane Avril**

8:30am - 8:42am
SEGMENTATION AND MECHANICAL CHARACTERIZATION OF ATHEROSCLEROTIC PLAQUES.
Á. T. Latorre Molins, M. Á. Martínez Barca, M. Cilla Hernández, J. Ohayon, E. Peña Baquedano

8:42am - 8:54am
ARTIFICIAL NEURAL NETWORK FOR PREDICTION OF MECHANICAL PROPERTIES OF ATHEROMA PLAQUE
R. Caballero Masa, M. Á. Martínez Barca, E. Peña Baquedano

8:54am - 9:06am
On the CFD Modelling of Hemodynamics in Unruptured Intracranial Aneurysms
P. Jeken Rico, A. Goetz, R. Nemer, P. Meliga, A. Larcher, J. Viquerat, A. F. Sanches, Y. Özpeynirci, T. Liebig, E. Hachem

9:06am - 9:18am
PULSE WAVE VELOCITY AS A GUIDE TO REDUCE THE MATERIAL PARAMETERSPACE IN ARTERIAL COMPUTATIONAL BIOMECHANICS
L. Gheysen, L. Maes, N. Famaey, P. Segers

9:18am - 9:30am
FLUID STRUCTURE INTERACTION MODELING OF COMPLIANT AORTIC VALVES USING THE LATTICE BOLTZMANN CFD AND FEM METHODS
A. Morany, K. Lavon, R. Bardon, B. Kovarovic, A. Hamdan, D. Bluestein, R. Haj-Ali

9:30am - 9:42am
Computational Modelling of the Effect of Infarct Stiffening on Local Myofiber Mechanics
K. L. P. M. Janssens, M. Kraamer, P. H. M. Bovendeerd

TR03.5: Patient-specific modelling II
Location: D. Maria Hall
Chair: **Claudio Vergari**
Chair: **Laura Lafuente Gracia**

8:30am - 8:42am
Towards a repository of patient-specific intervertebral discs finite element models
E. Muñoz-Moya, M. Rasouligandomani, C. Ruiz Wills, G. Piella, J. Noailly

8:42am - 8:54am
LUMBAR INTERVERTEBRAL DISC 3D SEGMENTATION FOR BIOMECHANICAL SIMULATION
R. Matos, P. R. Fernandes, N. M. P. L. Matela, A. P. G. Castro

8:54am - 9:06am
EFFECT OF INSTRUMENTATION INACCURACIES ON BIOMECHANCIAL AND COMPUTATIONAL FAILURE RISK OF FRACTURE FIXATIONS
D. Mischler, L. Tenisch, J. F. Schader, J. Dauwe, B. Gueorguiev, M. Windolf, P. Varga

9:06am - 9:18am
VERTEBRAL STRENGTH PREDICTION FROM SINGLE ENERGY BIPLANAR RADIOGRAPHS
C. Heidsieck, L. Gajny, J.-Y. Lazennec, C. Travert, W. Skalli

9:18am - 9:30am
PATIENT SPECIFIC GROWTH MODEL FOR CRANIOSYNOSTOSIS
M. Geoffroy, M. Abbad Andaloussi, P.-M. François, R. H. Khonsari, S. Laporte

9:30am - 9:42am
MODELLING STRATEGIES FOR ORTHOGNATHIC SURGERY: MECHANICAL OPTIMIZATION OF PATIENT-SPECIFIC PLATES
I. Rota, A. Giglio, F. Grecchi, M. Bonacina, D. Gastaldi

TR04.5: Tissue engineering I
Location: D. Luis Hall
Chair: **Gwendolen Reilly**
Chair: **Alberto Sensini**

8:30am - 8:42am
PATIENT SPECIFIC OSTEOGENESIS IMPERFECTA BONE ORGANOIDS DEMONSTRATE INCREASED TISSUE MINERALIZATION
J. K. Griesbach, A. de Leeuw, T. Minacci, P. J. Lim, M. Rüger, M. Rohrbach, C. Giunta, R. Müller

8:42am - 8:54am
Towards controlled formation and resorption in a 3D human in vitro bone remodeling model.
B. de Wildt, L. Cuypers, K. Ito, S. Hofmann

8:54am - 9:06am
3D electrospun arcade-like scaffolds for articular cartilage
A. Semitela, C. Sousa, A. F. Mendes, P. A. A. P. Marques, A. Completo

9:06am - 9:18am
Automated Parallel Bioreactor Platform Combining Perfusion and PEMF Stimulation
S. Gabetti, F. Daou, B. Masante, G. Putame, A. Sanginario, E. Zenobi, F. Mochi, C. Del Gaudio, C. Bignardi, L. Rimondini, A. Cochis, D. Massai

9:18am - 9:30am
WALL SHEAR STRESS ANALYSIS TOWARDS THE OPTIMAL DESIGN IN TPMS TISSUE ENGINEERING SCAFFOLDS
T. Pires, A. P. G. Castro, P. R. Fernandes

9:30am - 9:42am
COMPOSITE METHACRYLOYL GELATIN-BASED HYDROGELS FOR BONE TISSUE ENGINEERING APPLICATIONS
G. Ciardelli, R. Laurano, R. Pappalardo, V. Chiono, M. Boffito

TR05.5: Spine biomechanics I
Location: Porto Hall
Chair: **Marco Palanca**
Chair: **John Costi**

8:30am - 8:42am
IN VITRO TESTING OF HYDROGELS FOR THE IVD THERAPY USING A NOVEL ORGAN CULTURE APPROACH: CHONDROITINASE OR PAPAIN?
J. U. Jansen, G. Q. Teixeira, A. Vernengo, S. Grad, K. Benz, C. Neidlinger-Wilke, H.-J. Wilke

8:42am - 8:54am
USE OF DISPLACEMENTS FIELD TO VALIDATE SUBJECT-SPECIFIC FINITE ELEMENT MODELS OF SPINE SEGMENTS WITH METASTASIS
C. Garavelli, C. Curreli, A. Aldieri, E. Paoli, M. Palanca, L. Cristofolini, M. Viceconti

8:54am - 9:06am
DESIGN AND CHARACTERISATION OF A NOVEL TI-PVA/PAAM ARTIFICIAL INTERVERTEBRAL DISC
X. Du, L. Kölle, D. Schümperlin, S. J. Ferguson

TR06.5: Clinical and translational biomechanics / in silico trials I
Location: Arrabida Hall
Chair: **Richie Gill**
Chair: **Marco Viceconti**

8:30am - 8:42am
A parametric study to improve surgical planning of spring-assisted posterior vault expansion
L. Deliege, K. Ramdat Misier, G. James, J. Ong, D. Dunaway, N. U. O. Jeelani, S. Schievano, A. Borghi

8:42am - 8:54am
ASSESSING CREDIBILITY OF A MULTISCALE MODEL FOR JOINT REPLACEMENTS SOLUTIONS
C. Curreli, S. Huebner, A. Di Pietro, G. Davico, M. Viceconti

8:54am - 9:06am
A MODELING FRAMEWORK TO ENABLE THE DIFFERENTIAL DIAGNOSIS FOR THE LOSS OF MUSCLE FORCE
G. Davico, L. Labanca, F. Bottin, F. Baruffaldi, M. G. Benedetti, M. Viceconti

9:06am - 9:18am

TR07.5: Artificial intelligence in biomechanics + Robots in biomechanics
Location: Miragaia Hall
Chair: **Massimo Sartori**

8:30am - 8:42am
Examination of 2D markerless motion capture for sagittal and frontal joint angles of the knee and hip
L. Wade, L. Needham, M. Evans, M. P. McGuigan, S. Colyer, D. Cosker, J. Bilzon

8:42am - 8:54am
INTEGRATING ANN-BASED REAL-TIME JOINT FORCE PREDICTION WITH DEEP AUTO-REGRESSIVE GOAL-DRIVEN MOTION SYNTHESIS
I. Loi, E. I. Zacharaki, K. Moustakas

8:54am - 9:06am
CONTROL SYSTEM OF A MUSCULAR CONTROLLED, EXPERIMENTAL GLENOHUMERAL SIMULATOR
J. Genter, G. Rauter, M. Rohner, A. M. Müller, A. Mündermann, D. Baumgartner

9:06am - 9:18am
Interfacing Neuromusculoskeletal Models With Exoskeletons For

TR08.5: Respiratory biomechanics
Location: S. Joao Hall
Chair: **Sam Bayat**

8:30am - 8:42am
The effect of prone and supine position ventilation on alveolar overdistension and collapse
S. Quicken, U. Strauch, E. van Engelen, M. van Mil, F. van de Vosse

8:42am - 8:54am
HOW LUNG LESIONS LOCATION IN ARDS MODIFIES RESPIRATORY BIOMECHANICS? A COMPUTATIONAL FRAMEWORK
C. Bruna-Rosso, S. Boussen

8:54am - 9:06am
SPHERICAL, TRANSPARENT AND STREATCHABLE MEMBRANES FOR REPLICATING THE ALVEOLAR INTERFACE IN-VITRO
L. Cacopardo, N. Guazzelli, P. Signorello, A. Ahluwalia

9:06am - 9:18am
SIMULATION OF FLUID-STRUCTURE INTERACTION OF

9:06am - 9:18am

DEVELOPMENT OF IMAGE-BASED MULTIPHASIC MODELS OF THE INTERVERTEBRAL DISC

I. Fleps, E. Morgan

9:18am - 9:30am

BIOMECHANICAL COMPARISON BETWEEN POLY AXIAL AND OAK SCREWS FOR THORACOLUMBAR FRACTURE REDUCTION

A. Y. Moufid, F. Zot, A. Duits, M. Severyns, A. Germaneau, T. Vendeuvre

9:30am - 9:42am

THE INFLUENCE OF LOADING CONDITIONS ON THE PRINCIPAL AND NON-PRINCIPAL STIFFNESS OF CERVICAL DISC PROSTHESIS

H. Ansaripour, S. J. Ferguson, M. Flohr

Reliability of fluoroscopic assessment of glenohumeral translation during a 30° shoulder abduction test

E. Croci, M. Künzler, S. Börlin, F. Eckers, C. Nüesch, D. Baumgartner, A. M. Müller, A. Mündermann

9:18am - 9:30am

INVESTIGATION OF LIMITED CT SCAN COVERAGE IN BIOFIDELIC SIDEWAYS-FALL MODELS FOR CLINICAL COHORTS

A. Baker, I. Fleps, P. Guy, S. J Ferguson, B. Helgason

Controlling Neuro-Musculotendon Parameters In Vivo

G. Durandau, H. van der Kooij, M. Sartori

9:18am - 9:30am

FORM AND FUNCTION IN THE TAIL FEATHERS OF CLIMBING BIRDS

M. Granatosky, M. Young, N. Flaim, D. Deleon, B. Zou, B. Bas, L. Reader, E. Dickinson

9:30am - 9:42am

Neural Network Finite Element Modeling of the Heart Mechanics

W. Zhang, M. S. Sacks

FLOW IN COLLAPSIBLE TUBES: A SIMPLIFIED MODEL FOR OBSTRUCTIVE SLEEP APNEA

B. Akbar, S. G. Johnsen, P. R. Leinan, B. Müller

9:18am - 9:30am

ASTHMA SEVERITY LEVELS MONITORING BASED ON EEG SIGNALS USING NOVEL CLASSIFICATION ALGORITHMS

A. Ratnovsky, R. Haba, G. Singer, M. R. Kramer, S. Naftali

9:45am - 10:15am Coffee Break
Location: West Ground floor

10:15am - 11:40am

TR01.6: Implants / orthotics / prosthetics / devices VI: Multiple topics (Total knee arthroplasty, Fracture repair)

Location: Archive Hall
Chair: Bernardo Innocenti

10:15am - 10:27am

Standardized In Vivo Knee Implant Kinetics and Kinematics and their Application to Implant Wear Simulation

M. J. Dreyer, A. Trepczynski, B. Weisse, W. R. Taylor, P. Damm, C. R. Smith

10:27am - 10:39am

COMPREHENSIVE BOUNDARY CONDITIONS FOR INVESTIGATING TOTAL KNEE REPLACEMENT WEAR DURING WALKING

M. Febrer-Nafría, M. Dreyer, N. Guo, S. H. Hosseini Nasab, C. R Smith, W. R Taylor

10:39am - 10:51am

A SIMULATION BASED APPROACH FOR KINEMATICS EVALUATION AND WORST-CASE DETERMINATION IN PRE-CLINICAL TESTING

A. Maas, A. L. Puente Reyna, T. M. Grupp

10:51am - 11:03am

THE EFFECT OF INTERFERENCE FIT AND COEFFICIENT OF FRICTION ON THE INTERFACE GAPS OF A PEEK FEMORAL COMPONENT

C. Post, T. Bitter, A. Briscoe, N. Verdonschot, D. Janssen

11:03am - 11:15am

SYSTEMATIC VALIDATION OF FINITE ELEMENT SIMULATIONS OF LOCKING PLATE FIXATIONS

D. Mischler, M. Knecht, P. Varga

11:15am - 11:27am

INFLUENCE OF CERCLAGE WIRE APPLICATION ON THE DYNAMIC BEHAVIOUR OF A FRACTURED IMPLANT-CYLINDER SYSTEM

M. Timmermans, G. Athanassoulis Makris, L. Van Bel, J. Verhoeven, L. C. Pastrav, K. Denis

11:27am - 11:39am

Analytical model for the mechanical performance prediction of a bone-plate implant

F. A. Bologna, M. Terzini, A. L. Audenino

TR02.6: Cardiovascular biomechanics V: Thrombi and plaques

Location: Infante Hall
Chair: Selda Sherifova
Chair: Stéphane Avril

10:15am - 10:40am

CHALLENGES OF VALIDATING COMPUTATIONAL THROMBOSIS MODELS

K. B. Manning

10:40am - 10:52am

THE INFLUENCE OF PLAQUE STRUCTURAL STRESS AND WALL SHEAR STRESS ON HUMAN CORONARY PLAQUE PROGRESSION

A. Tziotziou, E. Hartman, S.-A. Korteland, A. F. van der Steen, J. Daemen, J. Wentzel, A. C. Akyildiz

10:52am - 11:04am

IMAGE-BASED SIMULATION OF FLOW IN A PLATELET AGGREGATE

Y. Hao, G. Závodszky, C. Tersteeg, A. Hoekstra

11:04am - 11:16am

ON THE INFLUENCE OF THROMBUS PERMEABILITY ON FLUID DYNAMICS IN THORACIC AORTIC ANEURYSM: IN SILICO MODELS

C. GUIVIER-CURIEN, V. DEPLANO

11:16am - 11:28am

The effect of size and proximity of micro-beads on the rupture threshold of atheroma cap laboratory models

A. Corti, D. Khalil, S. Weinbaum, L. Cardoso

11:28am - 11:40am

WALL SHEAR STRESS TOPOLOGICAL SKELETON VARIABILITY PREDICTS PLAQUE GROWTH IN HUMAN CORONARY ARTERIES

G. De Nisco, E. Hartman, V. Mazzi, D. Gallo, C. Chiastra, J. Daemen, J. Wentzel, U. Morbiducci

TR03.6: Hard tissue biomechanics II: Bone tissue level

Location: D. Maria Hall
Chair: Vee San Cheong
Chair: Gianluca Tozzi

10:15am - 10:27am

Replicability of a finite element model to quantify human femur failure load

M. GARDEGARONT, A. Sas, F. Bermond, C. Confavreux, J.-B. Pialat, G. H. van Lenthe, H. Follet, D. Mitton

10:27am - 10:39am

THE INFLUENCE OF FORAMINA ON FEMORAL NECK FRACTURES AND STRAINS PREDICTED WITH FINITE ELEMENT ANALYSIS

J. Kok, L. Grassi, H. Isaksson

10:39am - 10:51am

HIP FRACTURE RISK PREDICTION BASED ON STATISTICAL MODELS INFORMED BY DXA IMAGES

A. Aldieri, F. Pagotto, P. Bhattacharya, M. Paggiosi, R. Eastell, C. Bignardi, A. L. Audenino, M. Terzini

10:51am - 11:03am

IDENTIFICATION OF STATISTICAL CRITICAL AREA TO DISCRIMINATE PROXIMAL FEMUR FRACTURE DUE TO LATERAL FALL

N. Morando, C. Ruiz Wills, J. Noailly, S. Tassani

11:03am - 11:15am

AGE MODULATES BMD AND STRENGTH BUT NOT FORCE RELAXATION IN HUMAN FEMORA

S. Martelli

11:15am - 11:27am

Principal Component Analysis for elucidating important changes in mouse tibia geometry

S. Moraiti, V. S. Cheong, E. Dall'Ara, V. Kadirkamanathan, P. Bhattacharya

TR04.6: Biomedical imaging I

Location: D. Luis Hall
Chair: Dieter Pahr
Chair: Uwe Wolfram

10:15am - 10:40am

X-RAY BASED 3D HISTOLOGY OF BIOLOGICAL TISSUES

G. Kerckhofs

10:40am - 10:52am

The osteocyte lacuno-canalicular network at the bone-implant interphase imaged with focused ion beam – scanning electron microscopy

E. Törnquist, G. Haïat, Y. Hériveaux, H. Albini-Lomami, E. Vennat, S. Le Cann

10:52am - 11:04am

LONGITUDINAL CHANGES IN THE SUBCHONDRAL BONE IN A MOUSE MODEL OF KNEE POST TRAUMATIC OSTEOARTHRITIS

S. Oliviero, Z. Chen, A. Rayson, B. C Roberts, H. M. Ismail, I. Bellantuono, E. Dall'Ara

11:04am - 11:16am

AN IN SILICO METHOD TO EVALUATE BONE REMODELLING AFTER TOTAL HIP ARTHROPLASTY: A SIX YEARS LONGITUDINAL STUDY

V. Betti, H. Jónsson Jr, L. Cristofolini, M. K. Gislason, P. Gargiulo

11:16am - 11:28am

A Correlative Multimodal Imaging approach for multiscale analysis of bone regeneration and adaptation

F. Correia Marques, B. Schroeder, D. Yilmaz, E. Wehrle, R. Müller

11:28am - 11:40am

OSTEOARTHRITIC KNEES CAN BE QUANTIFIED WITH IN VIVO SCANNERS

P. Antonacci, J. Dauwe, P. Varga, D. Ciric, D. Gehweiler, B. Gueorguiev, K. Mys

TR05.6: Spine biomechanics II

Location: Porto Hall
Chair: André P. G. Castro
Chair: John Costi

10:15am - 10:40am

MULTISCALE BIOMECHANICAL AND STRUCTURAL PROPERTIES OF

TR06.6: Clinical and translational biomechanics / in silico trials II

Location: Arrabida Hall
Chair: Richie Gill
Chair: Marco Viceconti

10:15am - 10:40am

TR07.6: Artificial intelligence in biomechanics II

Location: Miragaia Hall
Chair: Konstantinos Moustakas
Chair: Idit Avrahami

10:15am - 10:40am

TR08.6: Advance computing for biomechanics I

Location: S. Joao Hall

10:15am - 10:27am

A non intrusive data-driven reduced order model framework

LUMBAR INTERVERTEBRAL DISCS: MECHANISMS OF INJURY
J. J. Costi

10:40am - 10:52am
COMPARATIVE STUDY OF PEDICLE SCREW STABILIZATIONS FOR METASTASIS TREATMENT ON A BIOMIMETIC LUMBAR CONSTRUCT
S. Borrelli, G. Putame, M. Terzini, A. Ferro, S. Marone, A. L. Audenino

10:52am - 11:04am
Micro-FE models can predict the displacement field in human vertebrae with lytic and blastic metastases
M. Palanca, G. Cavazzoni, L. Cristofolini, E. Dall'Ara

11:04am - 11:16am
HARDWARE DENSITY REDUCTION AVOIDS T3 PROXIMAL JUNCTION FAILURE IN ADULT SPINE SURGERY: FE SIMULATION
M. Rasouligandomani, A. del Arco, F. Pellisé, M. González Ballester, F. Galbusera, J. Noailly

11:16am - 11:28am
EVALUATION OF METHODS FOR SCREW-VERTERBA FIXATION USING FINITE ELEMENT MODELLING
S. Vallejo Pareja, C. Ruiz Wills, J. Ramirez

11:28am - 11:40am
LOWER LIMB COMPENSATION DURING SIT-TO-STAND-TO-SIT AFTER MULTI-LEVEL FUSION SURGERY IN ADULT SPINAL DEFORMITY
P. Severijns, T. Overbergh, E. Beaucage-Gauvreau, T. Ackermans, L. Moke, L. Scheys

Translational Computational Studies Toward Preventing Post-Traumatic Osteoarthritis After Joint Injury
R. K Korhonen, D. D Anderson

10:40am - 11:05am
C4Bio: Community Challenge towards Consensus on Characterization of Biological tissue
N. Famaey

11:05am - 11:17am
Use of ASME V&V-40-2018 Standard as methodological framework for the Qualification of Digital Twins
A. Aldieri, C. Curreli, A. A. La Mattina, M. Viceconti

11:17am - 11:29am
The use of mobile eye tracking to assess cognitive load in lower limb amputees: a pilot study
S. Manz, S. Dosen, J. Gonzalez-Vargas

Hemodynamical Study of a Novel Percutaneous Left Ventricle Assist Device
I. Avrahami

10:40am - 10:52am
AUTOMATED SEGMENTATION AND LANDMARKING OF SCAPULAE TO ASSESS THE OUTCOME OF TOTAL SHOULDER ARTHROPLASTY
O. B. Satir, A. Terrier, A. Meylan, F. Becce, P. Goetti, R. Diot, P. Büchler

10:52am - 11:04am
Super-Resolution of Clinical CT Data: Towards Improving the Strength of Fracture Risk Assessments
L. Frazer, J. Vaishnav, N. Louis, D. Nicolella

11:04am - 11:16am
TEMPORALLY OPTIMIZED INVERSE KINEMATICS FOR 6DOF HUMAN POSE ESTIMATION
K. Gildea, C. Mercadal-Baudart, R. Blythman, C. Simms

11:16am - 11:28am
Correction of Motion Artefacts in HR-pQCT using Cycle-consistent Adversarial Networks
P. Y. Steiner, M. Walle, M. Rigotti, D. E. Whitter, C. McLennan, P. R. Atkins, R. Müller, C. J. Collins

for cardiovascular problems
M. Girfoglio, P. Siena, N. Demo, M. Conti, G. Rozza, F. Auricchio

10:27am - 10:39am
COMPUTATIONAL INVESTIGATION AND VERIFICATION OF THE IN-VITRO PERFORMANCE OF BIORESORBABLE BRAIDED STENTS
A. Lucchetti, T. Gries, T. J. Vaughan

10:39am - 10:51am
DEVELOPING A FRAMEWORK FOR GENERATING MITRAL VALVE SCALABLE MODELS
D. M. Cruz de Oliveira, D. Espino, L. Deorsola, J. Mynard, V. Rajagopal, K. Buchan, D. Dawson, D. Shepherd

10:51am - 11:03am
MODELLING THE BIOMECHANICAL BEHAVIOR OF THE LIVER IN REAL TIME USING ML MODELS TRAINED ON FE SIMULATIONS
O. PELLICER-VALERO, M. J. RUPÉREZ, J. D. MARTÍN-GUERRERO

11:03am - 11:15am
ASSESSING PROSTHETIC HAND DESIGNS THROUGH A NEW GRASPING SIMULATION BENCHMARK
I. Llop-Harillo, J. L. Iserte, A. Pérez-González

11:15am - 11:27am
Parametrisation SETTING and generation algorithm for abdominal aortic aneurysms
L. Saccaro, G. Ravon, F. Bernard, A. Iollo

11:27am - 11:39am
CFD MODELLING OF THE AIRFLOW IN THE HUMAN NASAL CAVITY
S. G. Johnsen

11:45am - 12:30pm
Keynote lecture 2: Modelling the human neuromuscular system across spatio-temporal scales for a new class of movement enhancing technologies, Massimo Sartori
Location: Archive Hall
Chair: Jérôme Noailly
Chair: Paulo Rui Fernandes

12:30pm - 1:15pm
Lunch Break
Location: West Ground floor

1:15pm - 2:00pm
Poster sessions: PS7 - PS12
Location: West Ground floor

2D FLUID-STRUCTURE INTERACTION MODELING OF THE LEFT ATRIUM – IMPACT OF MITRAL VALVE STIFFENING
M. Meskin, J. Arendt Jensen, M. Bo Stuart, M. Sand Traberg

An Impedance Pump For Assisting Failing Fontan Circulation
M. Garcia-Diaz, F. Castro-Ruiz, J. Á. Moneo-Fernandez, C. Barrios-Collado, J. Anatol, M. Horvath, E. T. Roche, J. Sierra-Pallares

Hemodynamics of an Idealized Mechanical Heart Valve – Predictions by FVM and SPH
S. LAHA, G. Fourtakas, P. K. Das, A. Keshmiri

PATIENT-SPECIFIC SIMULATION AIMED AT EVALUATION OF THE NEOINTIMA GROWTH EFFECT ON ANASTOMOSIS HEMODYNAMICS
Y. Ivanova, A. Yukhnev, E. Smirnov, L. Tikhomolova, A. Vrabiy, A. Suprunovich, A. Morozov, G. Khubulava, V. Vavilov

THE EFFECT OF STENT GRAFT CURVATURE ON MIGRATION RISK IN ABDOMINAL AORTIC ANEURYSM ENDOVASCULAR REPAIR
M. Brand, B. Yoel, M. Halak, C. Speter, G. Marom

CHARACTERISATION OF THE SPECIFIC GEOMETRIC ANISOTROPY OF TRABECULAR PLATES AND RODS
N. Rogalski, S. Laporte, I. Iordanoff, C. Cluzel

A PK-PD MODEL OF ALENDRONATE FOR THE TREATMENT OF POSTMENOPAUSAL OSTEOPOROSIS
R. Ruiz-Lozano, J. L. Calvo-Gallego, P. Pivonka, J. Martínez-Reina

Porosity and matrix mineral content determine the variation of compression strength of Cortical bone from elderly donors
X. Cai, F. Fan, H. Follet, F. Peyrin, H. Niu, Q. Grimal

HYDROXYAPATITE CRYSTAL THICKNESS AND ORIENTATION AT THE BONE IMPLANT INTERFACE: SPATIAL AND TEMPORAL EVOLUTIONS
S. Le Cann, E. Törnquist, I. Silva Barreto, M. Fraulob, M. Verezhak, M. Guizar-Sicairos, H. Albini Lomani, H. Isaksson, G. Haïat

CONCURRENT IMAGING AND DIFFRACTION OF TRABECULAR BONE CONSTRUCTS WITH IN SITU SCANNING AND COMPRESSION
E. Newham, A. James, H. Deyhle, S. Ahmed, G. Tozzi, H. S. Gupta

A COARSE GRAINED MODEL OF MINERALISED COLLAGEN FIBRIL BIOMECHANICS: UNDERSTANDING THE ROLE EXTRAFIBRILLAR MINERALIZATION
M. Tavakol, T. Vaughan

Epiphyseal bone healing within continuum bone remodeling
I. Schmidt, P. Steinmann, A. Papastavrou

BONE REMODELLING ALGORITHM. A VOXEL BASED APPROACH
J. Roces García, V. Celemín Mohedano, P. Pankaj

PRELIMINARY INVERSE ANALYSIS FOR CRACK PROPAGATION MECHANICAL PARAMETERS ON LONG HUMAN CORTICAL BONE
T. Kurtz, J.-L. Tailhan, Y. Godio-Raboutet

A BONE CELL POPULATION MODEL DESCRIBING INTERMITTENT ACTIVATION OF BMUS BASED ON CELL AVAILABILITY
J. L. Calvo-Gallego, P. Manchado-Morales, P. Pivonka, J. Martínez-Reina

Development and characterization of 3D printed bone substitutes mimicking trabecular bone architecture
F. Leborgne, L. Caillé, C. Tromas, D. Campion, M. Séveryns, T. Vendeuvre, A. Germaneau, V. Valle

APPLICATION OF MARKERLESS POSE ESTIMATION TO RUGBY COLLISION TRACKING
R. Blythman, M. Saxena, G. Tierney, C. Richter, A. Smolic, C. Simms

Evaluation of finite element head models using 3D printed surrogate - preliminary control of boundary conditions
F. Jonca, S. Persohn, L. Chalanqui, S. Laporte, B. Sandoz

POSTERIOR CRUCIATE LIGAMENT TENSION AND TIBIAL COMPONENT MALROTATION IN TOTAL KNEE REPLACEMENT
K. Johnson, J.-O. Sass, L. Buerstenbinder, J. B. Darques, I. Soodmand, R. Bader, M. Kebbach

BIOMECHANICAL ANALYSIS OF SURGICAL ALIGNMENT AND DESIGN IN TOTAL KNEE ARTHROPLASTY
B. Innocenti, E. Bori

ASSESSING THE FIRST RESONANCE FREQUENCY OF SCREWS IN BONE BLOCKS FOR ESTIMATION OF SCREW FIXATION
M. Timmermans, Q. Goossens, L. C. Pastrav, B. Depreitere, W. Desmet, K. Denis

A COMPUTATIONAL METHODOLOGY FOR THE INVESTIGATION AND COMPARISON OF THE ASSEMBLY EFFECTIVENESS DURING TOTAL HIP ARTHROPLASTY
A. C. Messellek, M. Ould Ouali, A. Amrouche

On measuring implant fixation stability in ACL reconstruction
E. Benca, I. Zderic, J. Caspar, K. van Knegsel, L. Hirtler, B. Gueorguiev, R. Windhager, H. Widhalm, P. Varga

COMPUTATIONAL TOOLS FOR BIO-COMPATIBLE GYROID FOAMS
A. Pais, J. Lino Alves, J. Belinha

TOPOLOGY OPTIMIZATION OF A UNIVERSAL ARTIFICIAL TALUS IMPLANT
A. H. Hafez, A. Schiffer, M. El-Rich

DEVELOPMENT OF A FULLY-PARAMETRIC THORACOLUMBAR SPINE MODEL AND CALIBRATION OF T6-T7-R7 FSU
A. Perego, A. Pezzinga, L. La Barbera

VECTOR CODING ASSESSMENT OF LOWER LIMB JOINT ANGULAR COORDINATION ON LONG, SHORT AND NO COUNTERMOVEMENT
C. Rodrigues, M. Correia, J. Abrantes, M. Benedetti, J. Nadal

POROUS GEOMETRY OF TISSUE ENGINEERING SCAFFOLD INFLUENCES ITS INTERNAL MICROFLUIDIC ENVIRONMENT
M. J. A. Bedding, F. Zhao

HOW REFRACTIVE POWER OF THE EYE MAY EFFECT THE CHANGE OF FOCUS
F. K. Debowy, B. Pierscionek

EFFECTS OF CORNEAL PRESERVATION ON THE MECHANICAL PROPERTIES OF PORCINE CORNEAS
S. Bahramizadeh Sajadi, H. R. Katoozian, M. A. Ariza-Gracia, J. Nohava, P. Büchler

ANALYSIS OF THE CILIARY MUSCLE MOVEMENT DURING ACCOMMODATION USING ARTIFICIAL INTELLIGENCE
I. Cabeza Gil, M. Ruggeri, Y.-C. Chang, B. Calvo, F. Manns

Computational Method for Evaluating Fracture-Fixation Stability of Complex Bone Fractures
S. Comtesse, A. von Keudell, S. J. Ferguson, T. Zumbrunn

Simulating the impact of diabetic foot insoles: a finite element analysis
A. Ciniglio, A. Guiotto, M. Palladino, M. Faccin, F. Spolaor, E. Bertoncello, E. Meggiato, Z. Sawacha

UNCERTAINTIES QUANTIFICATION ON ARTERIES RECONSTRUCTED FOR CORONARY STENT DEPLOYMENT SIMULATIONS
L. Antonini, F. Lotrecchiano, G. Poletti, L. Petrini, G. Pennati

BIOMECHANICAL MODELING OF THE ANOMALOUS AORTIC ORIGIN OF THE CORONARY ARTERY
M. Conti, G. M. Formato, V. Ceserani, A. Rosato, M. Lo Rito

AN ULTRASOUND-BASED MODELING FRAMEWORK FOR THE ASSESSMENT OF PERIPHERAL ARTERIAL DISEASE
M. Gillissen, F. N. van de Vosse, M. van Sambeek, R. G. P. Lopata

EXPERIMENTAL PROCEDURE AND FINITE ELEMENT ANALYSIS TO MAP MECHANICAL CONSTITUTIVE PARAMETERS OF ARTIFICIAL MENISCUS
G. Marchiori, M. Berni, M. Zingales, C. Mannone, S. di Paolo, S. Zaffagnini, N. F. Lopomo, M. Baleani, M. Fini

Ex-vivo human tongue muscle mechanical characterization
M. A. Nazari, P. Perrier, C. Jeanin, S. Veyre, C. Masri, Y. Payan

Finite Element Modeling of the Coupling Between the Earcanal and the Temporomandibular Joint
M. Demuynck, A. Delnavaz, J. Voix

TRACHEOBRONCHIAL MATERIALS COMPUTATIONAL DEFINITION
R. B. Ruben, J. C. Dinis, J. B. Pinto, C. A. Campos, M. S. Correia, H. Almeida

HIS ANGLE, FOOD VISCOSITY AND LSG: HOW THEY AFFECT GASTROESOPHAGEAL REFLUX. A FLUID-STRUCTURE STUDY
I. Toniolo, A. Berardo, M. Gagner, M. Foletto, E. L. Carniel

NUMERICAL MODELLING OF THE BREAST RECONSTRUCTION USING SILICONE GEL-FILLED IMPLANTS
B. Areias, A. André, A. M. Teixeira, S. Brandão, P. Martins

TEMPORAL DESIGN FOR ADDITIVE MANUFACTURING AND ITS POTENTIAL FOR TUNING THE SURFACE ROUGHNESS
N. Mahmoodi, B. Hawthorn, F. Khan, A. Triantaphyllou, R. Dyson, L. E. J. Thomas-Seale

A preliminary study for the assessment of a complementary therapy in Parkinson's Disease
E. Pegolo, A. Cucca, E. Berti, D. Volpe, Z. Sawacha

THE EFFECT OF THE OF RUNNING-INDUCED FATIGUE ON THE SYMMETRY OF KINEMATICS AND KINETIC VARIABLES OF KNEE JOINTS IN A COUNTERMOVEMENT JUMP.
Z. Gao, Y. He, G. Fekete, Y. Gu

Effect of ACL reconstruction on the muscle activity of the knee during selected activities
P. Zalewska, T. Guszczyn, S. Piszczatowski

A new method for determining the knee axis of rotation for motion capture
E. B. O'Regan, D. Dawson, K. Bryan

DYNAMIC ANALYSIS OF GAIT MOTION IN OSTEOARTHRITIC WOMEN
J. Torras, A. Espinoso, L. Tio, F. Castro-Domínguez, J. Monfort, J. Monllau, M. Gonzalez-Ballester, J Noailly, S. Tassani

Recording wrist circumduction with different sensors for clinical assessment
M. Vergara, R. Lázaro-Belenguer, V. Gracia-Ibáñez, N. Jarque-Bou, J. L. Sancho-Bru

MOTOR CONTROL IN A POPULATION OF YOUNG SUBJECTS WITH IDIOPATHIC SCOLIOSIS: THE MOTOR-CHILD STUDY
R. Stagni, G. M. G. Farella, F. Vanzini, R. Tedeschi, M. G. Benedetti, M. C. Bisi

Detecting a new category of flexion contracture patients in total hip arthroplasty
C. Vergari, Y. Kim, M. Takemoto, Y. Shimizu, C. Tanaka, S. Fukae, S. Fujibayashi, S. Matsuda

Weight-bearing symmetry in healthy and active workers: an occupational study with instrumented insoles
S. A. Alves, A. N. Agres, G. N. Duda

Hand posture and forearm muscle activity during reaching and transportation tasks: effect of product weight and task height
A. Roda-Sales, N. J. Jarque-Bou, V. Bayarri-Porcar, J. L. Sancho-Bru, M. Vergara

MIMU Kinematics for Monitoring Recovery from Ankle Fracture
O.-P. Mattila, P. Vartiainen, T. Mujunen, H. Piitulainen, N. J. Cronin, T. Rantanen, T. Rantalainen

Infant gastrocnemius growth in the first two years of life
R. Florez, H. Kim, M. Bell, S. Stott, A. Mirjalili, S. Williams, T. Besier, J. Fernandez

IMAGE-BASED CHARACTERIZATION OF LARGE VESSELS INTEGRATING IN-VITRO AND IN-SILICO METHODS
B. M. Fanni, E. Gasparotti, K. Capellini, E. Vignali, G. Santoro, S. Celi

CRANIAL BONE MICROARCHITECTURE IN A MOUSE MODEL FOR SYNDROMIC CRANIOSYNOSTOSIS
J. E. Hut, S. Ajami, E. Pauws, D. Savery, A. Carriero, A. J Bodey, A. Pitsillides, N. U. O. Jeelani, S. Schievano, A. Borghi

IMAGE-BASED IN-VIVO ESTIMATION OF AORTIC LOCAL STIFFNESS AND HEMODYNAMICS
K. Capellini, E. Gasparotti, E. Vignali, B. M. Fanni, M. A. Scarpolini, F. Cademartiri, S. Celi

IMPLEMENTATION OF A WAVELET-BASED PROCESSING METHOD ADAPTED TO DIFFRACTION ULTRASOUND COMPUTED TOMOGRAPHY OF BONE TISSUES
E. DOVERI, M. BRIE, J. BALDISSER, L. SABATIER, R. GUILLERMIN, V. LONG, P. LASAYGUES

REPRODUCIBILITY OF MUSCLE FORCES ESTIMATION DURING POST-STROKE GAIT USING OPENSIM
G. Giarmatzis, S. Fotiadou, E. Giannakou, A. Gkrekidis, C. Kokkotis, K. Vadikolias, N. Aggelousis

COMPARING CALCULATED AND MEASURED MUSCLE ACTIVITY OF THIGH MUSCLES IN DYNAMIC MOTION
S. Auer, L. Reinker, F. Süß, S. Dendorfer

VALIDATION OF REMOTE METHODS FOR MEASURING FOOT ARCH HEIGHT AND SHAPE
J. Uhan, A. Kothari, A. Zavatsky, J. Stebbins

FINITE ELEMENT MANDIBLE MODEL OPTIMIZATION FOR LARGE MANDIBULAR DEFECT REGENERATION
A. R. Reis, V. Orassi, S. Checa, R. Natal, M. Parente

TOWARDS THE MEASUREMENT OF ELBOW JOINT FORCES IN MAN: A FINITE ELEMENT STUDY
M. Basiouny, S. Taylor, S. Lambert, K. Chin

A Novel Method for Artificial Intelligence Based Ground Reaction Force Measurement from Video
T. Eliason, T. Templin, N. Louis, O. Medjaouri, D. Chambers, K. Saylor, D. Nicolella

How do the musculoskeletal modeling parameters affect the estimation of the tibiofemoral contact forces?
W. Bernardes, S. Jahangir, A. Esrafilian, M. Mononen, P. Tanska, T. Alkjaer, M. Henriksen, R. Korhonen, L. Stenroth

PRIMITIVE-DRIVEN MUSCULOSKELETAL MODELLING OF HUMAN LOCOMOTION: TOWARDS MODEL-BASED CONTROL OF BIONIC LEGS
F. Damonte, G. Durandau, H. van der Kooij, J. Gonzales, M. Sartori

EXPERIMENTAL AND NUMERICAL CHARACTERIZATION OF THE ACTIVE BEHAVIOUR OF MOUSE ROTATOR CUFF MUSCLES
P. Martins, A. Pérez, G. Abanza, B. Calvo, J. Grasa

MECHANOBIOLOGICAL COMPUTER MODELING OF MANDIBULAR FRACTURE HEALING
V. Orassi, C. Rendenbach, S. Checa

Design and characterization of a flexible substrate for culturing adherent cells under defined uniaxial stretch
G. Putame, M. Tosini, A. T. Lugas, I. Roato, B. Masante, F. Mussano, D. Massai

BIOMECHANICAL MODEL REPRODUCING THE ACTIVE RESPONSE OF A CARDIAC SARCOMERE
M. Peyroteo, J. Belinha, I. Falcão-Pires, A. Leite-Moreira, R. Natal

Analyzing mechanical circulatory support in patients with single ventricle physiology using a multiscale model
V. Yuan, F. De Gaetano, M. L. Costantino

Influence of transurethral catheters on urodynamics measurements in male: a computational study
M. V. Mascolini, A. Berardo, C. G. Fontanella, E. L. Carniel

EDGE LOADING TESTING OF HIP REPLACEMENTS: TECHNIQUES FOR EFFICIENT AND ACCURATE MODELLING
L. W. Etchels, R. Wilcox, A. Jones

LATERAL MENISCUS ANTERIOR ROOT AVULSION INCREASES CONTACT PRESSURES: A FINITE ELEMENT STUDY
A. Peña-Trabalón, S. Moreno-Vegas, B. Estebanez, M. Prado-Novoa, A. Espejo-Reina, F. García-Vacas, A. Perez-Blanca

EXPLOITING CELL MODULARITY TO CREATE REPURPOSABLE DIGITAL TWINS
I. Manifacier, K. Anselme, B. Nebe, J.-L. Milan

BALANCE RECOVERY PREDICTION UNDER THE INFLUCENCE OF DIFFERENT ACTUATION MODELS
M. Harant, M. Roller, M. Obentheuer, J. Linn

ASSESSING INTUITIVE DESIGN OF ASSISTIVE DEVICES TO IMPROVE HUMAN BIOMECHANICAL DEFICIENCIES: AN EYE-TRACKER STUDY
V. Bayarri-Porcar, J.-L. Sancho-Bru, M. Vergara

DESIGN OF AN IN VIVO BIOMECHANICAL CHARACTERISATION DEVICE FOR UNRUPTURED INTRACRANIAL ANEURYSMS: CALIBRATION STUDY ON PHANTOM ARTERIES
G. Plet, J. Raviol, H. Magoariec, C. Pailler-Mattei

Human brain and muscle activities coupling during isokinetic contractions with incremental motor output
D. Glories, M. Soulhol, D. Amarantini, J. Duclay

DYSREGULATED ENERGY PRODUCTION IMPACT THE OUTCOME OF SCAFFOLD-GUIDED BONE REGENERATION IN TYPE 2 DIABETES
D. S. Bastos Dias

PREDICTIVE SIMULATION OF SINGLE-LEG LANDING SCENARIOS FOR ACL INJURY RISK FACTORS EVALUATION
E. Moustridi, K. Risvas, K. Moustakas

2:00pm - 3:30pm

TR01.7: Biomechanics of movement and posture: Upper limb and trunk function and posture

Location: Archive Hall
Chair: Lennart Scheys
Chair: William R. Taylor

2:00pm - 2:25pm

QUANTITATIVE FUNCTIONAL ASSESSMENT IN THE SETTING OF ADULT SPINAL DEFORMITY USING 3D MOVEMENT ANALYSIS
A. Assi, V. Lafage, W. Skalli

2:25pm - 2:37pm

A novel method to quantify pseudo-kinematics of the rib cage over the vital capacity range

TR02.7: Cardiovascular biomechanics VI: Treatment design and clinical outcome

Location: Infante Hall
Chair: Selda Sherifova
Chair: Stéphane Avril

2:00pm - 2:12pm

VASCULAR ADAPTATION FOLLOWING ENDOVASCULAR AORTIC ANEURYSM REPAIR
S. Zhang, J. Laubrie, J. Mousavi, S. Avril

2:12pm - 2:24pm

FINITE ELEMENT STUDY ON THE PROXIMAL FIXATION OF A STENT-GRAFT: IMPACT OF THE AORTIC ARCH ANGULATION
A. Ramella, L. Iannetti, J. F. Rodriguez Mata, F. Migliavacca, G. Luraghi

TR03.7: Hard tissue biomechanics III: Bone organ level

Location: D. Maria Hall
Chair: Helene Follet
Chair: Marta Peña Fernández

2:00pm - 2:12pm

VALIDATION OF LINEAR AND MATERIALLY NONLINEAR µFE PREDICTED DISPLACEMENT FIELDS OF BONE BIOPSIES USING DVC
P. Stefanek, A. Synek, E. Dall'Ara, D. H. Pahr

2:12pm - 2:24pm

Full-field strain evaluation of bone tissue subjected to microindentation using spherical and Berkovich indenters

TR04.7: Biomedical imaging II

Location: D. Luis Hall
Chair: Dieter Pahr
Chair: Inas H Faris

2:00pm - 2:25pm

VISCOSITY AND NONLINEAR ELASTOGRAPHY WILL BECOME THE NEXT GENERATION BIOMARKERS IN CLINICAL DIAGNOSIS
G. Rus, I. H. Faris

2:25pm - 2:37pm

AUTOMATION OF MRI-BASED SPINAL MUSCLE SEGMENTATION
B. Peeters, T. Overbergh, D. Farotto, E. Beaucage-gauvreau, L. Scheys

C. Vergari, W. Skalli, L. Clavel, M. Demuynck, R. Valentin, B. SANDOZ, T. Similowski, V. ATTALI

2:37pm - 2:49pm

A slouched or erect spinal posture modifies upper limb kinematics

A. Tomezzoli, A. Naaïm, B. Fréchède, S. Duprey

2:49pm - 3:01pm

Impact of the time scale of muscle activation dynamics on reaching performance

T. Murtola, C. Richards

3:01pm - 3:13pm

Upper limb functional evaluation of a complementary therapy in Parkinson's Disease: a preliminary study

E. Pegolo, M. Romanato, C. Riccò, A. Cucca, F. Spolaor, D. Volpe, Z. Sawacha

2:24pm - 2:36pm

INTEGRATING IN-SILICO AND EX-VIVO ANALYSIS FOR BIOMECHANICAL ASSESSMENT OF AORTIC ENDOGRAFTING

M. Conti, D. Bianchi, M. Domanin, D. Bissacco, S. Trimarchi, F. Auricchio

2:36pm - 2:48pm

IN VITRO INVESTIGATION OF THE IMPACT OF ANEURYSMAL SAC ASPECT RATIO AND NECK SIZE ON HEMODYNAMICS OF CEREBRAL ANEURYSMS TREATED WITH FLOW DIVERTING STENTS

F. Chassagne, M. C. Barbour, M. R. Levitt, A. Aliseda

2:48pm - 3:00pm

PREDICTING 1-YEAR IN-STENT RESTENOSIS IN FEMORAL ARTERIES THROUGH MULTISCALE COMPUTATIONAL MODELING

A. Corti, M. Colombo, J. M Rozowsky, S. Casarin, Y. He, F. Migliavacca, J. F Rodriguez Matas, S. A Berceli, C. Chiastra

3:00pm - 3:12pm

A SMART PARTICLE IMAGE VELOCIMETRY SYSTEM FOR THE IN VITRO ASSESSMENT OF CORONARY ARTERY HEMODYNAMICS

E. Torta, G. C. A. Caridi, C. Chiastra, D. Gallo, U. Morbiducci

3:12pm - 3:24pm

A high-power LED illuminated piv setup to characterize the flow behaviour in abdominal aortic aneurysm models

F. Bardi, E. Gasparotti, E. Vignali, M. Aguirre, S. Avril, S. Celi

M. Peña Fernández, J. Schwiedrzik, A. Bürki, F. Peyrin, J. Michler, P. Zysset, U. Wolfram

2:24pm - 2:36pm

DAMAGE IN SINGLE TRABECULAE UNDER TENSION IDENTIFIED BY INVERSE RHEOLOGICAL MODELLING

A. Reisinger, M. Frank, P. Thurner, D. Pahr

2:36pm - 2:48pm

A MICROMECHANICAL PHASE FIELD DAMAGE MODEL TO INVESTIGATE THE FRACTURE PROPERTIES OF LAMELLAR BONE

H. Alijani, T. Vaughan

2:48pm - 3:00pm

Measurement uncertainties of a global dvc approach are weakly affected by the vertebral bone microstructure

G. Cavazzoni, E. Dall'Ara, L. Cristofolini, M. Palanca

3:00pm - 3:12pm

CRACK PROPAGATION IN CORTICAL BONE ANALYZED WITH DIGITAL IMAGE CORRELATION

G. Galteri, L. Grassi, J. Engqvist, S. A Hall, L. Cristofolini, H. Isaksson, A. Gustafsson

3:12pm - 3:24pm

NOVEL METHOD TO OBTAIN MECHANICAL PROPERTIES OF ISOLATED TRABECULAE UNDER COMPRESSION IN WET CONDITION

K. Haslinger, M. Frank, D. H. Pahr, P. J. Thurner

2:37pm - 2:49pm

Automatic muscle segmentation with deformable image registration from MR images of human lower limb

W. H. Henson, C. Mazzà, E. Dall'Ara

2:49pm - 3:01pm

A non rigid registration algorithm to build Statistical shape model of thoracic Aorta, together with aortic arch and supra aortic vessels

M. A. Scarpolini, M. Mazzoli, F. Bardi, K. Capellini, V. Positano, S. Celi

3:01pm - 3:13pm

Generating 3D Personalised Respiratory Domains For Deposition Models From CT and Chest X-rays

J. Williams, H. Ahlqvist, A. Cunningham, A. Kirby, S. Cunningham, A. Ozel, U. Wolfram

3:13pm - 3:25pm

In-vivo 3D Muscle Morphological Measurement Based on 3D Freehand Ultrasound and Diffusion Tensor Imaging

Z. Wang, F. Cenni, A. Destro, S. Petersson, R. Wang

TR05.7: Spine biomechanics III

Location: Porto Hall
Chair: André P. G. Castro
Chair: Marco Palanca

2:00pm - 2:25pm

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

L. Cristofolini

2:25pm - 2:37pm

Vertebra and disc slenderness are not an early sign of adolescent idiopathic scoliosis progression

C. Vergari, W. Skalli, K. Abelin-Genevois, J. C. Bernard, Z. Hu, J. C. Y. Cheng, W. C. W. Chu, A. Assi, M. Karam, I. Ghanem, T. Bassani, F. Galbusera, L. M. Sconfienza, M. Brayda-Bruno, I. Courtois, E. Ebermeyer, R. Vialle, T. Langlais, J. Dubousset

2:37pm - 2:49pm

DETERMINATION OF A LUMPED-PARAMETER MODEL OF THE INTERVERTEBRAL JOINT FROM AN EXPERIMENTAL DATASET

S. L. Gould, G. Davico, M. Palanca, L. Cristofolini, M. Viceconti

2:49pm - 3:01pm

The effect of intervertebral disc degeneration on the flexibility of the thoracic spine: An in vitro study

C. Liebsch, H.-J. Wilke

3:01pm - 3:13pm

Multiscale Mechanics of Collagen-Hyaluronan Interfaces in Annulus Fibrosus

S. Bhattacharya, D. K. Dubey

3:13pm - 3:25pm

RECOVERY OF TRUNK MOTION DURING GAIT AT 1-WEEK AND 3-

TR06.7: Biomechanics of ageing and neuromuscular control

Location: Arrabida Hall
Chair: Stephen Ferguson
Chair: Annegret Mündermann

2:00pm - 2:12pm

AGE-RELATED DEGENERATION AFFECTS THE STRUCTURE–FUNCTION RELATIONSHIP OF HUMAN MENISCI

G. Q. Teixeira, J. Schwer, A. Ignatius, L. Dürselen, A. M. Seitz

2:12pm - 2:24pm

Influence of Ageing on Micromechanical Properties of the Fermoral Neck Using the Inverse Method

B. Voumard, P. Stefanek, M. Pretterklieber, D. Pahr, P. Zysset

2:24pm - 2:36pm

In-vivo Determination of Region-Specific Material Parameters of Healthy and Osteoarthritic Menisci

J. Schwer, F. Galbusera, M. Sgroi, M. Faschingbauer, A. Ignatius, L. Dürselen, A. M. Seitz

2:36pm - 2:48pm

A NOVEL NEUROMECHANICAL MODEL FOR PREDICTING MUSCLE FORCE FROM MOTONEURON SPIKE TRAINS

L. Modenese, A. H. Caillet, A. T. Phillips, D. Farina

2:48pm - 3:00pm

ALTERATIONS IN UPPER EXTREMITY MUSCLE COORDINATION RESULTING FROM MUSCLE DYSTROPHY AND GRAVITY COMPENSATION

J. M. N. Essers, K. Meijer, A. Peters, A. Murgia

TR07.7: Virtual and augmented reality in biomechanics

Location: Miragaia Hall
Chair: Konstantinos Moustakas
Chair: Bill Baltzopoulos

2:00pm - 2:25pm

Knee joint forces and cartilage stress in Osteoarthritis

V. Baltzopoulos, D. Britzman, D. Tsaopoulos

2:25pm - 2:37pm

BALANCE REACTION & MOTOR CONTROL DURING SIMULATED FEAR OF HEIGHT IN CHILDREN WITH CEREBRAL PALSY – A PILOT STUDY

R. Winter, R. Lohss, N. B. Singh, W. R. Taylor, R. M. Visscher, E. Viehweger

2:37pm - 2:49pm

OACTIVE: VR-BASED GAIT RETRAINING TO ADDRESS KNEE OSTEOARTHRITIS

G. Giarmatzis, S. Zouras, M. Pavlou, K. Moustakas

2:49pm - 3:01pm

A VIRTUAL REALITY ENVIRONMENT TO STUDY GAIT DERANGEMENTS IN PARKINSON'S DISEASE

C. Palmisano, I. Hanafi, I. U. Isaias

3:01pm - 3:13pm

MOTION ANALYSIS FOR VIRTUAL REALITY AIDED TRAINING AND REHABILITATION

M. Żuk, M. Popek, K. Bulińska, M. Wojtków, M. Łopusiewicz

TR08.7: Advance computing for biomechanics II

Location: S. Joao Hall

2:00pm - 2:12pm

SPINADOID AND DUAL-LATTICE BASED ALGORITHMS FOR GENERATING BIOMIMETIC TRABECULAR BONE STRUCTURES

M. vafaeefar, K. M. Moerman, T. J. Vaughan

2:12pm - 2:24pm

The Influence of Cross-linking on the Mechanical Properties of Collagen: A Bottom-up Approach

J. T. Kamml, C.-Y. Ke, D. Kammer

2:24pm - 2:36pm

BIORESORBABLE LATTICE STRUCTURES FOR TIME-DEPENDENT STIFFNESS IN FRACTURE FIXATION DEVICES

B. Hawthorn, A. Triantaphyllou, F. Khan, R. Dyson, L. E. J. Thomas-Seale

2:36pm - 2:48pm

Numerical modelling of a ploymeric aneurysm in support for dimensionning a mechanical characterisation device

J. Raviol, G. Plet, H. Magoariec, C. Pailler-Mattei

2:48pm - 3:00pm

A TWO-PHASE GENETIC ALGORITHM TO MODEL THE MENISCAL HORN REPAIRED WITH SUTURE

M. B. ESTEBANEZ CAMPOS, A. PEÑA TRABALON, S. MORENO VEGAS, A. ESPEJO REINA, F. NADAL MARTINEZ, F. M. GARCIA VACAS, A. M. PEREZ DE

	MONTHS AFTER SPINAL FUSION SURGERY IN AIS PATIENTS T. Ackermans, S. Schelfaut, P. Severijns, P. Moens, L. Moke, L. Scheys	**3:00pm - 3:12pm** **Functional simplification of motor control of antagonist muscles after stroke.** C. Delcamp, C. Cormier, A. Chalard, D. Gasq, D. Amarantini **3:12pm - 3:24pm** **SHARED SYNERGIES BETWEEN COMPLEX MOVEMENTS** P. Kaufmann, L. Zweier, A. Baca, H. Kainz		LA BLANCA COBOS, M. PRADO NOVOA **3:00pm - 3:12pm** **HOW OXYGEN AND GLUCOSE INFLUENCE CELL GROWTH: A COMPUTATIONAL SIMULATION STUDY** M. I. Araújo Barbosa, J. A. O. Pinto Belinha, R. Natal Jorge, A. Xavier de Carvalho
3:30pm - 4:00pm	**Coffee Break** Location: West Ground floor			
4:00pm - 5:00pm	**ESB S.M. Perren Research Award: Standardized Tibio-Femoral Implant Loads and Kinematics, Michael J. Dreyer, ETH Zurich** Location: Archive Hall Chair: **Markus Heller** Chair: **Harry van Lenthe** ESB S.M. Perren Research Award The winner of the 2022 ESB S.M. Perren Research Award is Michael Dreyer from the ETH, Zurich (Switzerland) for the manuscript entitled: “Standardized Tibio-Femoral Implant Loads and Kinematics” by MJ Dreyer, A Trepczynski, SH Hosseini Nasab, I Kutzner, P Schütz, B Weisse, J Dymke, B Postolka, P Moewis, G Bergmann, GN Duda, WR Taylor, P Damm, and CR Smith. Michael Dreyer is originally from Munich, Germany. He did his Bachelor’s and Master’s degree in mechanical engineering at ETH Zurich, Switzerland. There, he focused on robotics and composite materials. Currently, Michael is pursuing a Ph.D. under the supervision of Prof. William R. Taylor at the Laboratory for Movement Biomechanics at ETH Zurich and in close collaboration with Empa, the Swiss Federal Laboratories for Materials Science and Technology. In his project, Michael investigates the wear of joint implants. The project aims to develop validated simulation tools for the preclinical prediction...			
5:00pm - 6:00pm	**TR01.8: Biomechanics of movement and posture: Motor control in ageing and pathology** Location: Archive Hall Chair: **William R. Taylor** Chair: **Lennart Scheys** **5:00pm - 5:12pm** **WALKING IN CHILDREN WITH HEMIPLEGIA USING DIFFERENT TYPES OF ANKLE FOOT ORTHOSIS** F. Camuncoli, A. Barbonetti, L. Piccinini, E. Di Stanislao, C. Corbetta, L. Donno, M. Galli **5:12pm - 5:24pm** **A VECTOR FIELDS ANALYSIS TO INVESTIGATE FOOT-GROUND INTERACTIONS IN INFANCY DURING WALKING** E. Montagnani, S. C Morrison, C. Price **5:24pm - 5:36pm** **EXPLORING MINIMUM TOE CLEARANCE AS A PREDICTOR FOR RISK OF STUMBLES AND FALLS IN OLDER ADULTS** M. A Avalos, N. J Rosenblatt **5:36pm - 5:48pm** **DEVELOPMENT OF GROSS MOTOR CONTROL IN SCHOOL-CHILDREN: INFLUENCE OF AGE, SEX, AND ANTHROPOMETRY** R. Stagni, A. Masini, S. Toselli, S. Marini, L. Bragonzoni, A. Ceciliani, M. Lanari, A. Sansavini, A. Tessari, D. Gori, L. Dallolio, M. C. Bisi **5:48pm - 6:00pm** **Long Term effects of an ACL reconstruction on knee joint kinematics and loading.** J. Eichwalder, W. Koller, A. Baca, P. Weninger, H. Kainz	**TR02.8: Cardiovascular biomechanics VII: Image-based biomechanics** Location: Infante Hall Chair: **Nele Famaey** Chair: **Mathias Peirlinck** **5:00pm - 5:12pm** **Monitoring mechanical and geometrical progression of abdominal aortic aneurysms using 3D+t ultrasound** E. Maas, A. Nievergeld, J. Fonken, M. Thirugnanasambandam, M. van Sambeek, R. Lopata **5:12pm - 5:24pm** **AAA mechanics during ultrasound procedures: a patient-specific computational study** M. I. Bracco, M. E. Biancolini, L. Rouet, S. Avril **5:24pm - 5:36pm** **USING 4D ULTRASOUND IMAGING TO QUANTIFY ARTERIAL WALL PROPERTIES IN VIVO** C. Blase, A. Wittek, A. Hegner, W. Derwich, A. Huß **5:36pm - 5:48pm** **MECHANICAL CHARACTERIZATION OF ABDOMINAL AORTIC ANEURYSMS USING 4D ULTRASOUND AND VIRTUAL FIELDS METHOD** M. Thirugnanasambandam, E. J Maas, A. H. Nievergeld, M. van Sambeek, S. Avril, R. Lopata **5:48pm - 6:00pm** **US-BASED VOLUME-TIME CURVES OF THE AAA FOR ESTIMATING IN-VIVO THROMBUS COMPRESSIBILITY AND WALL STIFFNESS** A. Nievergeld, E. Maas, J. Fonken, M. van Sambeek, F. van de Vosse, R. Lopata	**TR03.8: Patient-specific modelling III** Location: D. Maria Hall Chair: **Sebastian Laporte** Chair: **Lucia Donno** **5:00pm - 5:12pm** **GENERATING PATIENT GAIT SPECIFIC FINITE ELEMENT MODELS OF THE HAEMOPHILIC ANKLE** H. G. Talbott, R. A Wilkins, A. C Redmond, C. L Brockett, M. Mengoni **5:12pm - 5:24pm** **INVESTIGATION OF THE EFFECT OF FOOT SOFT TISSUE STIFFENING ON THE PLANTAR CONTACT PRESSURE** Z. Kamal, E. E. Hekman, G. {. Verkerke **5:24pm - 5:36pm** **VALIDATION OF AN MRI-BASED PERSONALIZED MODEL OF THE SUBTALAR JOINT** M. Conconi, A. Pompili, N. Sancisi, A. Leardini, C. Belvedere **5:36pm - 5:48pm** **A comparison of foot mechanics between automatically generated personalised and scaled generic skeletal models** E. A. Meilak, L. Modenese, C. Stewart **5:48pm - 6:00pm** **Using Carbon Fiber Custom Dynamic Orthoses To Prevent Post-Traumatic Ankle Osteoarthritis** K. Anderson, M. Corlett, J. Wilken, D. D Anderson	**TR04.8: Tissue engineering II** Location: D. Luis Hall Chair: **Gwendolen Reilly** Chair: **Alberto Sensini** **5:00pm - 5:12pm** **TISSUE-ENGINEERED COLLAGENOUS FIBROUS CAP MODELS TO EXPLORE ATHEROSCLEROTIC PLAQUE RUPTURE** T. Wissing, K. van der Heiden, S. Serra, A. Smits, C. Bouten, F. Gijsen **5:12pm - 5:24pm** **FABRICATION OF MAGNESIUM AND STRONTIUM SUBSTITUTED HYDROXYAPATITE-POLYCAPROLACTONE COMPOSITES VIA 3D PRINTING FOR THE USAGE AS BONE FILLER** D. Syla, L. Grillini, L. Forte, F. Claeyssens, G. Reilley **5:24pm - 5:36pm** **In-Vitro/In-Silico Modelling of Core-Shell Structures as Advanced Barrier Models** N. Guazzelli, L. Cacopardo, A. Ieva, A. Corti, A. Ahluwalia **5:36pm - 5:48pm** **TISSUE REMODELING AT THE INTERFACE BETWEEN PYROCARBON INTERPOSITION IMPLANTS AND HUMAN HUMERAL BONE** R. Gauthier, G. Ouenzerfi, I. de Gaudemaris, N. Attik, M. Hassler, A.-M. Trunfio-Sfarghiu **5:48pm - 6:00pm** **ELECTROSPUN POLYMER GRAFT AS AN OPTION FOR TISSUE REPLACEMENT IN SEVERE SPRING LIGAMENT INJURIES** S. Nieto, C. J. Cifuentes, J. C. Cruz, J. Hinojosa
	TR05.8: Corporate Members Session Location: Porto Hall	**TR06.8: Clinical and translational biomechanics / in silico trials III** Location: Arrabida Hall Chair: **Richie Gill** Chair: **Marco Viceconti** **5:00pm - 5:25pm** **IN SILICO TRIALS TO ASSESS THE SAFETY AND EFFICACY OF NEW TREATMENTS FOR MUSCULOSKELETAL DISEASES** M. Viceconti **5:25pm - 5:37pm** **Markov chains with patient-specific FE models for in silico trials of antiresorptive drugs** A. A. La Mattina, M. Viceconti	**TR07.8: Biomaterials II** Location: Miragaia Hall **5:00pm - 5:25pm** **TAILOR-MADE POLYMERS: AN ADDITIONAL DEGREE OF FREEDOM IN THE TUNING OF MECHANICAL PROPERTIES IN TISSUE MODELING** G. Ciardelli **5:25pm - 5:37pm** **ALIGNED ELECTROSPUN FIBRES GUIDE COLLAGEN DEPOSITION TO SUPPORT A LAMELLA-LIKE TWISTED ORIENTATION BY MSCS** A. J Hann, G. C Reilly, N. Green, F. Claeyssens	**TR08.8: Advance computing for biomechanics III** Location: S. Joao Hall **5:00pm - 5:12pm** **CFD SIMULATION OF THA FOR DIFFERENT FEMUR POSITIONS INCLUDING MICROMOTION BETWEEN BONE AND IMPLANT** A. Hrouda, M. Vanierschot, L. Capek, M. Mulier, K. Denis **5:12pm - 5:24pm** **TESTING SIMULATED CARTILAGE BIOMECHANICS TO PREDICT KNEE OSTEOARTHRITIS: DATA FROM THE OSTEOARTHRITIS INITIATIVE**

		5:37pm - 5:49pm **Changes in gait patterns after hip arthroplasty - comparing IMU- and marker-based data** C. Nüesch, P. Ismailidis, D. Koch, K. Stoffel, A. Mündermann	5:37pm - 5:49pm **Surface modifications to promote the osteoconductivity of UHWMPE fabrics for a novel biomimetic artificial disc prosthesis: an in vitro study** C. A. M. Jacobs, E. E. Cramer, A. A. Dias, H. Smelt, S. Hofmann, K. Ito 5:49pm - 6:01pm **A FRAMEWORK TOWARDS THE DESIGN OF TUNABLE AND GRADED OPEN-CELL BONE SCAFFOLDS WITH ANISOTROPIC PROPERTIES** K. Cheikho, C. Laurent, J.-F. Ganghoffer	A. Paz, R. K. Korhonen, J. J. García, M. E. Mononen 5:24pm - 5:36pm **Fluid-Structure Interaction Analysis of Descending Aorta After VSRR Surgery: The Effects of Graft Stiffness** G. Nannini, M. C. Palumbo, S. Saitta, A. Caimi, J. D. Humphrey, Y. Wang, L. N. Girardi, M. Gaudino, J. W. Weinsaft, E. Votta, A. Redaelli 5:36pm - 5:48pm **IMPLEMENTATION OF SMOOTHED SURFACE, SLIDING CONTACT IN THE VOXEL BASED FINITE ELEMENT SOLVER PAROSOL** F. M. Trommer, P. Bhattacharya
6:00pm - 7:00pm	**ESB General Assembly** Location: **Archive Hall** Chair: **Harry van Lenthe**			
8:00pm - 11:00pm	**ESB 2022 Congress Dinner** Venue: Real Companhia Velha Cellars - Baron´s hall (Azevedo Magalhaes 314, Via Nova de Gaia. Metro: General Torres			

Date: Wednesday, 29/June/2022

8:30am - 9:45am

TR01.9: Patient-specific modelling IV
Location: Archive Hall
Chair: Claudio Vergari

8:30am - 8:42am
CT-Based FEA and Computational Fluid Dynamics Applied to Scaffold-Based Reconstruction of a Sheep Mandible
B. M. Ferguson, W. Lewin, H. Zreiqat, J. Clark, Q. Li

8:42am - 8:54am
Ultrasound-based FSI modeling of aortic aneurysms: impact of the aortic bifurcation and inlet velocity profile
J. Fonken, E. van Engelen, E. Maas, A. Nievergeld, M. van Sambeek, F. van de Vosse, R. Lopata

8:54am - 9:06am
VALIDATION OF AN IMAGE-BASED APPROACH FOR PATIENT-SPECIFIC ARTERIAL MODELLING IN CORONARY STENTING SIMULATIONS
G. Poletti, L. Antonini, P. Tsompou, G. S. Karanasiou, D. I. Fotiadis, L. Petrini, G. Pennati

9:06am - 9:18am
EVALUATING THE EFFECT OF COMPUTATIONAL DOMAIN REDUCTION IN ASCENDING AORTA SIMULATIONS
A. Martinez, L. Geronzi, M. Daniel, P. Escrig, J. Tomasi, M. Rochette, M. E. Biancolini

9:18am - 9:30am
PATIENT-SPECIFIC PRE- AND POST-SURGICAL STOMACH MODELS
I. Toniolo, A. Berardo, S. Perretta, G. Quero, C. Fiorillo, E. L. Carniel

9:30am - 9:42am
ON THE USE OF DIGITAL TWIN TECHNOLOGY ARIELLE FOR THE DEVELOPMENT OF PERINATAL LIFE SUPPORT SYSTEMS
B. G. van Willigen, M. B. van der Hout-van der Jagt, W. Huberts, F. N. van de Vosse

TR02.9: Musculoskeletal biomechanics III: Hip, trunk, foot
Location: Infante Hall
Chair: Ilse Jonkers
Chair: Erica Beaucage-Gauvreau

8:30am - 8:42am
Hip contact forces in patients with increased femoral antetorsion do not differ with different gait patterns
N. Alexander, E. Viehweger, J. Cip, R. G. Brunner, E. De Pieri

8:42am - 8:54am
Differences in impingement patterns in cam-type hips with superior and anterior asphericity of the femur
A. C. Jones, T. D. Stewart, N. Maher, C. Holton

8:54am - 9:06am
COMPARATIVE EFFECTS OF SURGICAL AND NON-SURGICAL THERAPY ON HIP CONTACT FORCE FOR FEMOROACETABULAR IMPINGEMENT SYNDROME
A. Nasseri, L. Diamond, T. Savage, T. Grant, M. Hall, K. Bennell, J. Eyles, L. Spiers, D. Hunter, D. Lloyd, D. Saxby

9:06am - 9:18am
SINERGY-BASED MULTIBODY KINEMATICS OPTIMIZATION TO TRACK ALL THE FOOT BONES WITH A STANDARD GAIT PROTOCOL
A. Pompili, M. Conconi, N. Sancisi, A. Leardini, S. Durante, C. Belvedere

9:18am - 9:30am
REFINING THE OXFORD FOOT MODEL TO DESCRIBE THE KINEMATICS OF THE MEDIAL LONGITUDINAL ARCH
J. Uhan, A. Kothari, A. Zavatsky, J. Stebbins

9:30am - 9:42am
Validation of an electromyography-driven musculoskeletal model for trunk mechanical analysis
A. Moya-Esteban, H. van der Kooij, M. Sartori

TR03.9: Implants / orthotics / prosthetics / devices VII: Bone response
Location: D. Maria Hall
Chair: PETER ZIOUPOS
Chair: Federico Andrea Bologna

8:30am - 8:42am
TRIPLY PERIODIC MINIMAL SURFACE FOR BIOINSPIRED DISSIMILAR MATERIAL INTERFACING
M. Cruz Saldivar, E. Tay, E. L. Doubrovski, M. J. Mirzaali, A. A. Zadpoor

8:42am - 8:54am
THE ROLE OF THE SOCKET IN BMD LOSS IN TRANSFEMORAL AMPUTEES
J. L. Zavaleta Ruiz, S. Dimartino, L. Hutton, P. Pankaj

8:54am - 9:06am
INCIDENCE OF PELVIC BONE OVER THE STRESS STATE AT THE RESIDUAL LIMB/SOCKET INTERFACE OF TRANSFEMORAL AMPUTEES
J. Atehortua C., V. Mejía Gallón, J. Ramírez

9:06am - 9:18am
Validated Finite Element simulation of porous titanium samples under fatigue loading for design optimization
A. Vautrin, J. Aw, E. Attenborough, P. Varga

9:18am - 9:30am
LONGITUDINAL FUNCTIONAL ASSESSMENT OF A TRANSFERMORAL AMPUTEE PATIENT TREATED WITH OSSEOINTEGRATION SURGERY
S. Di Paolo, D. Alesi, A. I. Mirulla, E. Gruppioni, S. Zaffagnini, L. Bragonzoni

9:30am - 9:42am
THE INFLUENCE OF SCREW CONFIGURATIONS ON LCP UNDER THE TIME-DEPENDENT CALLUS HEALING PROCESS
Z. Li, Z. Ding, S. Zhu, Z. Wu

TR04.9: Mechanobiology III: In silico
Location: D. Luis Hall
Chair: Hans Van Oosterwyck

8:30am - 8:42am
A coupled finite element and systems biology model to study the role of mechanics and inflammation in knee OA
S. Mukherjee, R. Lesage, L. Geris

8:42am - 8:54am
IDENTIFICATION OF THE MOST IMPORTANT CELLULAR PROCESSES BEHIND IMPAIRED BONE REGENERATION IN TYPE-2 DIABETES
M. Jaber, G. Duda, S. Checa

8:54am - 9:06am
EMERGENCE OF BONE REMODELLING BEHAVIOUR FROM A MICRO-MULTIPHYSICS AGENT-BASED MODEL
J. J. Kendall, D. Boaretti, C. Ledoux, F. C. Marques, E. Wehrle, R. Müller

9:06am - 9:18am
BIOMECHANICAL MODEL OF BONE REMODELING COUPLED WITH ADVANCED DISCRETIZATION METHODS
M. Peyroteo, J. Belinha, R. Natal

9:18am - 9:30am
The influence of Wnt pathway in bone remodelling and calcium concentration in microgravity conditions
A. Pica, A. Marinozzi, F. Marinozzi, F. Bini

9:30am - 9:42am
DISRUPTED OSTEOCYTE CONNECTIVITY AND MECHANOSENSATION IN BONE WITH AGING AND DEFECTIVE TGF-B SIGNALLING
S. Verbruggen, C. Schurman, T. Alliston

TR05.9: Sport biomechanics I
Location: Porto Hall
Chair: Hans Kainz
Chair: António Prieto Veloso

8:30am - 8:42am
HIP CONTACT FORCES DURING SPRINTING IN FEMOROACETABULAR IMPINGEMENT SYNDROME
B. Goncalves, E. Meinders, D. Saxby, R. Barrett, L. Diamond

8:42am - 8:54am
Muscle Contributions To Knee Bone-on-Bone Forces during an Horizontal Deceleration Task in Elite Athletes
R. B. Mateus, V. Ferrer-Roca, F. João, A. P. Veloso

8:54am - 9:06am
V-SPINE ANGLE AND GROUND REACTION FORCES IN FAST BOWLING IN CRICKET
R. E. Ferdinands, U. Singh

9:06am - 9:18am
HIGHER JOINT LOADING DUE TO INCREASED JOINT ANGLES IN PROFESSIONAL COMPARED TO NOVICE LATIN DANCERS
C. Egner, H.-B. Schmiedmayer, H. Kainz

9:18am - 9:30am

TR06.9: Impact / injury biomechanics I
Location: Arrabida Hall
Chair: David Mitton
Chair: Ciaran Simms

8:30am - 8:55am
DIGITAL TWINS AND COUPLED APPROACHES FOR MANAGEMENT OF TIBIAL PLATEAU FRACTURE
A. Germaneau

8:55am - 9:07am
A multimodal framework for evaluating the efficacy of orthopaedic implants in a sideways fall impact
E. Bliven, A. Fung, I. Fleps, A. Baker, B. Helgason, P. Guy, P. Cripton

9:07am - 9:19am
MECHANICAL CARACTERIZATION OF A KNEE COMPRESSION FRACTURE BY H-DVC ON A CLINICAL CT-SCAN
M. Severyns, T. Vendeuvre, K. Aubert, V. Valle, A. Germaneau

9:19am - 9:31am
EXPERIMENTAL STUDY OF CERVICAL SPINE INJURY AND KINEMATICS IN LATERAL HEAD IMPACT
M.-H. Beausejour, N. Bailly, W. Wei, L. Troude, P. Panichelli, P.-J. Arnoux

9:31am - 9:43am

TR07.9: Skin biomechanics
Location: Miragaia Hall
Chair: Jérôme Molimard
Chair: Michael Crichton

8:30am - 8:55am
SKIN – AN ACCESSIBLE WINDOW TO HEALTH
M. Crichton

8:55am - 9:07am
Characterising the mechanical properties of skin wounds
S. Medina-Lombardero, J. Cash, B. Reuben, M. Crichton

9:07am - 9:19am
combined measurement of friction and through-thickness deformation on ex vivo skin samples
B. Eydan, B. Pierrat, N. Curt, H. Zahouani, J. Molimard

9:19am - 9:31am
TENSILE TESTING OF CELL SHEETS: AN EXPERIMENTAL APPROACH
M. G. Fernandes, M. D. Malta, A. André, P. Martins, A. P. Marques

TR08.9: Inspirational key note lecture - "How to Communicate Science"
Location: S. Joao Hall
Lecturer: prof. Joana Lobo Antunes

	A postural strategy at string release in elite archers A. KUCH, R. TISSERAND, F. DURAND, T. MONNET **9:30am - 9:42am** **The reliability of a novel 3D motion capture protocol for the analysis of instep soccer kick kinematics** D. Al Otti, L. Scheys	**CHANGE OF DIRECTION BIOMECHANICS AND COORDINATION IN ANTERIOR CRUCIATE LIGAMENT-INJURED FEMALE FOOTBALLERS** S. Di Paolo, L. Bragonzoni, A. Grassi, S. Zaffagnini		
9:45am - 10:15am	**Coffee Break** Location: West Ground floor			
10:15am - 11:40am	**TR01.10: Cardiovascular biomechanics VIII: Multiscale computational modeling** Location: Archive Hall Chair: **Fanette Chassagne** Chair: **Diego Gallo** **10:15am - 10:40am** **Opportunities in multiscale and multiphysics human heart modeling** M. Peirlinck **10:40am - 10:52am** **THE INFLUENCE OF THE ORTHOTROPIC TISSUE IN A ELECTROMECHANICAL HEART MODEL** D. Holz, D. Martonova, E. Schaller, M. T. Duong, M. Alkassar, S. Leyendecker **10:52am - 11:04am** **USING THE DIGITAL TWIN OF HUMAN FETAL HEART TO PREDICT OUTCOMES OF A FETAL HEART INTERVENTION** L. E. Green, W. X. Chan, A. Tulzer, G. Tulzer, C. H. Yap **11:04am - 11:16am** **COMPUTATIONAL STUDY ON TWO IDEALIZED MODELS OF THE LEFT VENTRICLE WITH DIFFERENT MYOFIBER ARCHITECTURES** K. Osouli, F. De Gaetano, P. Zunino, M. L. Costantino **11:16am - 11:28am** **IMPACT OF HYPERTENSION AND ARCH MORPHOLOGY ON AORTIC HEMODYNAMICS: A PRELIMINARY NUMERICAL ANALYSIS** M. A. D'Attimo, A. Caimi, M. Marrocco-Trischitta, F. Sturla, A. Redaelli	**TR02.10: Musculoskeletal biomechanics IV: Methods** Location: Infante Hall Chair: **Claudia Mazzà** Chair: **Simon Herger** **10:15am - 10:40am** **Biomechanics of craniofacial growth** M. Moazen **10:40am - 10:52am** **Tendon compliance affects time-series energy expenditure** A. I. Luis Pena, M. Afschrift, F. De Groote, E. M. Gutierrez-Farewik **10:52am - 11:04am** **CALIBRATION OF A NEUROMUSCULOSKELETAL MODEL AT THE JOINT TORQUE AND JOINT STIFFNESS LEVELS SIMULTANEOUSLY** C. P. Cop, A. C. Schouten, B. Koopman, M. Sartori **11:04am - 11:16am** **Estimating a single maximum muscle-tendon length from discretised muscles** C. F. Hayford, E. Montefiori, E. Pratt, C. Mazzà **11:16am - 11:28am** **QUANTITATIVE VALIDATION OF A DEEP LEARNING BASED MARKERLESS MOTION CAPTURE SYSTEM** T. Templin, T. Eliason, D. Chambers, N. Louis, O. Medjaouri, K. Saylor, D. Nicolella **11:28am - 11:40am** **SMART FLEXIBLE GARMENT AND RAPID NEUROMUSCULOSKELETAL MODELLING FOR FAST AND ACCURATE CLINICAL DECISION-MAKING** D. Simonetti, B. Koopman, S. Massimo	**TR03.10: Hard tissue biomechanics IV: Bone remodelling, and diseases** Location: D. Maria Hall Chair: **Enrico Dall'Ara** Chair: **Alexandra Tits** **10:15am - 10:27am** **Effectiveness of Alternating PTH and Mechanical Loading Treatment in an Ovariectomised Mouse Model** V. S. Cheong, B. Roberts, V. Kadirkamanathan, E. Dall'Ara **10:27am - 10:39am** **Homogenized-FE-based inverse bone remodeling: Modified optimization criterion and evaluation on the distal radius** S. Bachmann, D. H. Pahr, A. Synek **10:39am - 10:51am** **MICRO-FE DERIVED MECHANICAL PROPERTIES FOR TRABECULAR BONE REMODELING AND ADAPTATION UNDER LOADING** D. BOARETTI, F. C. MARQUES, J. J. KENDALL, G. A. KUHN, E. WEHRLE, Y. D. BANSOD, R. MÜLLER **10:51am - 11:03am** **DAMAGE MECHANICS OF TYPE-2 DIABETIC TRABECULAR BONE SUBJECT TO MONOTONIC AND CYCLIC LOADING** M. Britton, J. Schiavi, T. J Vaughan **11:03am - 11:15am** **In end-stage knee osteoarthritis the subchondral bone microarchitecture of the tibial plateau is correlated to that of the distal femur** F. Azari, W. Colyn, J. Bellemans, L. Scheys, G. H. van Lenthe **11:15am - 11:27am** **NEW INSIGHTS INTO HIGH-RESOLUTION STRAIN FIELDS OF TRABECULAR BONE USING DIGITAL IMAGE CORRELATION** N. Amraish, D. Pahr **11:27am - 11:39am** **SITE-MATCHED MICROPILLAR COMPRESSION AND RAMAN SPECTROSCOPY TO ASSESS JAW BONE QUALITY** T. Kochetkova, A. Groetsch, C. Peruzzi, M. Indermaur, S. Remund, B. Neuenschwander, J. Hofstetter, B. Bellon, J. Michler, P. Zysset, J. Schwiedrzik	**TR04.10: Mechanobiology IV: In silico** Location: D. Luis Hall Chair: **Hans Van Oosterwyck** Chair: **Daphne Weihs** **10:15am - 10:27am** **A 3D COMPUTATIONAL MODEL OF AORTIC VALVE INTERSTITIAL CELL CONTRACTILE BEHAVIOR WITHIN A PEG HYDOGEL MEDIUM** A. Khang, M. S. Sacks **10:27am - 10:39am** **AGENT – BASED MODEL OF VASCULOGENESIS INCLUDING CELL – ECM INTERACTIONS** A. Carrasco-Mantis, T. Alarcón, J. A. Sanz-Herrera **10:39am - 10:51am** **THE ROLE OF OUTER-VASCULAR MECHANICS ON SPROUTING ANGIOGENESIS: AN IN SILICO STUDY** C. Dazzi, J. Mehl, G. N. Duda, S. Checa **10:51am - 11:03am** **NUMERICAL AND EXPERIMENTAL APPROACH TO STUDY THE RESPONSE OF YAP AND NPC TO DIFFERENT MECHANICAL SIGNALS** S. Saporito, C. F. Natale, C. Menna, P. A. Netti, M. Ventre **11:03am - 11:15am** **MAGNETO-ACOUSTIC INTERACTION IN MAGNETIC NANOSYSTEMS** R. Marqués, A. Ashofteh Yazdi, J. Melchor, R. Ibarra, G. Rus **11:15am - 11:27am** **Agent-Based Model of Long-term Disease Progression in Duchenne Muscular Dystrophy** K. Crump, S. Peirce-Cottler, S. Blemker **11:27am - 11:39am** **In silico avatars of cells to predict and drive cell migration on travelling waves** J.-L. Milan, M. Vassaux, L. Pieuchot, K. Anselme, I. Manifacier
	TR05.10: Sport biomechanics II Location: Porto Hall Chair: **António Prieto Veloso** Chair: **Joao Paulo Vilas-Boas** **10:15am - 10:27am** **CONTRIBUTIONS TO THE SHAPE OF THE FORCE-VELOCITY RELATIONSHIP IN SIMULATIONS OF LOADED SQUAT JUMPS** S. J. Allen **10:27am - 10:39am** **A KINEMATIC ANALYSIS OF THE 10-BALL BREAK IN PROFESSIONAL POOL BILLARDS**	**TR06.10: Impact / injury biomechanics II** Location: Arrabida Hall Chair: **David Mitton** Chair: **Ciaran Simms** **10:15am - 10:40am** **Modelling blast injury; from clinical data to pathophysiology and protection** S. Masouros **10:40am - 10:52am** **TOWARDS COMPUTATIONAL MODELLING OF ACTIVE RESPONSE IN CYCLIST FALLS FROM IN-THE-WILD FOOTAGE**	**TR07.10: Ergonomics / occupational biomechanics / rehabilitation I** Location: Miragaia Hall Chair: **Margit Gföhler** Chair: **Xuguang Wang** **10:15am - 10:40am** **EXPERIMENTAL AND BIOMECHANICAL MODELING INVESTIGATIONS FOR UNDERSTANDING SEATING DISCOMFORT** X. Wang **10:40am - 11:05am**	**TR08.10: Biofluid and transport I** Location: S. Joao Hall Chair: **Frans van de Vosse** Chair: **Junfeng Zhang** **10:15am - 10:40am** **Computer Modelling and Investigations of Capsule Dynamics in Flows: Membrane Viscosity Effect** J. Zhang **10:40am - 10:52am** **UMBILICAL CORDS ABNORMALITIES CLASSIFICATION BASED ON**

P. Kornfeind, T. Boindl, A. Baca

10:39am - 10:51am

DO FATIGUE-INDUCED CHANGES IN COGNITIVE PERFORMANCE RELATE TO CHANGES IN KNEE MECHANICS?

F. Bertozzi, P. D. Fischer, F. Aflatounian, K. A. Hutchison, M. Galli, M. Tarabini, C. Sforza, S. M. Monfort

10:51am - 11:03am

FINGERBOARD HANGING LOCK-OFFS: REFINING PRACTICE GUIDELINES FOR CLIMBERS

J. Exel, O. Froschauer, D. Deimel, A. Baca, H. Kainz

11:03am - 11:15am

FINITE ELEMENT MODELLING OF SPORTS FOOTWEAR GRIP PERFORMANCE ON WET HARD SURFACES

L. Sissler, J. Gringet-Charre, K. Beschorner, T. Tarrade

11:15am - 11:27am

Accuracy of a new local positioning system in obtaining speed and acceleration during game sports movements

P. X. Fuchs, Y.-C. Chou, W.-H. Chen, N. J. Fiolo, T.-Y. Shiang

K. Gildea, C. Simms

10:52am - 11:04am

SIMULATION OF BICYCLE ACCIDENTS USING HUMAN BODY MODELS

K. Brolin, V. Alvarez, A.-K. Säther, D. Olsson, H. Wendelrup

11:04am - 11:16am

PERIPROSTHETIC FRACTURE MODELLING USING A COMBINED FINITE ELEMENT – SMOOTH PARTICLE HYDRODYNAMIC METHOD

Ö. Cebeci, S. Checa

11:16am - 11:28am

Simulating head-first impact in sport: a hybrid multibody and finite element head and neck model

T. Holzinger, J. Martinek, D. Cazzola, B. Sagl

11:28am - 11:40am

BIOMECHANICAL BEHAVIOUR OF THE TRANSVERSE LIGAMENT OF THE ATLAS: AN IN VITRO EXPERIMENTAL ANALYSIS

S. Laporte, S. Persohn, B. Sandoz

Emma4Drive - Digital Human Twins for Evaluating Ergonomics and Safety in New Mobility Solutions

J. Linn, J. Fehr

11:05am - 11:17am

Motion Analysis of Therapeutic Climbing: a Rehabilitation Tool for Children with Cerebral Palsy

C. Monoli, G. Simoni, J. A Tuhtan, E. Palermo, M. Galli, A. Colombo

11:17am - 11:29am

MUSCLE ACTIVITY ASSOCIATED WITH PERFORMING ROBOT-ASSISTED AND CONVENTIONAL LAPAROSCOPY

A. Shugaba, J. Lambert, H. Nuttall, D. Subar, C. Gaffney, T. Bampouras

FLOW SIGNALS FROM DOPPLER ULTRASOUND SIMULATOR

S. Naftali, Y. Nareznoy Ashkenazi, A. Ratnovsky

10:52am - 11:04am

Near wall dynamics of a tilted lighthouse return cannula

F. Fiusco, L. M. Broman, L. Prahl Wittberg

11:04am - 11:16am

An In-Silico Pipeline for Patient-Specific Haemodynamic Analysis of the Aorta

S. Black, C. Maclean, P. Hall Barrientos, K. Ritos, A. Kazakidi

11:45am - 12:30pm

Keynote lecture 3: Meta-biomaterials, Amir Zadpoor
Location: **Archive Hall**
Chair: **David Mitton**
Chair: **Renato Natal Jorge**

12:30pm - 1:15pm

Lunch Break
Location: **West Ground floor**

1:15pm - 2:00pm

Poster sessions: PS13 - PS18
Location: **West Ground floor**

3D-printer enabling customized anatomic models

L. Jaksa, A. Lorenz

Calibration wand design for motion analysis

K. Rácz, R. M. Kiss

PARROTS ACHIEVE GREATER MECHANICAL EFFICIENCY ON ARBOREAL SUBSTRATES

M. W. Young, E. Dickinson, N. D. Flaim, A. C. Bastian, M. C. Granatosky

MUSCULOSKELETAL SOFTWARE FOR TEACHING BIOMECHANICS AT UNDERGRADUATE AND MASTERS LEVEL

B. May, J. Shippen

Color-Doppler based hemodynamics of aortic phantoms

M. N. Antonuccio, F. Bardi, E. Vignali, E. Gasparotti, A. This, L. Rouet, S. Avril, S. Celi

RELIABILITY ANALYSIS OF MAGNETIC RESONANCE MEASUREMENTS OF FATTY INFILTRATION IN ADULTS WITH SPINAL DEFORMITIES

E. Beaucage-Gauvreau, P. Severijns, T. Overbergh, A. Meynen, T. Ackermans, N. Schepens, L. Moke, L. Scheys

A VIRTUAL LABORATORY FOR THE DETERMINATION OF MINIMAL FUSION AREAS IN TIBIA PSEUDARTHROSIS

M. Roland, S. Diebels, K. Wickert, A. Andres, B. Bouillon, T. Tjardes

Development of Sol-Gel TiO2/Hydroxyapatite Composite Osteoinductive Coatings

J. Rodrigues, L. Grillini, R. Bendoni, L. Forte, G. Reilly, F. Claeyssens

LOW-COST METHODOLOGY FOR PVA PHANTOM MANUFACTURING AS SOFT TISSUE SIMULANT

B. Miguélez Garrido, L. Elvira, J. Pascau, M. Marco

CORROSION RESISTANCE OF THE GRADE 2 TITANIUM AFTER THERMOPLASTIC DEFORMATION

J. Bańczerowski, M. Pawlikowski, T. Płociński, M. Grobelny

DEVELOPMENT AND MODELLING OF FUNCTIONALLY GRADED BIOINSPIRED HIP IMPLANT IN REDUCING STRESS SHIELDING

S. A. Naghavi, J. Hua, M. Moazen, S. Taylor, C. Liu

DESIGN, DEVELOPMENT, AND TESTING OF A NOVEL WEARABLE DEVICE FOR REHABILITATION AFTER ANKLE SPRAIN

N. Breitman, A. Fischer

EFFECTS OF BREATHING ON SPINE POSTURE AND STABILITY

P. Chaves, J. Ramirez, J Noailly, S. Tassani

MECHANICAL BEHAVIORS OF THE SACROILIAC JOINT

A. Jeon, E. Hong, T. S. Bae, D.-S. Kwak

FLUID-STRUCTURE INTERACTION ANALYSES OF BLOOD FLOWS IN LARGE ARTERIES
D. Jodko

ACOUSTIC LENS DESIGN FOR IN-VITRO CELL STIMULATION: A NUMERICAL STUDY
E. Doveri, M. Majnooni, C. Guivier-Curien, P. Lasaygues, C. Baron

Computational modelling of cell response to various mechanical stimuli
V. V. S. V. Jakka, L. Orlova, J. Bursa

CLOSED-LOOP BIAXIAL CELL STRETCHING SYSTEM FOR CONTROLLING CELL MECHANO-TRANSDUCTION PROCESSES
L. Crimaldi, V. Panzetta, C. Natale, P. A. Netti

Comparison of different tensegrity models of the living cell undergoing compression
A. Arduino, S. Pettenuzzo, A. Berardo, V. Salomoni, E. L. Carniel, C. Majorana

TRILEAFLET VS BILEAFLET MECHANICAL AORTIC VALVE – ASSESSMENT OF THEIR BLOOD ANTICOAGULATION PERFORMANCE
A. Nieroda, M. Pawlikowski

ADHESION PROPERTIES OF A MONOLAYER OF ENDOTHELIAL CELLS ON MICROFLUIDICS DEVICES
I. Ríos, M. A. Martínez, E. Peña

A NOVEL FSI FRAMEWORK FOR HIGH-FIDELITY SIMULATION OF HEMODYNAMICS IN INTRACRANIAL ANEURYSMS
A. Goetz, P. Jeken-Rico, R. Nemer, P. Meliga, A. Larcher, A. Sanches, Y. Özpeynirci, T. Liebig, E. Hachem

Analysis of the influence of the arterial wall mechanics in a mechanobiological model of atherosclerosis
P. Hernández-López, N. Laita, M. Cilla, M. Á. Martínez, E. Peña

A NEW TECHNIQUE OF RECONSTRUCTING 3D GEOMETRIES FROM CT IMAGES – A CFD STUDY
M. Meskin, R. Hvid, M. Sand Traberg

A Fluid-Structure Interaction approach for patient-specific thoracic aortic wall stress analysis using SimVascular
R. B. Valente, A. F. G. Mourato, M. G. Brito, J. M. C. Xavier, S. Avril, J. M. d. A. Cesar de Sá, A. C. Tomás, J. Fragata

In silico Ultrasound stimulation Of osteocyte in Bone lacuno-canalicular network
M. Majnooni, E. Doveri, P. Lasaygues, C. Guivier-Curien, C. Baron

SILICO AND IN VITRO TESTS TO ASSESS MECHANICAL HEMOLYSIS IN HEMODIALYSIS CATHETERS
I. Guidetti, F. De Gaetano, D. Gallo, U. Morbiducci, M. L. Costantino

WHICH POSTERIOR SLOPE SHOULD BE USED WITHIN A MEDIAL STABILISED TKA DESIGNS: AN IN VITRO WEIGHT-BEARING KNEE RIG STUDY
L. Bauer, C. Thorwächter, A. Steinbrück, V. Jansson, H. Traxler, B. Holzapfel, M. Woiczinski

APPROACH TO HUMAN JOINT ANALYSIS IMPLEMENTING ACCELEROMETERS FOR OUTDOOR MOTION STUDIES
J. A. Hinojosa Virviescas, D. S. Pulgarín Castañeda, C. Cifuentes-De la Portilla

A VISCOELASTOPLASTIC MODEL TO INTERPRET DENTAL CEMENTS RESPONSE TO A NANOINDENTATION TEST
G. Serino, A. Audenino

Finite Element Analysis of Mechanical Behavior of a Jaw Plate during the Implant Biodegradation Process
P. Ansoms, M. Barzegari, L. Geris

VENTRICULAR SEPTAL DEFECT FROM IN SILICO STUDY TO CLINICAL PRACTICE
M. BELGHITI ALAOUI, F. EL-LOUALI, M. EVIN

FRACTURE RESISTANCE OF ZIRCONIA REINFORCED LITHIUM SILICATE DENTAL RESTORATIONS AFTER THERMOCYCLING
R. D. Vasiliu, L. Rusu, A. Boloș, S. D. Porojan, L. Porojan

STRESS RELAXATION PHENOMENA IN POLYMERIC ORTHODONTIC LIGATURES
G. Milewski

Diabetic shoe upper pressures: Results of a proof concept
S. Lopes, P. Martins, C. Silva, A. Marques, L. Figueiredo

A THUMS BASED MULTIBODY MODEL FOR DRIVING SIMULATIONS WITH SEAT INTERACTION
M. Roller, D. N. Fahse, M. Harant, M. Obentheuer, J. Fehr, J. Linn

Evaluation of Optimal Procedures for Medical Staff Handling with Patients in Nursing Care
Z. Horak, M. Docekalova, P. Vrsecka, M. Hanacek

ON THE PERFORMANCE OF CABLE-DRIVEN MOBILE LOWER LIMB REHABILITATION EXOSKELETON: THREE VERSUS FOUR CABLES
R. Prasad, K. Khalaf, M. I. Awad, I. Hussain, H. F. Jelinek, U. Huzaifa, M. E. Rich

SOFT DESIGN FOR AN REHABILITATION EXOSUIT: A PRELIMINARY APPROACH
A. D. André, A. M. Teixeira, P. Martins

PREDICTING FRACTURE LOCALIZATION IN TRABECULAR BONE
M. Pani, C. Ruiz Wills, M. Ballart, S. Tassani

NUMERICAL APPROACH TO IMPROVE SOCKET-LINER SYSTEM USING TAILORABLE 3D PRINTED METAMATERIALS

V. Plesec, G. Harih

ANALYSIS OF THE EFFECT OF SKINFOLD THICKNESS ON MYOTONOMETRIC SIGNAL CHARACTERISTICS
S. S. Banerjee, A. Arunachalakasi, R. Swaminathan

Study of Torsional wave behavior due to Depth change in Hydrogel Phantoms
H. Shamimi Noori, J. Torres, G. Rus Carlborg

DETERMINING TIP RADIUS IN AFM NANOINDENTATION
A. Stylianou, S.-V. Kontomaris, A. Malamou

AGE AT DEATH ESTIMATION BASED ON BONE TISSUE PROPERTIES BEFORE AND AFTER SKELETAL MATURITY
A. Bonicelli, E. F Kranioti, B. Xhemali, P. Zioupos

Analysis of eye load during ball impact
T. Bacova, Z. Horak, V. Baca

Measuring spinal rod forces for Scoliosis and/ or fracture fixation in vivo
M. Mangaleshwaran, J. Leong, S. Taylor

Design and translation of a modular hip implant device for soft tissue tension and motion tracking evaluated in a sheep model during hip arthroplasty
J. C. Wei, N. A White, J. Pérez de Frutos, E. M Pérez Merino, N. Pastor Sirvent, M. Santella, B. J Blaauw, F. M Sánchez-Margallo, D. Durán-Rey, I. López-Agudelo, M. R González-Portillo, J. A Sánchez Margallo, J. Dankelman, T. Horeman

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MECHANICAL PROPERTIES OF GYROID UNIT CELLS FOR BIOMEDICAL APPLICATIONS
A. Pais, J. Lino Alves, J. Belinha

A PROTOCOL FOR EVALUATING HAND PROSTHESIS CONTROL
J. V. García-Ortiz, M. C. Mora, J. J. Arroyave-Salazar, A. Pérez-González, I. Llop Harillo

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Numerical study for primary stability assessment in osseointegrated transfemoral prostheses
A. I. Mirulla, A. Valenti, L. Bragonzoni, T. Ingrassia

THE RELATIVE BITE FORCE AND GAPE POTENTIAL OF PSITTACIFORMES
E. Dickinson, M. W Young, M. C Granatosky

MONITORING LOWER LIMB ASYMMETRY DURING REHABILITATION OF ACL RECONSTRUCTED PATIENTS USING DINABANG DEVICE
D. Santos, B. Articardi, J. Garcia, M. Bonilla, J. Comesaña, M. Arriola, F. Motta, F. Simini

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A PROCEDURE TO PERSONALIZE A MUSCLE FATIGUE MODEL FOR SOLVING THE MUSCLE RECRUITMENT PROBLEM
F. Michaud, F. Romero-Sanchez, U. Lúgris, J. Cuadrado

COMPARING THE EFFICIENCY AND ACCURACY OF SEVERAL CONTACT METHODS FOR HUMAN-ENVIRONMENT INTERACTION
F. Mouzo, F. Michaud, U. Lugris, J. Cuadrado

AN INNOVATIVE APPROACH TO INVESTIGATE THE TIBIOFEMORAL ELASTICITY DURING GAIT WITH IN-VIVO 3D COMPLIANCE MATRIXES
F. Bucci, M. Taylor, R. Al-Dirini, S. Martelli

DIFFERENT MUSCLE EXCITATION PATTERNS AND MODEL-BASED MUSCLE FORCES IN PARKINSON'S DISEASE
M. Romanato, D. Volpe, Z. Sawacha

BIOMECHANICAL ANALYSIS OF STRESS CHANGES IN MEDIAL ANKLE LIGAMENTS CAUSED BY ADULT ACQUIRED FLAFOOT DEFORMITY
N. Yanguma Muñoz, B. D. Solorzano, C. Cifuentes-De la Portilla, J. A. Hinojosa Virviescas

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Development of a musculoskeletal model for the determination of muscle activity in the healthy shoulder
L. Bauer, E. Raicholt, M. Woiczinski, P. Müller, I. Santos

THE EFFECT OF SUBSTRATE SIZE ON GRIP AND PULL FORCES IN PARROTS
E. Dickinson, M. W Young, C. J Kim, M. Hadjiargyrou, M. C Granatosky

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MUSCLE TORQUE GENERATORS FOR DIGITAL HUMAN MODEL CONTROL - MEASUREMENT PROTOCOL FOR DATA AQUSITION
M. Obentheuer, M. Harant, E. Bartaguiz, C. Dindorf, J. Linn, M. Fröhlich

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NORMATIVE DATA SET OF THE KNEE EXTENSORS' RATE OF FORCE DEVELOPMENT USING A FIXED HAND-HELD DYNAMOMETER
T. Yona, A. Fischer

Enhancing Dynamic Consistency of Multimodal Motion Data in Musculoskeletal Simulation
I. Wechsler, A. Wolf, S. Wartzack, J. Miehling

Estimation of the free energy barrier of the step of pi release in myosin VI cycle
R. Manevy, M. Caruel, F. Detrez, I. Navizet

KNEE EXTENSORS' RATE OF FORCE DEVELOPMENT MEASUREMENT USING A HAND-HELD DYNAMOMETER AND A 3D PRINTED ADAPTER
T. Yona, A. Fischer

CORNEAL STIFFNESS – IMPORTANT PARAMETER IN INTRAOCULAR PRESSURE MEASUREMENT
B. Hučko

IN VITRO STUDY OF THE INFLUENCE OF VERTEBRAE GEOMETRY ON THE BEHAVIOUR OF LUMBAR ARTHROPLASTY PROSTHESES
F. Zot, A. Germaneau, M. A. Laribi, J. Sandoval, L. Caillé, Y. Ledoux, M. Mesnard, E. Ben Brahim, M. Severyns, V. Valle, T. Vendeuvre

INTRA-OPERATIVE MEASUREMENT OF THE SPINE: TOWARDS IN VIVO BIOMECHANICAL DATA OF PATIENTS WITH IDIOPATHIC ADOLESCENT SCOLIOSIS
F. Erb, N. Gerig, D. Studer, P. Büchler, C. Hasler, G. Rauter

A METHODOLOGY TO DETERMINE THE EFFECTS OF THE PITCHER-GROUND INTERACTION ON FASTBALL PITCH VELOCITY
N. Tuttle, M. A Avalos, M. Meek, Y.-H. Kwon

The effect of cryotherapy on balance recovery at different moments after lower extremity muscle fatigue
Y. He, Z. Gao, G. Fekete, D. Mitic, Y. Gu

Effect of subject-specific mass distribution on joint biomechanics during gait
A. A. V. Hulleck, M. El Rich, T. Liu, K. Khalaf

Influence of modified musculoskeletal model on the hip loading in cerebral palsy patient
J. Skubich, S. Piszczatowski

Patient-Specific Design of High Tibial Osteotomy Plates using Densitometric Calibration
S. Chowdhury, S. Kanagalingam, L. Grassi, T. Boutefnouchet, L. Thomas-Seale

IN SILICO STUDY ON ALLOGRAFT-BASED ACETABULAR RECONSTRUCTION
A. Goyal, Z. Haider, A. Chawla, K. Mukherjee

MECHANICAL FRACTURE ENVIRONMENT IN LOWER EXTREMITY NON-UNIONS – AN INDIVIDUALIZED SIMULATION-BASED STUDY
A. Andres, M. Roland, K. Wickert, S. Diebels, T. Histing, B. Braun

MORPHOLOGICAL AND HAEMODYNAMIC CHARACTERISATON OF TURNER SYNDROME AORTAE
L. Johnston, R. Allen, A. Mason, P. Hall-Barrientos, A. Kazakidi

The feasibility of bespoke rehabilitation robot handgrips to meet the specific needs of stroke patients
L. Li, Q. Fu, S. Tyson, A. Weightman

Generative design of orthosis for patients with degenerative scoliosis
D. F. Landinez Leon, L. D. Parra Gomez

A voronoi-based homogenization method for trabecular microachitecture based on patient-specific micro-CT
Z. Li, S. Zhu, Z. Wu

2:00pm - 3:00pm
Best Doctoral Thesis Award
Location: Archive Hall
Chair: Markus Heller
Chair: Ilse Jonkers

3:00pm - 3:30pm
Coffee Break
Location: West Ground floor

3:30pm - 4:45pm

TR01.12: Cardiovascular IX: Image-based biomechanics
Location: Archive Hall
Chair: Fanette Chassagne
Chair: Diego Gallo

3:30pm - 3:42pm
DECIPHERING VORTICITY IN THE ABDOMINAL AORTIC ANEURYSM
V. Mazzi, K. Calò, D. Gallo, A. Iollo, U. Morbiducci

3:42pm - 3:54pm
PREDICTION OF ANALOG THROMBI MECHANICAL PROPERTIES, COMPOSITION, AND CONTRACTION USING CT IMAGING
J. M. H. Cruts, J.-A. Giezen, K. van Gaalen, R. Beurskens, Y. Ridwan, M. L. Dijkshoorn, H. M. M. van Beusekom, N. Boodt, A. van der Lugt, F. Gijsen, R. Cahalane

3:54pm - 4:06pm
UNIVERSAL LEFT ATRIAL APPENDAGE COORDINATES TO COMPARE AND CLASSIFY PHENOTYPIC FLOW PATTERNS
J. Dueñas-Pamplona, A. Gonzalo, S. F. Bifulco, P. M. Boyle, E. McVeigh, A. M. Kahn, P. Martínez-Legazpi, J. García García, J. Sierra-Pallares, M. García-Villalba, Ó. Flores, J. Bermejo, J. C. del Álamo

4:06pm - 4:18pm
PATIENT-SPECIFIC FLOW SIMULATIONS OF A DISSECTED AORTA INFORMED BY 4D FLOW MRI: THE IMPACT OF SEGMENTAL ARTERIES
C. Stokes, F. Haupt, D. Becker, V. Muthurangu, H. von Tengg-Kobligk, S. Balabani, V. Diaz-Zuccarini

TR02.12: Musculoskeletal biomechanics V: Knee and others
Location: Infante Hall
Chair: Annegret Mündermann
Chair: Claude Fiifi Hayford

3:30pm - 3:42pm
A NEW GENERALIZED CONTINUUM APPROACH TO MODEL SPINAL GROWTH
N. M. Castoldi, M. Antico, M. Martin, P. Pivonka, V. Sansalone

3:42pm - 3:54pm
EXPERIMENTAL INVESTIGATION OF THE FRACTURE MECHANICS OF FEMURS OF ZUCKER DIABETIC FATTY (ZDF) RATS
G. E Monahan, J. Schiavi-tritz, T. J. Vaughan

3:54pm - 4:06pm
INFLUENCE OF LIMB ALIGNMENT AND KNEE JOINT LOADING ON CONDYLAR KINEMATICS USING DYNAMIC VIDEOFLUOROSCOPY
B. Postolka, O. Ulrich, W. R. Taylor, R. List, P. Schütz

4:06pm - 4:18pm
Characterising the relationship between knee bone geometry and passive kinematics
D. O'Rourke, F. Bucci, W. Burton, R. Al-Dirini, M. Taylor, S. Martelli

4:18pm - 4:30pm
Variation in knee contact mechanics due to anatomy
J. Yao, G. Day, N. Wijayathunga, A. Jones, R. Wilcox, M. Mengoni

TR03.12: Implants / orthotics / prosthetics / devices VIII: Multiple topics
Location: D. Maria Hall
Chair: Peter Varga
Chair: Mauricio Cruz Saldivar

3:30pm - 3:42pm
A LUBRICIN-BINDING COATING FOR CARTILAGE RESURFACING IMPLANTS TO REDUCE FRICTION
A. H. A. Damen, C. C. van Donkelaar, P. K. Sharma, T. A. Schmidt, K. Ito

3:42pm - 3:54pm
LOAD TRANSFER IN CUSTOM MADE IMPLANT FOR OSTEOCHONDRAL LESION, A FINITE ELEMENT STUDY
A. Ramos, M. Vieira

3:54pm - 4:06pm
Biomechanical evaluation of a novel biomimetic artificial disc prosthesis in canine cervical cadaveric spines
C. A. M. Jacobs, R. J. Doodkorte, S. A. Kamali, A. M. Abdelgawad, S. Ghazanfari, M. A. Tryfonidou, J. Arts, B. P. Meij, K. Ito

4:06pm - 4:18pm
Novel Biodegradable Carotid Graft: Experimental Assessment Through An Animal Trial
A. Hendrickx, M. Ghasemi, T. Vervenne, T. Langenaeken, H. Bauer, H. Fehervary, M. Cox, P. Claus, F. Rega, N. Famaey, B. Meuris

4:18pm - 4:30pm
INTEGRATION OF MUSCULOSKELETAL AND MODEL ORDER REDUCED FE SIMULATION FOR PASSIVE ANKLE FOOT ORTHOSIS DESIGN

TR04.12: Animal and plant biomechanics
Location: D. Luis Hall
Chair: Christian Peham
Chair: Balázs Gerics

3:30pm - 3:42pm
A COMPUTATIONAL MODEL OF THE ZEBRAFISH HEART ELECTROPHYSIOLOGY
L. Cestariolo, G. Luraghi, P. L'Eplattenier, J. F. Rodriguez Matas

3:42pm - 3:54pm
LAMENESS INFLUENCES BREAKOVER DURATION IN HORSES
E. V. Briggs, C. Mazzà

3:54pm - 4:06pm
HISTOMORPHOMETRIC ANALYSIS OF CANINE TRABECULAR BONE IN THE OSTEOPOROTIC CONTEXT
E. Kostenko, A. Pockevičius, A. Maknickas

4:18pm - 4:30pm

4D FLOW MRI & NETWORK-BASED ANALYSIS OF THE HEMODYNAMIC CORRELATION PERSISTENCE LENGTH IN THE HEALTHY AORTA

K. Calò, A. Guala, D. Gallo, J. Rodriguez Palomares, S. Scarsoglio, L. Ridolfi, U. Morbiducci

4:30pm - 4:42pm

CALIBRATION OF THE MECHANICAL BOUNDARY CONDITIONS OF A THORACIC AORTA MODEL INCLUDING THE HEART MOTION EFFECT

L. Geronzi, A. Martinez, M. E. Biancolini, M. Rochette, O. Bouchot, A. Lalande, P. P. Valentini

4:30pm - 4:42pm

High Tibial Osteotomy Normalizes Knee Ambulatory Loads

E. De Pieri, C. Nüesch, G. Pagenstert, E. Viehweger, C. Egloff, A. Mündermann

D. Scherb, P. Steck, S. Wartzack, J. Miehling

4:30pm - 4:42pm

High-Fidelity Finite Element Stent-Graft Modeling

A. Ramella, F. Migliavacca, J. F. Rodriguez Matas, F. Dedola, M. Conti, F. Heim, S. Allievi, D. Bissacco, M. Domanin, S. Trimarchi, G. Luraghi

TR05.12: Sport biomechanics III
Location: Porto Hall
Chair: Joao Paulo Vilas-Boas
Chair: Hans Kainz

3:30pm - 3:42pm

BALL-FINGER POSITIONING FOR ACCURATE BASEBALL PITCHING

A. Kusafuka, K. Nishikawa, N. Tsukamoto, K. Kudo

3:42pm - 3:54pm

GROUND REACTION FORCE PREDICTION DURING RUNNING USING A FULL-BODY MULTIBODY MODEL

G. Marta, J. Folgado, C. Quental, F. G. Pinto

3:54pm - 4:06pm

Effect of Different Players' Motion Models on Linear and Non-linear Measures of Space Control in Futsal

J. Bischofberger, J. Exel, B. Travassos, J. Sampaio, A. Baca

4:06pm - 4:18pm

APPLYING PRINCIPAL COMPONENT ANALYSIS TO CHARACTERIZE THE BALANCING ABILITY OF ELITE SYNCHRONIZED ICE SKATERS

Z. Palya, B. Petro, R. M Kiss

4:18pm - 4:30pm

THE INFLUENCE OF SEX, AGE AND PEAK KNEE ISOKINETIC TORQUE ON SINGLE LEG HOP DISTANCE

S. Herger, L. Bühl, C. Nüesch, S. Müller, C. Egloff, A. Mündermann

TR06.12: Impact / injury biomechanics III
Location: Arrabida Hall
Chair: David Mitton

3:30pm - 3:42pm

Biomechanical study of electric scooter falls

M. Fournier, N. Bailly, A. Schäuble, Y. Petit

3:42pm - 3:54pm

E-SCOOTER CRASH SCENARIO AND KINEMATICS: ANALYSIS OF 112 CRASH VIDEOS

N. Bailly, S. Honore, Y. Petit, A. Naaim, A. Muller, W. Wei

3:54pm - 4:06pm

PELVIC SUBCUTANEOUS ADIPOSE TISSUE THICKNESS AND OUTER SHAPE CHANGE WITH POSITION FOR NUMERICAL MODELING

D. Hanesch, J. Muehlbauer, E. C. Sattler, N. Moellhoff, R. E. Giunta, S. Peldschus, S. Schick

4:06pm - 4:18pm

BIOMECHANICAL EVALUATION OF THE SPATIAL CONFIGURATIONS OF STABILIZER USED IN DISTAL HUMERUS FRACTURE TREATMENT

A. Kruszewski, P. Piekarczyk, S. Piszczatowski

4:18pm - 4:30pm

CHANGES IN LOADING DURING FRACTURE HEALING DO NOT IMPACT BONE MICROARCHITECTURE OF THE CONTRALATERAL RADIUS

D. Whittier, M. Walle, P. Christen, P. Atkins, C. Collins, M. Blauth, K. Lippuner, R. Müller

4:30pm - 4:42pm

Development of a simplified human thoracic FE model for blunt impact and related trauma.

M. CHAUFER, R. DELILLE, B. BOUREL, C. MARECHAL, F. LAURO, O. MAUZAC, S. ROTH

TR07.12: Ergonomics / occupational biomechanics / rehabilitation II
Location: Miragaia Hall
Chair: Margit Gföhler
Chair: Xuguang Wang

3:30pm - 3:55pm

Individualized vs. Population-based Musculoskeletal Simulation for Medical and Product Engineering

J. Miehling

3:55pm - 4:07pm

Towards the Learning of Human-Seat Interactions for Runtime-Efficient Human Models Based on Pressure Distribution

D. N. Fahse, M. Roller, F. Kempter, J. Fehr

4:07pm - 4:19pm

FE modeling and simulation of the cupula deformation of a semicircular canal in a clinical routine

M. Blaise, D. Baumgartner, A. Charpiot

TR08.12: Biofluid and transport II
Location: S. Joao Hall
Chair: Frans van de Vosse
Chair: Junfeng Zhang

3:30pm - 3:42pm

THROMBUS FORMATION IN A STENOTIC CHANNEL; A VISCOELASTIC MATERIAL MODEL

M. Rezaeimoghaddam, O. Dhaenens, A. Germain, F. N van de Vosse

3:42pm - 3:54pm

STUDY OF THE FLUID BEHAVIOUR IN 3D PRINTED MACROSCAFFOLDS USING CFD ANALYSIS AND PIV

T. Baumgartner, T. Yorov, M. Bösenhofer, O. Guillaume, A. Ovsianikov, M. Harasek, M. Gföhler

3:54pm - 4:06pm

HIGH DENSITY MICROFLUIDIC TRAP ARRAY GEOMETRIC OPTIMIZATION VIA COMPUTATIONAL FLUID DYNAMICS STUDY

N. Ruyssen, J. Fattaccioli, M.-C. Jullien, R. Allena

4:45pm - 5:15pm — **ESB 2022 Closing Ceremony**
Location: Archive Hall