Conference Agenda

Session Overview

Date: Monday, 12/July/2021

10:30am - 11:00am — **Open: Opening**
Opening Ceremony
https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

11:00am - 11:15am — **break-d1-1: Break**

11:15am - 12:15pm — **CV-Imag.1: Imaging for cardiovascular applications**
Session Chair: **Henk Marquering**
https://teams.microsoft.com/l/channel/19%3ae2e5fe20a93440b288ba1568882a6375%40thread.tacv2/TR03_Imaging%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Optimization of MicroCT and Contrast-Enhanced MicroCT for Cardiovascular Applications
L. Leyssens[1], M. Pétré[1,2], G. Kerckhofs[1,2]
[1]UCLouvain, Belgium; [2]KU Leuven, Belgium
ESB2021_1689-Optimization of MicroCT and Contrast-Enhanced MicroCT-1689.pdf

Characterisation of healthy and diseased human carotid arteries using diffusion tensor magnetic resonance imaging
B. Tornifoglio[1,2], A. J. Stone[1,2], C. Kerskens[1,3], C. Lally[1,2,4]
[1]Trinity Centre for Biomedical Engineering, Trinity Biomedical Sciences Institute, Trinity College Dublin, Ireland; [2]Department of Mechanical, Manufacturing and Biomedical Engineering, School of Engineering, Trinity College Dublin, Ireland; [3]Trinity College Institute of Neuroscience, Trinity College Dublin, Ireland; [4]Advanced Materials and Bioengineering Research Centre (AMBER), Royal College of Surgeons in Ireland and Trinity College Dublin, Ireland
ESB2021_1381-Characterisation of healthy and diseased human carotid arteries using diffusion tensor magnetic.pdf

On the potential of strain measurements to segment atherosclerotic plaques based on IVUS images
A. T. Latorre[1], M. Cilla[1,2,3], M. A. Martinez[1,2], J. Ohayon[4,5], E. Peña[1,2]
[1]Aragón Institute of Engineering Research (I3A). University of Zaragoza, Zaragoza, Spain; [2]Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Spain; [3]Centro Universitario de la Defensa, Academia General Militar, Zaragoza, Spain; [4]Laboratory TIMC-IMAG/Biomeca, UGA, CNRS UMR 5525, Grenoble, France; [5]University of Savoie Mont-Blanc, Polytech Annecy-Chambery, Le Bourget du Lac, France
ESB2021_1799-On the potential of strain measurements to segment atherosclerotic plaques based-1799.pdf

PT: IMAGE-BASED WALL SHEAR STRESS ANALYSES IN HUMAN CORONARY ARTERIES: WHERE ARE WE?
F. Gijsen
Erasmus MC, Netherlands, The
ESB2021_1150-PT IMAGE-BASED WALL SHEAR STRESS ANALYSES IN HUMAN CORONARY ARTERIES WHERE ARE WE-1150.pdf

11:15am - 12:15pm — **CV-Impl.1: Implants and devices for cardiovascular applications**
Session Chair: **Giancarlo Pennati**
https://teams.microsoft.com/l/channel/19%3ad29cbbb044b543f58199d8f1a24724a4%40thread.tacv2/TR02_Implants%2520and%2520Devices%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Endovascular Drug Delivery: Stents versus Balloons
J. Escuer-Gracia[1], E. Peña Baquedano[1,2], M. Á. Martínez Barca[1,2], S. McGinty[3]
[1]University of Zaragoza / I3A, Spain; [2]Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Spain; [3]Division of Biomedical Engineering, University of Glasgow, Glasgow, UK
ESB2021_1613-Endovascular Drug Delivery-1613.pdf

How do vessel curvature and plaque composition affect the distribution in tissue of drug eluted from stents?
J. Escuer[1], I. Aznar[1], C. McCormick[3], E. Peña[1,2], S. McGinty[4], M. A. Martinez[1,2]
[1]University of Zaragoza, Spain; [2]CIBER of Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Spain; [3]University of Strathclyde, UK; [4]University of Glasgow, UK
ESB2021_1750-How do vessel curvature and plaque composition affect the distribution-1750.pdf

ENDOVASCULAR TARGETED DRUG DELIVERY IN MYOCARDIAL MICROVASCULAR OBSTRUCTION (MVO)
Y. Rösch[1], M. Thirugnanasambandam[1], S. Frey[2], D. Eggenberger[3], Y. Kuster[3], C. Nef[3], L. Widmer[1], J. Ulmer[3], D. Obrist[1]
[1]ARTORG Center for Biomedical Engineering Research, University of Bern, Switzerland; [2]CorFlow Therapeutics AG, Baar, Switzerland; [3]OST, University of Applied Sciences, Buchs SG, Switzerland
ESB2021_1401-ENDOVASCULAR TARGETED DRUG DELIVERY IN MYOCARDIAL MICROVASCULAR OBSTRUCTION-1401.pdf

USE OF BIOHYBRID SILKOTHANE® FOR THE DEVELOPMENT OF VASCULAR GRAFTS WITH TUNEABLE MECHANICAL PROPERTIES
A. Caldiroli[1], E. Pederzani[2], S. Cappelletti[2], A. Caimi[2], E. Votta[2], G. B. Fiore[2], M. Tironi[3], F. Sangalli[3], M. Figliuzzi[3], N. Azzollini[3], S. Fiori[3], F. G. Greco[1], A. Remuzzi[4], M. Soncini[2], S. A. Riboldi[1], A. C. L. Redaelli[2]
[1]Bioengineering Laboratories S.r.l., Italy; [2]Department of Electronics, Information and Bioengineering, Politecnico di Milano, Italy; [3]IRCCS Istituto di Ricerche Farmacologiche Mario Negri, Italy; [4]Università degli Studi di Bergamo, Italy
ESB2021_1481-USE OF BIOHYBRID SILKOTHANE® FOR THE DEVELOPMENT OF VASCULAR GRAFTS WITH TUNEABLE MECHANICAL .pdf

AN EXPERIMENTAL INVESTIGATION OF THE DEGRADATION BEHAVIOUR OF A BIORESORBABLE POLYMER VASCULAR SCAFFOLD

C. J. Fiuza, K. Polak-Krasna, W. Ronan, T. J. Vaughan
National University of Ireland Galway, Ireland

ESB2021_1549-AN EXPERIMENTAL INVESTIGATION OF THE DEGRADATION BEHAVIOUR OF A BIORESORBABLE POLYMER VASCULAR.pdf

COMPLIANCE MEASUREMENTS OF SMALL VESSELS AND BIOHYBRID VASCULAR GRAFTS FOR HEMODIALYSIS TREATMENT

M. Soncini[1], E. Pederzani[1], A. Caldiroli[3], M. Pezzotta[1], A. Caimi[1], E. Votta[1], G. B. Fiore[1], M. Tironi[2], F. Sangalli[2], M. Figliuzzi[2], N. Azzollini[2], S. Fiori[2], F. Greco[3], A. Remuzzi[4], S. A. Riboldi[3], A. Redaelli[1]
[1]Politecnico di Milano, Italy; [2]Istituto di Ricerche Farmacologiche Mario Negri IRCCS; [3]Bioengineering Laboratories S.r.l.; [4]Università degli Studi di Bergamo.

ESB2021_1606-COMPLIANCE MEASUREMENTS OF SMALL VESSELS AND BIOHYBRID VASCULAR GRAFTS-1606.pdf

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11:15am - 12:15pm

Dental.1: Dental biomechanics

Session Chair: **Christoph Bourauel**
https://teams.microsoft.com/l/channel/19%3abe0506c22da44a55a5e394102b00c8ac%40thread.tacv2/TR28_Dental%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

INFLUENCE OF GEOMETRY VARIATIONS ON MICRO-MOTION AND GAP OPENING BETWEEN DENTAL IMPLANTS AND ABUTMENTS

L. Keilig[1,2], M. Wylezalek[1], H. Stark[2], C. Bourauel[1]
[1]Oral Technology, Medical Faculty, University of Bonn, Germany; [2]Department of Prosthetic Dentistry, Preclinical Education and Materials Science, Medical Faculty, University of Bonn, Germany

ESB2021_1522-INFLUENCE OF GEOMETRY VARIATIONS ON MICRO-MOTION AND GAP OPENING BETWEEN DENTAL IMPLANTS AND.pdf

NUMERICAL SIMULATION OF INITIAL FORCE GENERATED DURING BODILY TOOTH MOVEMEN T USING ORTHODONTIC ALIGNER S

T. Elshazly[1], L. Keilig[1], A. Ghoneima[2], M. Abuzayda[3], C. Bourauel[1]
[1]Oral Technology, Bonn University, Bonn, Germany; [2]Department of Orthodontics, Hamdan Bin Mohammed College of Dental Medicine, MBRU, Dubai, UAE; [3]Department of Prosthodontics, Hamdan Bin Mohammed College of Dental Medicine, MBRU, Dubai, UAE

ESB2021_1175-NUMERICAL SIMULATION OF INITIAL FORCE GENERATED DURING BODILY TOOTH MOVEMEN T USING ORTHODONTIC.pdf

IN VITRO IMPACT TESTING OF DENTAL PROSTHESIS: INFLUENCE OF CEMENT AND ABUTMENTS GEOMETRY ON RETRIEVABILITY

A. T. Lugas[1], M. Terzini[1], E. M. Zanetti[2], G. Schierano[3], C. Manzella[3], D. Baldi[4], C. Bignardi[1], A. L. Audenino[1]
[1]PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Department of Industrial Engineering, University of Perugia, Italy; [3]Department of Surgical Science, c.i.r. Dental School, University of Turin, Italy; [4]Division of Prosthetic Dentistry, Department of Surgical Sciences (DISC), University of Genoa, Italy

ESB2021_1782-IN VITRO IMPACT TESTING OF DENTAL PROSTHESIS-1782_a.pdf

BIOMECHANICAL BEHAVIOR OF A TREATED MOLAR WITH CARIOUS TISSUE UNDER RESTORATION: SELECTIVE CARIES REMOVAL

D. Weimann[1], A. Morgenthal[1], F. Schwendicke[2], C. Fleck[1], H. Razi[1]
[1]Materials Science and Engineering, Technische Universität Berlin, Germany; [2]Department of Oral Diagnostics, Digital Health and Health Services Research, Charité - Universitätsmedizin, Germany

ESB2021_1328-BIOMECHANICAL BEHAVIOR OF A TREATED MOLAR WITH CARIOUS TISSUE UNDER RESTORATION-1328.pdf

IN VITRO COMPARISON OF SITE PREPARATION PARAMETERS IN RESPECT TO DENTAL ANCHORAGE AND PRIMARY STABILITY

J. Fabech, S. Ruch, A. Saade, P. Heuberger, A. Irastorza-Landa
ZHAW Zurich university of applied sciences, Switzerland

ESB2021_1321-IN VITRO COMPARISON OF SITE PREPARATION PARAMETERS-1321.pdf

EVALUATION OF PRIMARY STABILITY OF DENTAL IMPLANTS THROUGH DETERMINATION OF NEIGHBORING BONE DAMAGE

S. Khorshidparast[1], P. Akhlaghi[1], H. Barikani[2], G. Rouhi[1]
[1]Amirkabir University of Technology, Iran, Islamic Republic of; [2]Dental Implant Research Center, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran

ESB2021_1688-EVALUATION OF PRIMARY STABILITY OF DENTAL IMPLANTS THROUGH DETERMINATION OF NEIGHBORING BONE.pdf

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11:15am - 12:15pm

IST.1: In silico trials and clinical biomechanics

Session Chair: **Peter Varga**
https://teams.microsoft.com/l/channel/19%3a4ac5d81a695a4a4789f6d5248c68bd87%40thread.tacv2/TR21_In%2520Silico%2520trials%2520and%2520Clinical%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: HUMAN IN SILICO DRUG TRIALS WITH MULTISCALE MODELS OF CARDIAC ELECTROMECHANICS

E. Passini, A. Bueno-Orovio, B. Rodriguez
University of Oxford, United Kingdom

ESB2021_138-PT HUMAN IN SILICO DRUG TRIALS WITH MULTISCALE MODELS-138.pdf

ASSESSING CREDIBILITY OF CT-BASED FINITE ELEMENT MODEL TO PREDICT BONE STRENGTH

C. Curreli[1,2], A. A. La Mattina[1,2], M. Viceconti[1,2]
[1]Department of Industrial Engineering, School of Engineering and Architecture, Alma Mater Studiorum - Università di Bologna, Bologna, Italy; [2]Medical Technology Lab, IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy

ESB2021_1196-ASSESSING CREDIBILITY OF CT-BASED FINITE ELEMENT MODEL-1196.pdf

RAPID MODELING: A SURGICAL PROOF-OF-CONCEPT EXPLAINED BY HEMODYNAMICS MODELING

N. Golse[1,2,3], F. Joly[3], Q. Nicolas[3], E. Vibert[1,2], P. D. Line[4,5], I. Vignon-Clementel[3]
[1]Paul-Brousse Hospital, AP-HP, France; [2]INSERM, France; [3]Inria, France; [4]Oslo University Hospital, Norway; [5]University of Oslo, Norway

ESB2021_1440-RAPID MODELING-1440.pdf

In silico trials on osteoporotic human bone fit denosumab withdrawal rebound effect seen in clinical patient data

C. Ledoux, D. Boaretti, D. Tourolle né Betts, R. Müller, C. Collins
Institute for Biomechanics, ETH Zurich, Zurich, Switzerland

ESB2021_1683-In silico trials on osteoporotic human bone fit denosumab withdrawal rebound effect seen-1683.pdf

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11:15am - 12:15pm

Mechano.1: Mechanobiology

Session Chair: **Sandra Loerakker**
https://teams.microsoft.com/l/channel/19%3af07b298ef3034459a8476de6ec152fe6%40thread.tacv2/TR06_Mechanobiology?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

GENERATION OF CONTROLLED HYDRODINAMIC STIMULI ON VASCULAR PLANAR TISSUE SAMPLES IN A NOVEL BIOREACTOR

E. Pederzani[1], L. P. Coppadoro[1], A. J. S. Roldan[1], M. Lombardi[2], C. Foglieni[2], M. Soncini[1], G. B. Fiore[1]
[1]Politecnico di Milano, Italy; [2]San Raffaele Hospital IRCCS, Italy

ESB2021_1607-GENERATION OF CONTROLLED HYDRODINAMIC STIMULI ON VASCULAR PLANAR TISSUE SAMPLES-1607_a.pdf

CONVERGENCE OF HIPPO/TGF-β PATHWAYS IN MECHANICAL ACTIVATION OF VENOUS AORTO-CORONARY BYPASS FAILURE

G. Garoffolo[1], R. Vono[2], G. A. Cassanmagnago[3], A. Thomas[4], M. S. Ruiter[1], M. Carrara[5], C. Saccu[1], M. Agrifoglio[6], M. Soncini[7], G. B. Fiore[7], F. Martelli[5], G. Condorelli[3], P. Madeddu[4], G. Spinetti[2], M. Pesce[1]

[1]Centro cardiologico Monzino, IRCCS, Italy; [2]IRCCS Multimedica; [3]Humanitas Research Hospital; [4]University of Bristol; [5]Policlinico San Donato IRCCS; [6]Università degli studi di Milano; [7]Politecnico di Milano

ESB2021_1635-CONVERGENCE OF HIPPOTGF-β PATHWAYS IN MECHANICAL ACTIVATION OF VENOUS AORTO-CORONARY BYPASS .pdf

CARDIAC CELL IN-SILICO MODEL FOR ENHANCED CELL-EXTRACELLULAR MATRIX INTERACTIONS

P. Urdeitx[1,2], M. H. Doweidar[1,2]

[1]Mechanical Engineering Department, School of Engineering and Architecture (EINA), University of Zaragoza, 50018, Zaragoza, Spain; [2]Aragon Institute of Engineering Research (I3A), University of Zaragoza, 50018 Zaragoza, Spain

ESB2021_1638-CARDIAC CELL IN-SILICO MODEL FOR ENHANCED CELL-EXTRACELLULAR MATRIX INTERACTIONS-1638.pdf

SIMULATING THE EFFECTS OF BIOMECHANICAL CUES ON NOTCH SIGNALING IN NATIVE CORONARY ARTERIES

J. G. M. van Asten[1], T. Ristori[1], D. Nolan[2], C. Lally[2], F. Baaijens[1], C. Sahlgren[1,3], S. Loerakker[1]

[1]Department of Biomedical Engineering, Eindhoven University of Technology, Netherlands; [2]School of Engineering and Trinity Centre for Biomedical Engineering, Trinity College Dublin, Ireland; [3]Åbo Akademi University, Faculty of Science and Engineering, Biosciences, Turku, Finland

ESB2021_1839-SIMULATING THE EFFECTS OF BIOMECHANICAL CUES ON NOTCH SIGNALING-1839_a.pdf

11:15am - 12:15pm

Msk.1: Musculoskeletal biomechanics

Session Chair: **Claudia Mazzà**

https://teams.microsoft.com/l/channel/19%3ad142c4ba1ecf4a929219f6efcae89fa6%40thread.tacv2/TR08_Musculoskeletal%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

COMPARISONS OF NATIVE STRAIN DISTRIBUTION ON MEDIAL COLLATERAL LIGAMENT IN TOTAL KNEE ARTHROPLASTY; MECHANICAL ALIGNMENT AND KINEMATIC ALIGNMENT

M. J. Kim[1], I. J. Koh[2], D. S. Kwak[2], H. J. Cho[2], S. Y. Kim[1], J. H. Choi[1], D. Lim[1]

[1]sejong university, Korea, Republic of (South Korea); [2]Catholic University, Korea, Republic of (South Korea)

ESB2021_1313-COMPARISONS OF NATIVE STRAIN DISTRIBUTION ON MEDIAL COLLATERAL LIGAMENT-1313.pdf

KNEE CARTILAGE LOADING AT DIFFERENT GAIT SPEEDS

G. Giarmatzis, K. Moustakas

University of Patras, Greece

ESB2021_1548-KNEE CARTILAGE LOADING AT DIFFERENT GAIT SPEEDS-1548.pdf

KNEE LOADING IN A PRECLINICAL RODENT MODEL BASED ON MUSCULOSKELETAL MODELING AND INTEGRATED XROMM DATA

J. Piet[1], F. Mielke[2], R. Lories[3], P. Aerts[2], S. Van Wassenbergh[2], I. Jonkers[1,3]

[1]Human Movement Biomechanics Research Group, Department of Movement Sciences, KU Leuven, Leuven, Belgium; [2]Laboratory of Functional Morphology, Department of Biology, Faculty of Sciences, University of Antwerp, Wilrijk, Belgium; [3]Department of Development and Regeneration, Skeletal Biology and Engineering Research Center, KU Leuven, Leuven, Belgium

ESB2021_1644-KNEE LOADING IN A PRECLINICAL RODENT MODEL BASED ON MUSCULOSKELETAL MODELING AND INTEGRATED.pdf

Ligaments geometry definition for musculoskeletal simulations of high knee flexion tasks

D. Pavan[1], S. Van Rossom[2], H. Hoang[2], I. Jonkers[2], Z. Sawacha[1,3]

[1]University of Padua, Dept. of Information Engineering, Italy; [2]KU Leuven, Dept. of Movement Sciences, Belgium; [3]University of Padua, Dept. of Medicine, Italy

ESB2021_1707-Ligaments geometry definition for musculoskeletal simulations-1707.pdf

MUSCLE STIMULATION LEADS TO BONE TISSUE CHANGES: IN VIVO RESEARCH

O. Sachenkov, O. Gerasimov, M. Baltin, A. Fedianin, P. Bolshakov, N. Kharin, T. Baltina

Kazan Federal University, Russian Federation

ESB2021_1766-MUSCLE STIMULATION LEADS TO BONE TISSUE CHANGES-1766.pdf

PREDICTION OF INDIVIDUAL KNEE MOTION: AN IN-VIVO VALIDATION UNDER PHYSIOLOGICAL LOAD

M. Conconi[1], N. Sancisi[1], F. De Carli[2], G. Monetti[2], V. Parenti Castelli[1]

[1]Dept. of Industrial Engineering - DIN, University of Bologna, Italy; [2]Primus Medical Center, Forlì, Italy

ESB2021_1170-PREDICTION OF INDIVIDUAL KNEE MOTION-1170.pdf

11:15am - 12:15pm

Orth-dev.1: Implants and devices for orthopaedic applications

Session Chair: **Luca Cristofolini**

https://teams.microsoft.com/l/channel/19%3a57027081610449b28ac6f3f78c40f85f%40thread.tacv2/TR11_Implant%2520and%2520Devices%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Experimental Study of an Energy Harvesting System for Energy-Autonomous Instrumented Total Hip Replacements

H.-E. Lange[1], N. Arbeiter[2], R. Bader[1], D. Kluess[1]

[1]Department of Orthopaedics, Rostock University Medical Centre, Germany; [2]Institute of General Electrical Engineering, University of Rostock, Germany

ESB2021_1166-Experimental Study of an Energy Harvesting System-1166.pdf

IN-SILICO AND EXPERIMENTAL DEFORMATION ANALYSIS OF TWO HYBRID PLATE DESIGNS FOR CANINE PANCARPAL ARTHRODESIS

I. Zderic[1], P. Varga[1], U. Styger[1], B. Gueorguiev[1], L. Drenchev[2], E. Asimus[3], B. Saunders[4], M. Kowaleski[5], R. Boudrieau[5], L. Déjardin[6]

[1]AO Research Institute Davos, Switzerland; [2]Bulgarian Academy of Sciences, Institute of Metal Science 'Acad. A. Balevski', Bulgaria; [3]École Nationale Vétérinaire de Toulouse, France; [4]Texas A&M University, USA; [5]Tufts University, USA; [6]Michigan State University, USA

ESB2021_1515-IN-SILICO AND EXPERIMENTAL DEFORMATION ANALYSIS OF TWO HYBRID PLATE DESIGNS-1515.pdf

LATTICE STRUCTURES UNDER COMBINED STRESS STATES FOR SCAFFOLDS IN ORTHOPAEDIC IMPLANT APPLICATIONS

M. Alaña[1], I. Puerta[1], N. Rodriguez-Florez[1,2], A. López de Arancibia[1], A. López[1], S. Ruiz de Galarreta[1]

[1]Tecnun, Spain; [2]IKERBASQUE, Spain

ESB2021_1529-LATTICE STRUCTURES UNDER COMBINED STRESS STATES FOR SCAFFOLDS-1529_a.pdf

3D STRAIN DISTRIBUTION IN BONE DURING TIGHTENING AND FRACTURE FIXATION WITH NOVEL MG-BASED SCREWS

M. Peña Fernández[1,2], A. P. Kao[2], F. Witter[3], G. Tozzi[2]

[1]Heriot-Watt University, United Kingdom; [2]University of Portsmouth, United Kingdom; [3]Charité - Universitätsmedizin Berlin, Germany

ESB2021_1597-3D STRAIN DISTRIBUTION IN BONE DURING TIGHTENING AND FRACTURE FIXATION WITH NOVEL MG-BASED.pdf

POROUS HIP IMPLANT TO PROMOT OSSEOINTEGRATION AND REDUCE STRESS SHIELDING

S. A. Naghavi[1], **J. Hua**[1,2], **M. Moazen**[3], **S. Taylor**[1], **C. Liu**[1]
[1]Institute of Orthopaedics & Musculoskeletal Science, University College London, Royal National Orthopaedic Hospital Stanmore, London, HA7 4LP, UK; [2]School of Science and Technology, Middlesex University, London, NW4 4BT, UK; [3]Department of Mechanical Engineering, University College London, London, WC1E 6BT, UK

ESB2021_1619-POROUS HIP IMPLANT TO PROMOTE OSSEOINTEGRATION AND REDUCE STRESS SHIELDING-1619.pdf

NEW GENERATION OF SHOULDER HEMIPROSTHESIS – A PRELIMINARY IN-VITRO STUDY

D. Baumgartner[1], **R. von Mentlen**[1], **S. Ruch**[1], **V. Mai**[2]
[1]ZHAW, Switzerland; [2]Mathys AG Bettlach, Switzerland

ESB2021_1832-NEW GENERATION OF SHOULDER HEMIPROSTHESIS – A PRELIMINARY IN-VITRO STUDY-1832.pdf

11:15am - 12:15pm

Spine.1: Spine

Session Chair: **Christian Liebsch**

https://teams.microsoft.com/l/channel/19%3a6c533dfc4fe141b79f06b34b62f96265%40thread.tacv2/TR09_Spine?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

BIOMECHANICAL INVESTIGATION OF INTERSPINOUS PROCESS DEVICES AFTER LUMBAR DECOMPRESSION – POROELASTIC FINITE ELEMENT ANALYSES

K. Khalaf[1], **M. Nikkhoo**[2], **C.-C. Niu**[3], **C.-H. Cheng**[4]
[1]Khalifa University, United Arab Emirates; [2]Azad University, Department of Biomedical Engineering, Iran; [3]Department of Orthopaedic Surgery, Chang Gung Memorial Hospital, Taiwan; [4]School of Physical Therapy and Graduate Institute of Rehabilitation Science, College of Medicine, Chang Gung University, Taoyuan, Taiwan

ESB2021_1277-BIOMECHANICAL INVESTIGATION OF INTERSPINOUS PROCESS DEVICES AFTER LUMBAR DECOMPRESSION – P.pdf

PREDICTING PROXIMAL JUNTION FAILURE IN SPINE SURGERY: SAGITTAL ALIGNMENTS AND MECHANICAL INTEGRATED SCORE

M. Rasouligandomani[1], **A. del Arco**[3], **F. Pellisé**[4], **M. González Ballester**[1,2], **F. Galbusera**[5], **J. Noailly**[1]
[1]BCN MedTech, DTIC, University of Pompeu Fabra, Spain; [2]ICREA, Spain; [3]Hospital del Mar, Spain; [4]University Hospital Vall d'Hebron, Spain; [5]Laboratory of Biological Structures Mechanics, IRCCS Istituto Ortopedico Galeazzi, Italy

ESB2021_1662-PREDICTING PROXIMAL JUNTION FAILURE IN SPINE SURGERY-1662_a.pdf

Computational fracture analysis of screw-bone interaction in a patient-specific vertebra model

C. Falcinelli[1], **L. Molinari**[1], **A. Di Martino**[2,3], **A. Gizzi**[1]
[1]Università Campus Bio-Medico di Roma, Italy; [2]Università di Bologna, Italy; [3]IRCCS - Istituto Ortopedico Rizzoli, Bologna, Italy

ESB2021_1257-Computational fracture analysis of screw-bone interaction-1257.pdf

The combination of triangular implants with iliac screws to enhance sacropelvic fixation: a finite element study

M. Panico[1,2], **R. D. Chande**[3], **D. P. Lindsey**[3], **T. M. T. Villa**[1], **A. Mesiwala**[4], **S. A. Yerby**[3], **M. Brayda-Bruno**[2], **F. Galbusera**[2]
[1]Politecnico di Milano, Italy, Italy; [2]IRCCS Istituto Ortopedico Galeazzi, Milan, Italy; [3]SI-BONE, Inc., Santa Clara, CA, USA; [4]Southem California Center for Neuroscience and Spine, Pomona, CA, USA

ESB2021_1272-The combination of triangular implants with iliac screws-1272_a.pdf

APPLICATION OF REDUCED ORDER MODELLING TECHNIQUES FOR STRESS ANALYSIS IN SPINE FIXATION

M. Sensale[1,2], **L. Geronzi**[1,3], **M. E. Biancolini**[3,4], **T. Vendeuvre**[5], **M. Rochette**[1], **E. Dall'Ara**[2]
[1]Ansys France, France; [2]University of Sheffield, UK; [3]University of Rome "Tor Vergata", Italy; [4]RBF Morph srl, Italy; [5]Poitiers University Hospital, France

ESB2021_1367-APPLICATION OF REDUCED ORDER MODELLING TECHNIQUES-1367.pdf

11:15am - 12:15pm

TM-Meth.1: Computational methods in tissue mechanics

Session Chair: **Michele Marino**

https://teams.microsoft.com/l/channel/19%3a8f97a330e4e34ccebb7a9fe5ff82ea30%40thread.tacv2/TR16_CompMethods%2520in%2520Tissue%2520mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Performance Analysis of Hexahedral Mesh-Morphing for the Meniscus of the Knee

A. G. Kelly, **A. C. Jones**, **M. Mengoni**
Institute of Medical and Biological Engineering, School of Mechanical Engineering, University of Leeds, UK

ESB2021_1334-Performance Analysis of Hexahedral Mesh-Morphing for the Meniscus of the Knee-1334.pdf

CONSTRUCTION OF A THREE-LAYER SKIN FINITE ELEMENT MODEL BASED ON IN VITRO INDENTATION

B. Eydan, **B. Pierrat**, **J. Molimard**
Mines Saint-Étienne, Univ Lyon, Univ Jean Monnet, INSERM, U 1059 Sainbiose, Centre CIS, F-42023, Saint-Étienne, France

ESB2021_1434-CONSTRUCTION OF A THREE-LAYER SKIN FINITE ELEMENT MODEL BASED ON-1434.pdf

A mathematical model for radiation-induced pulmonary fibrosis

E. Ioannou[1], **M. Hadjicharalambous**[1], **S. Angeli**[2], **S. Kassinos**[1], **V. Vavourakis**[1,3]
[1]Mechanical & Manufacturing Engineering Dept., University of Cyprus, Cyprus; [2]Prognosis Advanced Diagnostic Center, Cyprus; [3]Medical Physics & Biomedical Engineering Dept., University College London, UK

ESB2021_1603-A mathematical model for radiation-induced pulmonary fibrosis-1603.pdf

Modelization of Endothelial Glycocalyx with Divergence-Free Immersed Boundary Method and Interacting Particles

A. Cerrato Casado[1], **H. Casquero**[2], **J. J. Cerdà Pino**[1], **C. Bona-Casas**[1]
[1]Universitat de les Illes Balears, Spain; [2]University of Michigan - Dearborn, United States

ESB2021_1620-Modelization of Endothelial Glycocalyx with Divergence-Free Immersed Boundary Method and.pdf

A penalty contact implementation on a highly parallelisable cartesian mesh finite element solver

F. M. Trommer[1,2], **P. Bhattacharya**[1,2]
[1]Insigneo Institute for in silico Medicine, University of Sheffield, United Kingdom; [2]Department of Mechanical Engineering, University of Sheffield, United Kingdom

ESB2021_1831-A penalty contact implementation on a highly parallelisable cartesian mesh finite element.pdf

12:15pm - 12:30pm

break-d1-2: Break

12:30pm - 1:15pm

EXEMPLAR - DASSAULT SYSTEMES.1: Workshop: "EXEMPLAR - Simulia workflow for life science applications"

https://teams.microsoft.com/l/channel/19%3aa1e9bbbcb7d64f1685e4afd272b26670%40thread.tacv2/SW_EXEMPLAR%2520-%2520DASSAULT?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm

PARAMETRIC DESIGN - ANSYS.1: Workshop: "How ANSYS transforms the cardiovascular activity: from Research to Medical

- 1:15pm **Innovation, from Regulatory to Clinical Applications"**
https://teams.microsoft.com/l/channel/19%3a5952b4a0cf9e460fb078b20a2f5079d3%40thread.tacv2/SW_PARAMETRIC%2520DESIGN%2520-%2520ANSYS?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm - 1:15pm **QUALISYS: Workshop: "Streamline your research with QUALISYS motion capture"**
https://teams.microsoft.com/l/channel/19%3a1143cc44d37346f3bd91610a8f480875%40thread.tacv2/SW_QUALISYS?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

1:15pm - 1:30pm **break-d1-3: Break**

1:30pm - 2:15pm **Key-1: Keynote Lecture Nico Verdonschot**
Session Chair: **Harry van Lenthe**
Session Chair: **Manuela Galli**
https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

COMPUTER MODELS SIMULATING THE MUSCULOSKELETAL SYSTEM OF THE LOWER EXTREMITY
n. verdonschot
Radboudumc, Aruba (The Netherlands)
ESB2021_1886-COMPUTER MODELS SIMULATING THE MUSCULOSKELETAL SYSTEM-1886.pdf

2:15pm - 2:30pm **break-d1-4: Break**

2:30pm - 3:30pm **AM-Bioprint.1: Additive manufacturing for biomedical applications and bioprinting**
Session Chair: **Giuseppe Vairo**
https://teams.microsoft.com/l/channel/19%3ae25b1ebf1cb940c0abbfed7221fe62e0%40thread.tacv2/TR24_Additive%2520manufact%2520and%2520Bioprinting?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

3D BIOPRINTING OF HYDROGELS FOR RETINAL TISSUE ENGINEERING
B. Belgio, A. Mantelli, F. Iervolino, M. Levi, F. Boschetti, S. Mantero
Politecnico di Milano, Italy
ESB2021_1557-3D BIOPRINTING OF HYDROGELS FOR RETINAL TISSUE ENGINEERING-1557.pdf

Extrusion bioprinting: simulations for cell viability assessment
G. Santesarti[1], M. Marino[1], F. Viola[2], R. Verzicco[3], G. Vairo[1]
[1]Department of Civil Engineering and Computer Science, University of Rome “Tor Vergata”, Italy; [2]Gran Sasso Science Institute, L'Aquila, Italy; [3]Department of Industrial Engineering, University of Rome “Tor Vergata”, Italy
ESB2021_1420-Extrusion bioprinting-1420.pdf

Description of the Viscoelastic Behaviour of 3D Printed Photopolymers through a Generalized Maxwell Model
S. Marconi[1], G. Alaimo[1], F. Auricchio[1], A. Vigliotti[2]
[1]Università degli Studi di Pavia, Italy; [2]CIRA Centro Italiano Ricerche Aerospaziali, Italy
ESB2021_1830-Description of the Viscoelastic Behaviour of 3D Printed Photopolymers through a Generalized.pdf

AVOIDING CELL DEATH IN 3D BIORPINTING - COMPUTATIONAL FLUID DYNAMICS (CFD) MODELLING OF EXTRUSION SHEAR STRESSES
P. Santos Beato, D. Kalaskar, R. Torii
UCL, United Kingdom
ESB2021_1821-AVOIDING CELL DEATH IN 3D BIORPINTING-1821.pdf

THREEDIMENSIONAL RECONSTRUCTION OF THE FEMALE PELVIC ORGANS FOR BIOMECHANICAL MODELING AND DEVICE TESTING
P. Ulacia Flores[1], S. McLennan[1], L. Gilbert[2], R. Mongrain[1]
[1]Department of Mechanical Engineering, McGill University, Canada; [2]Department of Obstetrics & Gynecology, McGill University Health Center, Canada
ESB2021_1796-THREEDIMENSIONAL RECONSTRUCTION OF THE FEMALE PELVIC ORGANS-1796.pdf

ANALYSIS OF DIFFERENT GEOMETRICAL FEATURES TO ACHIEVE CLOSE-TO-BONE STIFFNESS MATERIAL IN MEDICAL DEVICE: A FEASIBILITY NUMERICAL STUDY
A. I. Mirulla[1,2], G. M. Marcheggiani Muccioli[2,3], S. Fratini[2], S. Zaffagnini[2,3], T. Ingrassia[1], L. Bragonzoni[4], B. Innocenti[5]
[1]Department of Engineering, University of Palermo, Italy; [2]Department of Biomedical and Neuromotor Sciences, University of Bologna, Italy; [3]2nd Orthopaedic and Traumatologic Clinic, IRCCS Istituto Ortopedico Rizzoli, Italy; [4]Department for Life Quality Studies, University of Bologna, Italy; [5]BEAMS Department (Bio Electro and Mechanical Systems), Université Libre de Bruxelles, Belgium
ESB2021_1708-ANALYSIS OF DIFFERENT GEOMETRICAL FEATURES TO ACHIEVE CLOSE-TO-BONE STIFFNESS MATERIAL-1708.pdf

2:30pm - 3:30pm **Biomat.1: Biomaterials**
Session Chair: **Arti Ahluwalia**
https://teams.microsoft.com/l/channel/19%3aabf41579f20e4eaeb1dd086f63dac6e9%40thread.tacv2/TR27_Biomaterials?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: BIOFABRICATION OF FUNCTIONAL LIVING TISSUES: THE CROSSROAD OF TWO RESEARCH SOCIETIES
M. Castilho[1,2]
[1]UMC Utrecht, Netherlands; [2]Eindhoven University of Technology, Netherlands
ESB2021_1069-PT BIOFABRICATION OF FUNCTIONAL LIVING TISSUES THE CROSSROAD OF TWO RESEARCH SOCIETIES-1069.pdf

Influence of in vitro corrosion on the mechanical behavior of porous magnesium-based scaffolds
R. Bonithon[1], C. Lupton[1], M. Roldo[2], G. W. Blunn[2], F. Witte[3,4], G. Tozzi[1]
[1]ZEISS Global Centre, School of Mechanical and Design Engineering, University of Portsmouth, United Kingdom; [2]School of Pharmacy and Biomedical Science, University of Portsmouth, United Kingdom; [3]Biotrics bioimplants, Berlin, Germany; [4]Department of Prosthodontics, Geriatric Dentistry and Craniomandibular Disorders, University of Berlin, Germany.
ESB2021_1245-Influence of in vitro corrosion on the mechanical behavior of porous magnesium-based_a.pdf

DESIGN AND IN VIVO VALIDATION OF CERAMIC SCAFFOLDS FOR OVINE LONG-BONE DEFECTS
P. BLÁZQUEZ-CARMONA[1], J. A. SANZ-HERRERA[1], C. RODRÍGUEZ-ANDRADE[1], F. J. MARTÍNEZ-VÁZQUEZ[2], J. DOMÍNGUEZ[1], E. REINA-ROMO[1]
[1]Escuela Técnica Superior de Ingeniería, Universidad de Sevilla, Spain; [2]Escuela de Ingenierías Industriales, Universidad de Extremadura, Spain
ESB2021_1286-DESIGN AND IN VIVO VALIDATION OF CERAMIC SCAFFOLDS-1286.pdf

CHARACTERISATION OF SCLEROSING FOAM RHEOLOGY VIA CLINICALLY RELEVANT PARAMETERS: A STEP TOWARDS THE OPTIMISATION OF VARICOSE VEIN SCLEROTHERAPY

A. Meghdadi[1], S. Jones[2], V. Patel[2], A. Lewis[2], T. Millar[1], D. Carugo[3]
[1]Faculties of Engineering & Physical Sciences and Medicine, University of Southampton, United Kingdom; [2]Biocompatibles UK Ltd, Camberley, United Kingdom; [3]Department of Pharmaceutics, School of Pharmacy, UCL, London, United Kingdom

ESB2021_1614-CHARACTERISATION OF SCLEROSING FOAM RHEOLOGY VIA CLINICALLY RELEVANT PARAMETERS-1614.pdf

2:30pm - 3:30pm

CB.1: Computational biology

Session Chair: **Aurélie Carlier**

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A computational model of prostate cancer bone metastasis growth and response to Radium223

L. Marsilio[1], M. Grimaldi[1], P. Cerveri[1], E. Dondossola[2], S. Casarin[3]
[1]Politecnico di Milano, Milan, Italy; [2]MD Anderson Cancer Center, Houston, TX, USA; [3]Houston Methodist Hospital, Houston, TX, USA

ESB2021_1490-A computational model of prostate cancer bone metastasis growth and response-1490.pdf

Computational modeling of toxin transporters in a bio-artificial kidney

S. Swapnasrita, J. King, R. Truckenmüller, S. Giselbrecht, A. Carlier
Maastricht University, Netherlands, The

ESB2021_1386-Computational modeling of toxin transporters in a bio-artificial kidney-1386.pdf

ON PARAMETER FITTING FROM IN VITRO IMAGES OF CELL BEHAVIOR. A DEEP LEARNING APPROACH

M. Pérez-Aliacar[1], J. Ayensa-Jiménez[1], M. H. Doweidar[1,2], M. Doblaré[1,2,3]
[1]Aragón Institute of Engineering Research (I3A), University of Zaragoza; [2]Centro de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN); [3]Aragón Institute of Health Research (IIS Aragón)

ESB2021_1765-ON PARAMETER FITTING FROM IN VITRO IMAGES OF CELL BEHAVIOR A DEEP LEARNING APPROACH-1765.pdf

NETWORK MODELLING OF ARTICULAR CHONDROCYTE MOLECULAR REGULATION IN HEALTH AND OA

M. Segarra-Queralt[1], M. Neidlin[2], G. Piella[1], L. Tio[3], L. Akexopoulos[2], M. Á. González-Ballester[4], J. Noailly[1]
[1]Universitat Pompeu Fabra, Spain; [2]Department of Mechanical Engineering, National Technical University of Athens; [3]IMIM Spain; [4]ICREA, Spain

ESB2021_1585-NETWORK MODELLING OF ARTICULAR CHONDROCYTE MOLECULAR REGULATION-1585.pdf

2:30pm - 3:30pm

Cell.1: Cellular and molecular biomechanics

Session Chair: **Laoise McNamara**

https://teams.microsoft.com/l/channel/19%3a14ea6f3449684f5698dff33ab5c47781%40thread.tacv2/TR05_Cellular%2520and%2520Molecular%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: MATRIX AGEING AND THE LINK TO CONNECTIVE TISSUE DISEASE

J. Snedeker[1], F. Passini[1], A. Gautieri[2], P. Jaeger[1]
[1]University and ETH Zurich, Switzerland; [2]Politecnico di Milano, Italy

ESB2021_143-PT MATRIX AGEING AND THE LINK TO CONNECTIVE TISSUE DISEASE-143.pdf

NANOSECOND-SCALE INTENSE ELECTRIC FIELDS EFFECTS ON KINESIN NANOMOTOR MECHANICS

J. Průša, M. Cifra
Institute of Photonics and Electronics of the Czech Academy of Sciences, Czech Republic

ESB2021_1312-NANOSECOND-SCALE INTENSE ELECTRIC FIELDS EFFECTS ON KINESIN NANOMOTOR MECHANICS-1312.pdf

ENTROPY MAXIMISATION DRIVES CELL STRESS FIBRE ALIGNMENT

R. J Coleman, P. McGarry
NUI Galway, Ireland

ESB2021_1590-ENTROPY MAXIMISATION DRIVES CELL STRESS FIBRE ALIGNMENT-1590.pdf

Glycation increases indentation stiffness and decreases surface charge of individual collagen fibrils

M. Rufin[1], M. Nalbach[1], O. G. Andriotis[1], M. Poik[2], G. Schitter[2], P. J. Thurner[1]
[1]Institute for Lightweight Design and Structural Biomechanics, TU Wien, Austria; [2]Automation and Control Institute, TU Wien, Austria

ESB2021_1700-Glycation increases indentation stiffness and decreases surface charge-1700.pdf

2:30pm - 3:30pm

CV-Impl.2: Implants and devices for cardiovascular applications

Session Chair: **Emiliano Votta**

https://teams.microsoft.com/l/channel/19%3ad29cbbb044b543f58199d8f1a24724a4%40thread.tacv2/TR02_Implants%2520and%2520Devices%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PATIENT-SPECIFIC COMPUTATIONAL FLUID DYNAMICS OF FEMORO-POPLITEAL STENT-GRAFT IN STRAIGHT AND BENT-LEG POSITION

M. Conti[1], A. Ferrarini[1], A. Finotello[2], G. Salsano[3], F. Auricchio[1], G. Spinella[4], B. Pane[4]
[1]DICAr, University of Pavia, Italy; [2]DIMES, University of Genoa, Italy; [3]Department of Radiology, Ospedale Policlinico San Martino, Genoa, Italy; [4]Ospedale Policlinico San Martino, University of Genoa, Italy

ESB2021_1454-PATIENT-SPECIFIC COMPUTATIONAL FLUID DYNAMICS OF FEMORO-POPLITEAL STENT-GRAFT-1454.pdf

RESTENOSIS IN HUMAN STENTED SUPERFICIAL FEMORAL ARTERY: REMODELING TRAJECTORY AND ROLE OF HEMODYNAMICS

M. Colombo[1], Y. He[2], A. Corti[1], D. Gallo[3], F. Ninno[1,4], S. Casarin[5], J. M Rozowsky[2], F. Migliavacca[1], S. Berceli[2,6], C. Chiastra[1,3]
[1]LaBS, Dept. Chemistry, Materials and Chemical Engineering “Giulio Natta”, Politecnico di Milano, Italy; [2]Dept. Surgery, University of Florida, Gainesville, FL, USA; [3]PoliToBIOMed Lab, Dept. Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [4]Dept. Medical Physics and Biomedical Engineering, University College of London, UK; [5]Dept. Surgery, Houston Methodist Hospital, Houston, TX, USA; [6]Malcom Randall VAMC, Gainesville, FL, USA

ESB2021_1366-RESTENOSIS IN HUMAN STENTED SUPERFICIAL FEMORAL ARTERY-1366_a.pdf

Effect of Multiple Plaques on the Haemodynamics Performance in Peripheral Artery

J. Feng
Manchester Metropolitan University, United Kingdom

ESB2021_1874-Effect of Multiple Plaques on the Haemodynamics Performance-1874.pdf

Thickness-reduced pericardial tissue for catheter-based aortic heart valve prostheses

C. Müller, A. Rzany, B. Hensel
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

ESB2021_1183-Thickness-reduced pericardial tissue for catheter-based aortic heart valve prostheses-1183.pdf

Investigating 3D Polymer Resin for Biomimetic Polymer Aortic Valve Leaflets

C. E. Hughes[1,2,3], A. Whelan[1,2,3,4], L. Florea[4,5], D. O'Reilly[3], E. Campbell[3], C. Lally[1,2,4]
[1]Trinity Centre for Biomedical Engineering, Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin 2, Ireland; [2]Department of Mechanical, Manufacturing, and Biomedical Engineering, School of Engineering, Trinity College Dublin, Dublin 2, Ireland; [3]Structural Heart Division, Boston Scientific Corporation, Galway, Ireland; [4]Advanced Materials and Bioengineering Research Centre (AMBER), Trinity College Dublin, Dublin 2, Ireland; [5]School of Chemistry, Trinity College Dublin, Dublin 2, Ireland

ESB2021_1514-Investigating 3D Polymer Resin for Biomimetic Polymer Aortic Valve Leaflets-1514.pdf

PROPERTIES OF ISOTROPIC PYROLITIC CARBON: A MULTISCALE APPROACH

G. Serino[1], M. Gusmini[1], A. Audenino[1], G. Bergamasco[2], O. Ieropoli[2], C. Bignardi[1]
[1]Politecnico di Torino, Italy; [2]LivaNova, (Sorin Group Italia s.r.l)

ESB2021_1453-PROPERTIES OF ISOTROPIC PYROLITIC CARBON-1453.pdf

2:30pm - 3:30pm — CV-Meth.1: Computational methods for cardiovascular applications

Session Chair: **Irene Vignon-Clementel**

https://teams.microsoft.com/l/channel/19%3af7d78c3c31894881a6fd6019be2f1ce2%40thread.tacv2/TR04_CompMethods%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

A NOVEL METHODOLOGY FOR COMPLIANT, PERSONALISED AORTIC FLOW SIMULATIONS INFORMED BY MULTIMODAL MRI DATA FUSION

C. L. Stokes[1], M. Bonfanti[1], Z. Li[2], J. Xiong[3], D. Chen[2], S. Balabani[1], V. Diaz-Zuccarini[1]
[1]University College London, United Kingdom; [2]Beijing Institute of Technology, China; [3]Chinese PLA General Hospital, China

ESB2021_1396-A NOVEL METHODOLOGY FOR COMPLIANT, PERSONALISED AORTIC FLOW SIMULATIONS INFORMED-1396.pdf

Computational Study to Assess Silicon Aorta Models in Predicting Catheter Biomechanical Performance In-Vivo

D. G. Symes[1], P. King[2], B. O'Connell[2], D. Costello[2], L. M McNamara[1], C. Conway[3]
[1]National University of Ireland, Galway, Ireland; [2]Medtronic, plc, Ireland; [3]Royal College of Surgeons in Ireland, Ireland

ESB2021_1456-Computational Study to Assess Silicon Aorta Models-1456.pdf

NEW FULLY AUTOMATED TOOL FOR THE GEOMETRIC ANALYSIS OF THE AORTIC ARCH

N. Brambilla[1], S. Saitta[1], F. Sturla[2,1], E. Votta[1,2], A. Redaelli[1], M. Marrocco-Trischitta[2]
[1]Politecnico di Milano, Milan, Italy; [2]IRCCS Policlinico San Donato, San Donato Milanese, Italy

ESB2021_1510-NEW FULLY AUTOMATED TOOL FOR THE GEOMETRIC ANALYSIS-1510.pdf

Validation of Patient-Specific Computational Modelling of Type B Aortic Dissection

C. H. Armour[1], S. Saitta[1,2], S. Pirola[1], Y. Liu[3], B. Guo[3], Z. Dong[3], X. Y. Xu[1]
[1]Imperial College London, United Kingdom; [2]Politecnico di Milano, Italy; [3]Zhongshan Hospital, Fudan University, China

ESB2021_1546-Validation of Patient-Specific Computational Modelling of Type B Aortic Dissection-1546.pdf

PREDICTING DISSECTION RISK IN ASCENDING AORTIC ANEURYSM USING PATIENT-SPECIFIC IMAGE-BASED CFD

S. Pirola[1], M. Y. Salmasi[1], S. Sasidharan[1], S. M. Fisichella[1,2], O. A. Jarral[1], A. Redaelli[2], D. O'Regan[1], T. Athanasiou[1], J. Moore Jr[1], X. Y. Xu[1]
[1]Imperial College London, United Kingdom; [2]Politecnico di Milano, Italy

ESB2021_1744-PREDICTING DISSECTION RISK IN ASCENDING AORTIC ANEURYSM USING PATIENT-SPECIFIC IMAGE-BASED.pdf

FROM CTA TO WALL SHEAR STRESS PREDICTION ON AORTA: A FULLY AUTOMATIC DEEP LEARNING PIPELINE

M. A. Scarpolini[1,2,3], K. Capellini[1,4], S. Longo[4], M. Odino[2], D. Morbidelli[5], M. Cioffi[5], E. Costa[5], V. Positano[1], S. Celi[1]
[1]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [2]TechneValue GmbH, Switzerland; [3]Università di Roma "Tor Vergata"; [4]Dept. of Information Engineering, University of Pisa, Italy; [5]RINA S.p.A., Italy

ESB2021_1863-FROM CTA TO WALL SHEAR STRESS PREDICTION ON AORTA-1863_a.pdf

2:30pm - 3:30pm — Hard-Tissue.1: Hard tissue biomechanics

Session Chair: **Enrico Dall'Ara**

https://teams.microsoft.com/l/channel/19%3a51d82a4df16b420a9568e8c8b035296e%40thread.tacv2/TR14_Hard%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: MULTISCALE TRABECULAR AND COMPACT BONE MECHANICS

P. Zysset
University of Bern, Switzerland

ESB2021_123-PT MULTISCALE TRABECULAR AND COMPACT BONE MECHANICS-123.pdf

Validation of micro finite element models of porcine vertebrae with induced lesion using displacement measured by digital volume correlation

M. Palanca[1,2], S. Oliviero[1,2], E. Dall'Ara[1,2]
[1]Dept of Oncology and Metabolism, University of Sheffield, United Kingdom; [2]INSIGNEO Institute for in silico medicine, University of Sheffield, United Kindgom

ESB2021_1437-Validation of micro finite element models of porcine vertebrae with induced lesion using.pdf

MEASUREMENT OF LINEAR STRAIN FIELDS BY MEANS OF DIGITAL IMAGE CORRELATION

N. Amraish[1,2], A. Reisinger[2], D. Pahr[1,2]
[1]Institute for Lightweight Design and Structural Biomechanics, TU-Wien, Vienna, Austria; [2]Division Biomechanics, Karl Landsteiner University of Health Sciences, Krems Donau, Austria

ESB2021_1364-MEASUREMENT OF LINEAR STRAIN FIELDS BY MEANS OF DIGITAL IMAGE CORRELATION-1364.pdf

MECHANICAL AND MORPHOLOGICAL EVALUATION OF CORTICAL BONE THROUGH IN SITU XCT INDENTATION AND DVC

A. Karali[1], G. Blunn[2], A. P. Kao[3], J. Zekonyte[1], G. Tozzi[1]
[1]Zeiss Global Centre, School of Mechanical and Design Engineering, University of Portsmouth, United Kingdom; [2]School of Pharmacy and Biomedical Sciences, University of Portsmouth, United Kingdom; [3]Elettra - Sincrotrone Trieste S.C.p.A., Italy

ESB2021_1174-MECHANICAL AND MORPHOLOGICAL EVALUATION OF CORTICAL BONE THROUGH-1174.pdf

2:30pm - 3:30pm — HM.1: Human movement

Session Chair: **Carlo Albino Frigo**

https://teams.microsoft.com/l/channel/19%3a37a8583e7c9c4ec9a5e0bae0fbae9e25%40thread.tacv2/TR17_Human%2520movement?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Quantification of Multi-Segmental Spine Kinematics and Function: The Reliability and Outcomes of a New Protocol

J. Fayad[1,2], P. Eltes[2], A. Lazary[2], G. Szőke[3], T. Terebessy[3], L. Cristofolini[1], R. Stagni[4]

[1]Department of Industrial Engineering, Alma Mater Studiorum – Università di Bologna; [2]National Centre for Spinal Disorders, Budapest; [3]Department of Orthopaedics – Semmelweis University, Budapest; [4]Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi", Alma Mater Studiorum – Università di Bologna

ESB2021_1487-Quantification of Multi-Segmental Spine Kinematics and Function-1487.pdf

Comparing the Kinematics of Stroke Survivors and Healthy Individuals in a 360-degree Turning Task Using Inertial Measurement Units (IMU)

M. Abdollahi[1], P. M. Kuber[1], C. Hoang[2], M. Shiraishi[2], R. Soangra[2,3], E. Rashedi[1]
[1]Industrial and Systems Engineering Department, Rochester Institute of Technology, 1 Lomb Memorial Dr, Rochester, NY 14623, USA; [2]Department of Physical Therapy, Crean College of Health and Behavioral Sciences, Chapman University, Orange, CA 92866, USA; [3]Fowler School of Engineering, Chapman University, Orange CA 92866, USA

ESB2021_1673-Comparing the Kinematics of Stroke Survivors and Healthy Individuals-1673.pdf

Proof-of-concept exploratory study: markerless motion capture methodology based on deep learning

S. Zampato[1], A. Bouleimen[1], F. Piemontese[1], S. Fantozzi[2], G. Gatta[3], M. Cortesi[3], M. Rossi[1], Z. Sawacha[1,4]
[1]Dept of Information Engineering, University of Padova, 35131 Padova, Italy; [2]Dept of Electrical, Electronic and Information Engineering, University of Bologna, 40136 Bologna, Italy; [3]Dept for Life Quality Studies, University of Bologna, 47921 Rimini, Italy; [4]Dept of Medicine, University of Padova, 35128 Padova, Italy

ESB2021_1677-Proof-of-concept exploratory study-1677.pdf

COMPARING LAND AND UNDERWATER GAIT CHARACTERISTICS WITH INERTIAL MEASUREMENT UNITS

C. Monoli[1], I. Gasparini[2], L. Piccinini[3], J. A. Tuhtan[1], M. Galli[2]
[1]Centre for Biorobotics, Tallinn University of Technology, Tallinn, Estonia; [2]DEIB, Politecnico di Milano, Milan, Italy; [3]IRCCS "La nostra famiglia" Bosisio Parini, Italy

ESB2021_1718-COMPARING LAND AND UNDERWATER GAIT CHARACTERISTICS WITH INERTIAL MEASUREMENT UNITS-1718.pdf

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2:30pm - 3:30pm

Orth-dev.2: Implants and devices for orthopaedic applications

Session Chair: **Boyko Gueorguiev**

https://teams.microsoft.com/l/channel/19%3a57027081610449b28ac6f3f78c40f85f%40thread.tacv2/TR11_Implant%2520and%2520Devices%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Oxidation Resistance and Wear Performance of Vitamin E Blended Polyethylene for Total Knee Arthrolasty

A. L. Puente Reyna[1], A. Bollinger[1], M. A. Mulliez[1], T. M. Grupp[1,2]
[1]Aesculap AG, Germany; [2]Ludwig Maximilians University Munich, Department of Orthopaedic Surgery, Physical Medicine and Rehabilitation, Germany

ESB2021_1352-Oxidation Resistance and Wear Performance of Vitamin E Blended Polyethylene-1352.pdf

Targeting End-of-Stem Pain: A Biomechanical Analysis Based on 3-Dimensional Models of Human Femora

E. M. Sporer[1,2], C. Schilling[1], A. Sauer[1,3], R. J. Tait[4], A. Giurea[5], T. M. Grupp[1,3]
[1]Aesculap AG Research & Development, Tuttlingen, Germany; [2]Ludwig Maximilians University Munich, Medical Department, Munich, Germany; [3]Ludwig Maximilians University Munich, Dept. of Orthopaedic Surgery, Physical Medicine & Rehabilitation, Munich, Germany; [4]Orthopaedic Institute of Henderson, Henderson, Nevada, USA; [5]Medical University of Vienna, Dept. of Orthopaedic Surgery, Vienna, Austria

ESB2021_1407-Targeting End-of-Stem Pain-1407.pdf

Targeting End-of-Stem Pain: Surface Strains on Human Femora Under Dynamic Load.

C. Schilling[1], E. M. Sporer[1,2], R. J. Tait[3], A. Giurea[4], T. M. Grupp[1,5]
[1]Aesculap AG Research & Development, Tuttlingen, Germany; [2]Ludwig Maximilians University Munich, Medical Department, Munich, Germany; [3]Orthopaedic Institute of Henderson, Henderson, Nevada, USA; [4]Medical University of Vienna, Dept. of Orthopaedic Surgery, Vienna, Austria; [5]Ludwig Maximilians University Munich, Dept. of Orthopaedic Surgery, Physical Medicine & Rehabilitation, Munich, Germany

ESB2021_1411-Targeting End-of-Stem Pain-1411.pdf

IS THERE AN INFLUENCE OF DILUTE POVIDONE-IODINE (BETADINE) LAVAGE ON THE INTERFACE FIXATION OF TIBIAL BASEPLATES UNDER CLINICALLY RELEVANT CONDITIONS?

T. M. Grupp[1,2], A. L. Puente Reyna[1], C. Schilling[1], B. Masi[3], B. Fritz[1], W. M. Mihalko[4], C. Taunt[5]
[1]Aesculap AG Research & Development, Tuttlingen, Germany; [2]Ludwig Maximilians University Munich, Department of Orthopaedic Surgery, Physical Medicine &; [3]Aesculap Inc. Research & Development, Center Valley, Pennsylvania, USA; [4]Campbell Clinic Department of Orthopaedic Surgery & Biomedical Engineering, University of Tennessee Health Science Center, TN, USA; [5]Michigan Orthopedic Center 2815 S Pennsylvania Ave, Suite 204, Lansing, Michigan USA

ESB2021_1729-IS THERE AN INFLUENCE OF DILUTE POVIDONE-IODINE-1729.pdf

ASYMMETRIC VS SYMMETRIC INSERTS IN MOBILE BEARING TOTAL KNEE ARTHROPLASTY, A CLINICAL AND BIOMECHANICAL STUDY

E. Bori[1], S. Pianigiani[1], G. Castellarin[2], B. Innocenti[1]
[1]BEAMS Department, Université Libre de Bruxelles, Belgium; [2]II Unit Orthopaedic Department, Ospedale di Suzzara, Mantua, Italy

ESB2021_1307-ASYMMETRIC VS SYMMETRIC INSERTS IN MOBILE BEARING TOTAL KNEE ARTHROPLASTY, A CLINICAL AND.pdf

IN SILICO DETAILED ASSESSMENT OF THE INTERCONNECTION MECHANISM IN A COMMERCIAL SPINAL FIXATION SYSTEM

L. Ciriello, F. Berti, E. Galbusera, G. Pennati, T. Villa, L. La Barbera
Politecnico di Milano, Italy

ESB2021_1451-IN SILICO DETAILED ASSESSMENT OF THE INTERCONNECTION MECHANISM-1451.pdf

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2:30pm - 3:30pm

VVUQ.1: Verification, validation and uncertainties quantification

Session Chair: **José Félix Rodriguez Matas**

https://teams.microsoft.com/l/channel/19%3a5e24b1015ced4eaa933e9b3e7059321d%40thread.tacv2/TR22_VVUQ?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Efficient estimation of cardiac conductivities: A proper generalized decomposition approach

A. Barone[1,4], M. G. Carlino[2], A. Gizzi[1], S. Perotto[3], A. Veneziani[4]
[1]Department of Engineering, University Campus Bio-Medico of Rome, Italy; [2]INRIA, France; [3]MOX, Politecnico di Milano, Italy; [4]Department of Mathematics, Emory University, USA

ESB2021_1674-Efficient estimation of cardiac conductivities-1674.pdf

SENSITIVITY ANALYSIS TOWARDS A MODEL OF THE HUMAN HEART

G. Del Corso[1], R. Verzicco[1,2], F. Viola[1]
[1]GSSI (Gran Sasso Science Institute); [2]Università di Roma "Tor Vergata"

ESB2021_1572-SENSITIVITY ANALYSIS TOWARDS A MODEL OF THE HUMAN HEART-1572.pdf

SENSITIVITY ANALYSIS OF MENISCUS ASSUMPTIONS IN A VALIDATED TIBIOFEMORAL FINITE ELEMENT MODEL

J. Yao, J. Crockett, M. D'Souza, G. Day, R. Wilcox, A. Jones, M. Mengoni
Insitute of Medical and Biological Engineering, University of Leeds, United Kingdom

ESB2021_1282-SENSITIVITY ANALYSIS OF MENISCUS ASSUMPTIONS IN A VALIDATED TIBIOFEMORAL FINITE ELEMENT.pdf

REPRODUCIBILITY OF THE DENSITOMETRIC AND MECHANICAL PROPERTIES OF THE MOUSE TIBIA FROM IN VIVO MICRO-CT

S. Oliviero, V. S. Cheong, B. C Roberts, W. Griffiths, E. Dall'Ara
University of Sheffield, United Kingdom

ESB2021_1318-REPRODUCIBILITY OF THE DENSITOMETRIC AND MECHANICAL PROPERTIES OF THE MOUSE TIBIA FROM-1318.pdf

Uncertainity Quantification of Hyperelastic Soft Tissue

M. Pekedis
Ege University, Turkey

ESB2021_1822-Uncertainity Quantification of Hyperelastic Soft Tissue-1822.pdf

3:30pm - 3:45pm — **break-d1-5: Break**

3:45pm - 5:00pm — **std-aw: Student Award**
Session Chair: **Markus Heller**
Session Chair: **Aurélie Carlier**
https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

AN IMAGE-BASED CFD AND RBF MESH MORPHING APPROACH: AN ALTERNATIVE FOR STANDARD FSI TECHNIQUE

K. Capellini[1,2], E. Gasparotti[1,2], E. Vignali[1], B. M. Fanni[1,2], U. Cella[3], E. Costa[4], M. E. Biancolini[3], S. Celi[1]
[1]Fondazione Toscana Gabriele Monasterio, Italy; [2]Dept. of Information Engineering, University of Pisa, Italy; [3]Dept. of Enterprise Engineering, University of Rome Tor Vergata, Italy; [4]RINA Consulting Spa, Italy

ESB2021_1862-AN IMAGE-BASED CFD AND RBF MESH MORPHING APPROACH-1862_a.pdf

Mechano-driven regeneration predicts bone ingrowth in large animal model based on scaffold implantation site

G. Nasello[1,2], M. Á. Pérez[1], J. M. García-Aznar[1]
[1]University Of Zaragoza, Belgium; [2]KU Leuven, Belgium

ESB2021_1723-Mechano-driven regeneration predicts bone ingrowth-1723_a.pdf

IN VIVO AORTIC HEMODYNAMICS ANALYSIS COMBINING COMPLEX NETWORKS THEORY AND 4D FLOW MRI

K. Calò[1], A. Guala[2], D. Gallo[1], J. Rodriguez-Palomares[2], S. Scarsoglio[1], L. Ridolfi[1], U. Morbiducci[1]
[1]PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Hospital Universitari Vall d'Hebron, Department of Cardiology, CIBER-CV, Vall d'Hebron Institut de Recerca (VHIR), Universitat Autonoma de Barcelona, Barcelona, Spain

ESB2021_1462-IN VIVO AORTIC HEMODYNAMICS ANALYSIS COMBINING COMPLEX NETWORKS THEORY AND 4D FLOW MRI-1462_a.pdf

A finite element – agent-based coupled model of restenosis: linking tissue damage to cellular dynamics

A. Corti[1], M. Colombo[1], F. Colombo[1], S. A. Berceli[2,3], F. Migliavacca[1], J. F. Rodriguez Matas[1], C. Chiastra[1,4]
[1]LaBS, Dept. of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Italy; [2]Dept. of Surgery, University of Florida, FL, USA; [3]Malcom Randall VAMC, FL, USA; [4]PoliToBIOMed Lab, Dept. of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy

ESB2021_1380-A finite element – agent-based coupled model of restenosis-1380_a.pdf

5:00pm - 5:15pm — **break-d1-6: Break**

5:15pm - 6:30pm — **Cell.2: Cellular and molecular biomechanics**
Session Chair: **Monica Soncini**
Session Chair: **Marco Agostino Deriu**
https://teams.microsoft.com/l/channel/19%3a14ea6f3449684f5698dff33ab5c47781%40thread.tacv2/TR05_Cellular%2520and%2520Molecular%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: A Computational Perspective on Virtual Liver Design: Fluid Flow, Zonation, Fibrosis and Mechanics

J. A. Tuszynski[1], V. Rezania[2], D. Coombe[3]
[1]Politecnico di Torino, Italy, Department of Physics, University of Alberta, Edmonton, Canada; [2]MacEwan University, Edmonton, Canada; [3]Computer Modelling Group, Ltd.Calgary, Canada

ESB2021_131-PT A Computational Perspective on Virtual Liver Design Fluid Flow, Zonation, Fibrosis and.pdf

DISCOVERY OF SARS-COV-2 MAIN PROTEASE INHIBITORS THROUGH DEEP DOCKING OF 1.36 BILLION COMPOUNDS

F. Gentile, A.-T. Ton, H. Mslati, F. Ban, A. Cherkasov
Vancouver Prostate Centre, The University of British Columbia, Canada

ESB2021_1580-DISCOVERY OF SARS-COV-2 MAIN PROTEASE INHIBITORS THROUGH DEEP DOCKING OF 136 BILLION.pdf

Mechanically controlled antigen sensing by T-cell receptors

W. Hwang
Texas A&M University, United States of America

ESB2021_1757-Mechanically controlled antigen sensing by T-cell receptors-1757.pdf

Mechanosignaling in human atrial fibroblasts: Implications for cardiac fibrosis

R. Emig[1,2,3], W. Knodt[1], C. M. Zgierski-Johnston[1], W. Weber[2,3], M. Hörner[2,3], U. Ravens[1], P. Kohl[1,2], R. Peyronnet[1]
[1]Institute for Experimental Cardiovascular Medicine, University Heart Center Freiburg · Bad Krozingen, and Faculty of Medicine, University of Freiburg, Freiburg, Germany; [2]CIBSS – Centre for Integrative Biological Signalling Studies, University of Freiburg, Freiburg, Germany; [3]Faculty of Biology, University of Freiburg, Freiburg, Germany

ESB2021_1350-Mechanosignaling in human atrial fibroblasts-1350.pdf

Sucrose-Driven Effects on Structure-Function Relationships in Human Sweet Taste Receptor

L. Pallante[1], M. Malavolta[1], G. Grasso[2], M. A. Deriu[1]
[1]PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Dalle Molle Institute for Artificial Intelligence (IDSIA), Switzerland

ESB2021_1776-Sucrose-Driven Effects on Structure-Function Relationships-1776_a.pdf

THE EFFECT OF TYPE 1 DIABETES ON FORCE-LENGTH RELATIONS IN SINGLE LEFT AND RIGHT VENTRICULAR CARDIOMYOCYTES

D. Volzhaninov[1], T. Myachina[1,2], X. Butova[1], A. Khokhlova[1,2]
[1]Institute of Immunology and Physiology, Russian Academy of Sciences, Russian Federation; [2]Ural Federal University, Russian Federation

ESB2021_1745-THE EFFECT OF TYPE 1 DIABETES ON FORCE-LENGTH RELATIONS-1745.pdf

5:15pm - 6:30pm

CV-Impl.3: Implants and devices for cardiovascular applications

Session Chair: **Claire Conway**

https://teams.microsoft.com/l/channel/19%3ad29cbbb044b543f58199d8f1a24724a4%40thread.tacv2/TR02_Implants%2520and%2520Devices%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

EXPERIMENTAL ASSESSMENT OF A MOCK CALCIFIED ABDOMINAL AORTIC ANEURYSM

P. Mahbeer[1,2], G. Soulez[2], R. Mongrain[1]
[1]McGill University, Canada; [2]Centre de Recherche du Centre Hospitalier de l'Université de Montréal

ESB2021_1778-EXPERIMENTAL ASSESSMENT OF A MOCK CALCIFIED ABDOMINAL AORTIC ANEURYSM-1778.pdf

EFFECT OF BRANCHED ENDOGRAFTS ON LOCAL FLOW PATTERNS IN THE AORTIC ARCH IN COMPLEX AORTIC ARCH REPAIR

S. Sengupta[1], Y. Zhu[1], M. Hamady[2], Y. Xu[1]
[1]Imperial College London, United Kingdom; [2]Department of Interventional Radiology, St Mary's Hospital, Imperial College London, United Kingdom

ESB2021_1237-EFFECT OF BRANCHED ENDOGRAFTS ON LOCAL FLOW PATTERNS-1237.pdf

PATIENT-SPECIFIC CFD ANALYSIS OF TRANSCATHETER AORTIC ROOT REPLACEMENT WITH CHIMNEY CORONARY GRAFTS

R. M. Romarowski[1], A. Ferrarini[1], M. Stochino[1], F. Auricchio[1], S. Morganti[1], L. K. von Segesser[2], E. Ferrari[3,4], M. Conti[1]
[1]University of Pavia, Italy; [2]University of Lausanne, Switzerland; [3]University of Zurich, Switzerland; [4]Cardiocentro Ticino, Switzerland

ESB2021_1360-PATIENT-SPECIFIC CFD ANALYSIS OF TRANSCATHETER AORTIC ROOT REPLACEMENT WITH CHIMNEY CORONARY.pdf

4D XCT OF SYNTHETIC ARTERIAL GRAFTS: TOWARDS AN IMPROVED DESIGN

A. Coirbay[1,2], G. Pyka[1,2], G. Kerckhofs[1,2,3,4]
[1]Institute of Mechanics, Materials, and Civil Engineering, UCLouvain, Belgium; [2]Institute of Experimental and Clinical Research, UCLouvain, Belgium; [3]Dept. Materials Science and Engineering, KU Leuven, Belgium; [4]Prometheus, Division of Skeletal Tissue Engineering, KU Leuven, Belgium

ESB2021_1357-4D XCT OF SYNTHETIC ARTERIAL GRAFTS-1357.pdf

IN VITRO STUDY OF EFFECTS OF ECMO ON PATIENT SPECIFIC AORTA UNDER CARDIOGENIC SHOCK CONDITIONS

E. Gasparotti[1,2], E. Vignali[1], M. Scolaro[3], P. A. Del Sarto[3], S. Celi[1], D. Haxhiademi[3]
[1]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [2]Dept. of Information Engineering, University of Pisa, Italy; [3]Intensive Care Unit, Fondazione Toscana Gabriele Monasterio, Italy

ESB2021_1858-IN VITRO STUDY OF EFFECTS OF ECMO ON PATIENT SPECIFIC AORTA UNDER CARDIOGENIC SHOCK.pdf

IN-SILICO MODELING OF THE LEFT ATRIAL APPENDAGE OCCLUSION: DEFINITION OF A VALIDATION PATH

F. Danielli[1], A. Zaccaria[1,2], E. Stretti[1], M. F. Zaccone[1], E. Gasparotti[3,4], B. M. Fanni[3,4], K. Capellini[3,4], S. Celi[3], G. Pennati[1], L. Petrini[5]
[1]LaBS, Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy; [2]Intellimech, Italy; [3]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [4]Dept. of Information Engineering, University of Pisa, Italy; [5]Dept. of Civil and Environmental Engineering, Politecnico di Milano, Italy

ESB2021_1699-IN-SILICO MODELING OF THE LEFT ATRIAL APPENDAGE OCCLUSION-1699.pdf

A PULSATILE FLOW SIMULATOR FOR THE EXPERIMENTAL INVESTIGATION OF CARDIOVASCULAR TISSUES AND STRUCTURES

D. Bianchi[1], D. Bissacco[2], M. Domanin[2], S. Trimarchi[2], R. Romarowski[1], S. Marconi[1], F. Auricchio[1], M. Conti[1]
[1]University of Pavia, Italy; [2]IRCCS Ca' Grande Ospedale Maggiore Policlinico Milano, Italy

ESB2021_1496-A PULSATILE FLOW SIMULATOR FOR THE EXPERIMENTAL INVESTIGATION-1496.pdf

PREDICTION OF IN-STENT RESTENOSIS BY MODELLING TISSUE DAMAGE AND GROWTH

R. He, L. Zhao
Loughborough University, United Kingdom

ESB2021_1214-PREDICTION OF IN-STENT RESTENOSIS BY MODELLING TISSUE DAMAGE AND GROWTH-1214.pdf

5:15pm - 6:30pm

CV-Mech.1: Cardiovascular mechanics

Session Chair: **Peter Edward McHugh**

https://teams.microsoft.com/l/channel/19%3adfc7d4fe37914150a419a66ecd7331f5%40thread.tacv2/TR01_Cardiovascular%2520Mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

MECHANICAL CHARACTERIZATION OF THROMBI RETRIEVED WITH ENDOVASCULAR THROMBECTOMY IN PATIENTS WITH ACUTE ISCHEMIC STROKE

N. Boodt, A. van der Lugt, F. Gijsen
Erasmus MC, Netherlands, The

ESB2021_1876-MECHANICAL CHARACTERIZATION OF THROMBI RETRIEVED WITH ENDOVASCULAR THROMBECTOMY-1876.pdf

FIRST PATIENT-SPECIFIC IN SILICO THROMBECTOMY PROCEDURE

G. Luraghi[1], S. Bridio[1], J. F. Rodriguez Matas[1], N. Boodt[2], F. Gijsen[2,3], A. van der Lugt[2], B. Fereidoonnezhad[4], K. Moerman[4], P. McGarry[4], P. Konduri[5], N. Arrarte Terreros[5], H. Marquering[5], C. Majoie[5], F. Migliavacca[1]
[1]Politecnico di Milano, Italy; [2]Erasmus MC, Netherlands; [3]Delft University of Technology, Netherlands; [4]National University of Ireland Galway, Ireland; [5]Amsterdam UMC, location AMC, Netherlands

ESB2021_1365-FIRST PATIENT-SPECIFIC IN SILICO THROMBECTOMY PROCEDURE-1365.pdf

DECIPHERING THE EFFECT OF THROMBOLYSIS ON CLOT MECHANICAL PROPERTIES AND ITS MICROSTRUCTURE

A. Dwivedi[1], J. Burke[2], M. Gilavary[1], R. McCarthy[2]
[1]Cerenovus, Ireland; [2]National University of Galway, Ireland

ESB2021_1872-DECIPHERING THE EFFECT OF THROMBOLYSIS ON CLOT MECHANICAL PROPERTIES AND ITS MICROSTRUCTURE-1872.pdf

A REVIEW ON THE ASSOCIATION OF THROMBUS COMPOSITION WITH CLINICAL IMAGING AND MECHANICAL CHARACTERISTICS

R. Cahalane[1], N. Boodt[1], A. Akyildiz[1], J.-a. Giezen[2], M. Mondeel[2], A. van der Lugt[1], H. Marquering[3], F. Gijsen[1]
[1]Erasmus MC, Netherlands, The Netherlands; [2]Delft University of Technology, The Netherlands; [3]Amsterdam University Medical Centre, The Netherlands

ESB2021_1878-A REVIEW ON THE ASSOCIATION OF THROMBUS COMPOSITION WITH CLINICAL IMAGING AND MECHANICAL.pdf

A multiscale haemodynamic simulation environment for acute ischaemic stroke modelling

R. Padmos[1], T. Józsa[2], W. El-Bouri[2,3], G. Závodszky[1], S. Payne[2], A. Hoekstra[1]
[1]Computational Science Laboratory, Informatics Institute, Faculty of Science, University of Amsterdam, the Netherlands; [2]nstitute of Biomedical Engineering, Department of Engineering Science, University of Oxford, UK; [3]Liverpool Centre for Cardiovascular Science, Department of Cardiovascular and Metabolic Medicine, University of Liverpool, UK

ESB2021_1810-A multiscale haemodynamic simulation environment for acute ischaemic stroke modelling-1810.pdf

A NEW CONSTITUTIVE MODEL FOR PERMANENT DEFORMATION OF BLOOD CLOTS DURING CYCLIC PRESSURE ASPIRATION

B. Fereidoonnezhad, P. McGarry

National University of Ireland Galway, Galway, Ireland

ESB2021_1753-A NEW CONSTITUTIVE MODEL FOR PERMANENT DEFORMATION-1753.pdf

MODELING ACUTE ISCHEMIC STROKE RECANALIZATION THROUGH CYCLIC ASPIRATION

O. Oyekole[1], F. Costanzo[1], S. Simon[2], K. Manning[1]
[1]The Pennsylvania State University, United States of America; [2]Penn State Hershey Medical Center, United States of America

ESB2021_1879-MODELING ACUTE ISCHEMIC STROKE RECANALIZATION THROUGH CYCLIC ASPIRATION-1879.pdf

5:15pm - 6:30pm

Msk-imag.1: Imaging for muscoloskeletal applications

Session Chair: **Guillermo Rus**

https://teams.microsoft.com/l/channel/19%3a05d8d6c5ddf64163aaa13c35bee5f9dc%40thread.tacv2/TR10_Imaging%2520for%2520Musculoskeletal?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Perspectives on Muscle Elastography: Forces, Fibers, Fractals and Fractional Calculus

T. J Royston
University of Illinois at Chicago, United States of America

ESB2021_108-PT Perspectives on Muscle Elastography Forces, Fibers, Fractals and Fractional Calculus-108.pdf

MAGNETIC RESONANCE ELASTOGRAPHY: A TORSIONAL ACTUATION FOR AN ANISOTROPIC MUSCLE-MIMICKING PHANTOM

C. Gambacorta, M. Guidetti, T. Royston
University of Illinois at Chicago, United States of America

ESB2021_1178-MAGNETIC RESONANCE ELASTOGRAPHY-1178.pdf

BONE SAMPLE SELECTION FOR SCREW MECHANICAL TESTING BASED ON PERI-IMPLANT CT MORPHOMETRY

J. D. Silva-Henao, D. H. Pahr, A. G. Reisinger
Karl Landsteiner Private University, Austria

ESB2021_1212-BONE SAMPLE SELECTION FOR SCREW MECHANICAL TESTING BASED-1212.pdf

Fundamental shape analysis of human trabecular bone using surface curvature and Minkowski functionals

S. Callens[1], D. Tourolle[2], R. Müller[2], A. A. Zadpoor[1]
[1]Delft University of Technology, Delft, The Netherlands; [2]ETH Zurich, Zurich, Switzerland

ESB2021_1763-Fundamental shape analysis of human trabecular bone using surface curvature and Minkowski_a.pdf

PRESERVATION OF CARTILAGE MICROMECHANICS VIA OPTIMISED CONTRAST-ENHANCED X-RAY COMPUTED TOMOGRAPHY

S. Davis[1,2], G. Tozzi[2], G. Kerckhofs[3], G. Pyka[3], M. Roldo[1], G. Blunn[1]
[1]School of Pharmacy and Biomedical Science, University of Portsmouth, UK.; [2]Zeiss Global Centre, School of Mechanical and Design Engineering, University of Portsmouth, UK; [3]UCLouvain, Louvain-la-Neuve, Belgium

ESB2021_1779-PRESERVATION OF CARTILAGE MICROMECHANICS VIA OPTIMISED CONTRAST-ENHANCED X-RAY COMPUTED.pdf

5:15pm - 6:30pm

Msk.2: Musculoskeletal biomechanics

Session Chair: **Dennis Janssen**

https://teams.microsoft.com/l/channel/19%3ad142c4ba1ecf4a929219f6efcae89fa6%40thread.tacv2/TR08_Musculoskeletal%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

BIOMECHANICAL PROPERTIES OF PARASPINAL MUSCLES INFLUENCE SPINAL LOADING - A MUSCULOSKELETAL SIMULATION STUDY

M. Malakoutian[1], C. A. Sanchez[2], S. H. Brown[3], J. Street[4], S. Fels[2], T. R. Oxland[1,4]
[1]Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada; [2]Department of Electrical and Computer Engineering, University of British Columbia, Vancouver, Canada; [3]Department of Human Health and Nutritional Sciences, University of Guelph, Guelph, Canada; [4]Department of Orthopaedics, University of British Columbia, Vancouver, Canada

ESB2021_1483-BIOMECHANICAL PROPERTIES OF PARASPINAL MUSCLES INFLUENCE SPINAL LOADING-1483_a.pdf

Muscle activity in sleep-like states of consciousness for the validation of active human body models

L. Baur, J. Muehlbauer, S. Schick, S. Peldschus
Biomechanics and Accident Analysis, Institute of Legal Medicine, University of Munich LMU, Germany

ESB2021_1227-Muscle activity in sleep-like states of consciousness-1227.pdf

THE EFFECT OF PATHOLOGICAL SCAPULOHUMERAL RHYTHM ON MUSCLE FORCES AFTER REVERSE SHOULDER ARTHROPLASTY

L. Leuthard[1], J. Menze[2], B. Wirth[3], L. Audige[3], S. J. Ferguson[1]
[1]Institute for Biomechanics, ETH Zurich, Switzerland; [2]sitem Center, University of Bern, Switzerland; [3]Schulthess Klinik, Zürich, Switzerland

ESB2021_1400-THE EFFECT OF PATHOLOGICAL SCAPULOHUMERAL RHYTHM ON MUSCLE FORCES AFTER REVERSE SHOULDER.pdf

IN VIVO FORCE ENHANCEMENT IS LARGEST WHEN MUSCLES OPERATE ON THEIR FORCE-LENGTH PLATEAU

C. P. Cop[1], A. C. Schouten[1,2], B. F. Koopman[1], M. Sartori[1]
[1]University of Twente, Netherlands, The; [2]Delft University of Technology, Netherlands, The

ESB2021_1511-IN VIVO FORCE ENHANCEMENT IS LARGEST WHEN MUSCLES OPERATE-1511.pdf

Changes in muscle activation pattern during gait among healthy children

J. Ziziene[1], K. Daunoraviciene[1], J. Griskevicius[1], G. Juskeniene[2], K. Rinkeviciute[2], J. Raistenskis[2]
[1]Vilnius Gediminas Technical University, Lithuania; [2]Vilnius University Hospital Santaros Klinikos

ESB2021_1573-Changes in muscle activation pattern during gait among healthy children-1573.pdf

ALTERATIONS IN MUSCLE ACTIVITY AND KINEMATICS DURING GAIT IN CHILDREN WITH FRAGILE X SYNDROME

Z. Sawacha[1,3], F. Spolaor[1], W. J. Piatkowska[1], A. Ciniglio[1], F. Cibin[1], A. Guiotto[1], R. Polli[2], A. Murgia[2]
[1]Department of Information Engineering, University of Padova, Italy; [2]Department of Women and Children Health, University of Padova, Italy; [3]Department of Medicine, DIMED, University of Padova, Italy

ESB2021_1661-ALTERATIONS IN MUSCLE ACTIVITY AND KINEMATICS DURING GAIT IN CHILDREN WITH FRAGILE X.pdf

MODELING OF MYOFIBRIL MISALIGNMENT IN DYSTROPHIC FIBER

M. Stefanati[1], Y. Torrente[2], J. F. Rodriguez Matas[1]
[1]Department of Chemistry, Materials and Chemical Engineering “Giulio Natta”, Politecnico di Milano, Italy; [2]Stem Cell Laboratory, Department of Pathophysiology and Transplantation, State University of Milan, Italy

ESB2021_1185-MODELING OF MYOFIBRIL MISALIGNMENT IN DYSTROPHIC FIBER-1185.pdf

5:15pm -

OP.1: Orthotics & prosthetics

Session Chair: **Alberto Leardini**

6:30pm

https://teams.microsoft.com/l/channel/19%3a710ec0f721f74c71a708936e08df6104%40thread.tacv2/TR18_Orthotics%2520and%2520Prosthetics?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: TOWARDS EVIDENCE-BASED PROSTHETIC SOCKET DESIGN: MODELLING AND OPTIMISATION TOOLS TO SUPPORT THE CLINICIAN

A. Dickinson
University of Southampton, United Kingdom

ESB2021_103-PT TOWARDS EVIDENCE-BASED PROSTHETIC SOCKET DESIGN MODELLING AND OPTIMISATION TOOLS-103.pdf

VECTOR AND GEOMETRIC EXACT SOLUTION IN SINTHESYS OF TOTORONTO MECHANISM APPLIED IN TRANSRADIAL PROSTHESIS

L. A. BAUTISTA HERNANDEZ, D. F. VILLEGAS BERMUDEZ
INDUSTRIAL UNIVERSITY OF SANTANDER, Colombia

ESB2021_1752-VECTOR AND GEOMETRIC EXACT SOLUTION IN SINTHESYS OF TOTORONTO MECHANISM APPLIED IN TRANSRADIAL.pdf

MOTION SYNERGIES IN TENDON-DRIVEN PROSTHETIC HANDS ACTUATED BY ABLE-BODIED SUBJECTS

I. Llop-Harillo, A. Pérez-González, J. Andrés-Esperanza
Universitat Jaume I, Spain

ESB2021_1165-MOTION SYNERGIES IN TENDON-DRIVEN PROSTHETIC HANDS ACTUATED-1165.pdf

Design of 3D printed hinged ankle-foot orthosis based on in-vivo kinematics analysis with custom rigid shells

C. Ferraresi[1], C. De Benedictis[1], D. Maffiodo[1], W. Franco[1], A. Leardini[2]
[1]Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Torino, Italy; [2]Movement Analysis Laboratory, IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy

ESB2021_1195-Design of 3D printed hinged ankle-foot orthosis based-1195.pdf

FUNCTIONAL EVALUATION OF A NOVEL CUSTOM ANKLE-FOOT-ORTHOSIS IN PATIENTS WITH SEVERE DROP-FOOT

G. Rogati[1], A. Leardini[1], A. Zomparelli[2], G. Lullini[1], L. Berti[1], C. Fanciullo[1], A. Cinquepalmi[1], F. Cevolini[3], M. Ortolani[1], L. Boriani[1], P. Caravaggi[1]
[1]IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy; [2]MHOX Design, Modena, Italy; [3]CRP Technology, Modena, Italy

ESB2021_1428-FUNCTIONAL EVALUATION OF A NOVEL CUSTOM ANKLE-FOOT-ORTHOSIS-1428.pdf

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5:15pm - 6:30pm

Reproduct.1: Reproductive biomechanics

Session Chair: **Kristin M. Myers**
Session Chair: **David Elad**

https://teams.microsoft.com/l/channel/19%3a049b3eb26b1b4e6da3d33f29cb657d38%40thread.tacv2/TR30_Reproductive%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

BIOMECHANICS OF CERVICAL FUNNELING IN HIGH-RISK PREGNANCIES

K. M. Myers
Columbia University, United States of America

ESB2021_1877-BIOMECHANICS OF CERVICAL FUNNELING IN HIGH-RISK PREGNANCIES-1877.pdf

QUANTIFYING 3D SHAPE CHANGES TO THE DEEP AND SUPERFICIAL MUSCLES OF THE PELVIC FLOOR IN PREGNANT WOMEN

M. R. Routzong[1], L. C. Martin[1], G. Rostaminia[2], P. A. Moalli[3], S. D. Abramowitch[1]
[1]Department of Bioengineering, University of Pittsburgh, United States of America; [2]Division of Urogynecology, University of Chicago, United States of America; [3]Department of Obstetrics, Gynecology & Reproductive Surgery, University of Pittsburgh, United States of America

ESB2021_1833-QUANTIFYING 3D SHAPE CHANGES TO THE DEEP AND SUPERFICIAL MUSCLES-1833.pdf

Cervical remodeling: an interplay between the collagen fiber microstructure and micromechanical properties

A. Ostadi Moghaddam[1], Z. Lin[2], M. Sivaguru[1], H. Phillips[1], B. L. McFarlin[3], K. C. Toussaint[2], A. J. Wagoner Johnson[1]
[1]University of Illinois at Urbana-Champaign, United States of America; [2]Brown University, United States of America; [3]University of Illinois at Chicago, United States of America

ESB2021_1840-Cervical remodeling-1840.pdf

Biomechanical investigations into the cervical cerclage

A. Baumer[1], M. C Leftwich[1], A. Gimovsky[2], M. Gallagher[2]
[1]George Washington University, Department of Mechanical and Aerospace Engineering; [2]George Washington University, Department of Obstetrics and Gynecology, Division of Maternal Fetal Medicine

ESB2021_1851-Biomechanical investigations into the cervical cerclage-1851.pdf

MONTE CARLO SIMULATION OF PELVIC FLOOR SUPPORT BIOMECHANICAL MODEL: POPSIM

M. Gordon[1], C. Swenson[2], J. DeLancey[2], L. Chen[2,3]
[1]Biomedical Engineering, California Baptist University, Riverside, CA, USA; [2]Obstetrics and Gynecology, University of Michigan, Ann Arbor, MI, USA;; [3]Biomedical Engineering, University of Michigan, Ann Arbor, MI, USA;

ESB2021_1869-MONTE CARLO SIMULATION OF PELVIC FLOOR SUPPORT BIOMECHANICAL MODEL-1869.pdf

Biomechanics of fetal head molding during vaginal delivery

R. Moura[1], M. Vila Pouca[2], D. Oliveira[2], M. Parente[2], T. Mascarenhas[1], R. Natal Jorge[2]
[1]CHUSJ, FMUP, Portugal; [2]INEGI-LAETA, FEUP, Portugal

ESB2021_1538-Biomechanics of fetal head molding during vaginal delivery-1538.pdf

NUMERICAL MODELLING OF A SYNTETIC MESH IMPLANT TO REPAIR THE UTEROSACRAL LIGAMENT

E. Silva[1], J. Bessa[2], M. Parente[1], T. Mascarenhas[1,3], A. Fernandes[1]
[1]LAETA, INEGI, Faculty of Engineering, University of Porto, Portugal; [2]Faculty of Engineering, University of Porto, Portugal; [3]Dep. of Obstetrics and Gynecology, CHSJ-EPE / Faculty of Medicine, University of Porto, Portugal

ESB2021_1211-NUMERICAL MODELLING OF A SYNTETIC MESH IMPLANT TO REPAIR THE UTEROSACRAL LIGAMENT-1211.pdf

Biomechanical Study of Different Birthing Positions

P. M. Borges[1], D. Oliveira[2], M. Parente[2], T. Mascarenhas[1], R. Natal[2]
[1]Centro Hospitalar Universitário de São João, Faculty of Medicine, University of Porto, Portugal, Portugal; [2]INEGI-LAETA, Faculty of Engineering, University of Porto, Portugal

ESB2021_1539-Biomechanical Study of Different Birthing Positions-1539.pdf

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5:15pm - 6:30pm

Soft-Tissue.1: Soft tissue mechanics

Session Chair: **Rosaire Mongrain**
Session Chair: **Marie Christine Ho-Ba-Tho**

https://teams.microsoft.com/l/channel/19%3a1c67951192494ef19dedc6f6b20b4592%40thread.tacv2/TR15_Soft%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: BIOMECHANICS OF THE TISSUES OF THE EYE WALL AND APPLICATIONS TO GLAUCOMA

T. D. Nguyen
Johns Hopkins University, United States of America

ESB2021_130-PT BIOMECHANICS OF THE TISSUES OF THE EYE WALL AND APPLICATIONS-130.pdf

Wire-cutting to test the fracture properties of brain tissue and biomimicking gels: experiments and modelling

M. Terzano[1], A. Spagnoli[2], D. Dini[3], A. E. Forte[4,5]
[1]Institute of Biomechanics, Graz University of Technology, Austria; [2]University of Parma, Italy; [3]Imperial College London, UK; [4]DEIB, Politecnico di Milano, Italy; [5]Harvard University, USA

ESB2021_1846-Wire-cutting to test the fracture properties of brain tissue and biomimicking gels-1846.pdf

The Biomechanics of Being Born: Characterising Ovine Pelvic Tissue

K. Harte, A. Lennon, G. Menary
Queen's University Belfast, United Kingdom

ESB2021_1692-The Biomechanics of Being Born-1692_a.pdf

Design and preliminary validation of a novel, non-invasive intra-abdominal pressure measurement device

N. Jacobson, M. Driscoll
McGill University, Canada

ESB2021_1199-Design and preliminary validation of a novel, non-invasive intra-abdominal pressure measurement.pdf

COMPUTATIONAL INVESTIGATION OF ARTIFICIAL URINARY SPHINCTERS RELIABILITY DEPENDING ON TISSUES DEGENERATION

C. G. Fontanella[1,2], I. Toniolo[1], A. Arduino[3], J. V. Fotso Fogang[3], A. Natali[2], E. L. Carniel[1,2]
[1]Department of Industrial Engineering, University of Padova, Italy; [2]Centre for Mechanics of Biological Materials, University of Padova, Italy; [3]Department of Civil, Environmental and Architectural Engineering, University of Padova, Italy

ESB2021_1193-COMPUTATIONAL INVESTIGATION OF ARTIFICIAL URINARY SPHINCTERS RELIABILITY DEPENDING-1193.pdf

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5:15pm - 6:30pm

Spine.2: Spine

Session Chair: **Fabio Galbusera**
https://teams.microsoft.com/l/channel/19%3a6c533dfc4fe141b79f06b34b62f96265%40thread.tacv2/TR09_Spine?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Comparison of lumbar spine sagittal motion between external measures and quantitative fluoroscopy

M. Frey[1], A. Breen[2], A. Breen[3], M. Funabashi[4], G. Kawchuk[5], I. Pagé[6], J. Williams[2], A. Wong[7], D. De Carvalho[1]
[1]Memorial University of Newfoundland, Canada; [2]Bournemouth University; [3]AECC College Bournemouth; [4]Canadian Memorial Chiropractic College; [5]University of Alberta; [6]Université du Québec à Trois-Rivières; [7]The Hong Kong Polytechnic University

ESB2021_1768-Comparison of lumbar spine sagittal motion between external measures and quantitative_a.pdf

Proximal Junctional Failure risks with different Vertebra-rod Anchor Types in Adult Spinal Deformities

M. Lopez Poncelas[1,2], L. La Barbera[1,2,3], J. Rawlinson[4], D. Crandall[5,6,7], C.-E. Aubin[1,2]
[1]Dept. of Mechanical Engineering, Polytechnique Montreal, Canada; [2]Research Center, CHU Sainte-Justine, Canada; [3]LaBS, Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy; [4]Medtronic Spinal and Biologics, Memphis, USA; [5]Sonoran Spine Center, Tempe, USA; [6]Mayo Clinic, Phoenix, USA; [7]University of Arizona School of Medicine, Phoenix, USA

ESB2021_1325-Proximal Junctional Failure risks with different Vertebra-rod Anchor Types-1325.pdf

ESTIMATION AND ASSESSMENT OF SAGITTAL SPINAL CURVATURE AND THORACIC MUSCLE MORPHOMETRY IN DIFFERENT POSTURES

A. Pai S[1], H. Zhang[2], N. Ashjaee[1], T. R. Oxland[2], D. R. Wilson[2], S. H. M Brown[3], J. Street[2], S. Fels[4]
[1]School of Biomedical Engineering, The University of British Columbia, Canada; [2]Department of Orthopaedics, The University of British Columbia, Canada; [3]Department of Human Health and Nutritional Sciences, University of Guelph, Guelph, Canada; [4]Department of Electrical and Computer Engineering, University of British Columbia, Vancouver, Canada

ESB2021_1238-ESTIMATION AND ASSESSMENT OF SAGITTAL SPINAL CURVATURE AND THORACIC MUSCLE MORPHOMETRY-1238.pdf

ANALYSIS OF EARLY-ONSET SCOLIOSIS INSTRUMENTATION USING GROWING-ROD AND GROWTH GAUIDANCE SYSTEMS

X. Wang[1,2], J. P. Y. Cheung[3]
[1]Polytechnique Montreal, Canada; [2]Sainte-Justine University Hospital Center, Canada; [3]Department of Orthopaedics and Traumatology, The University of Hong Kong, Hong Kong SAR, China

ESB2021_1455-ANALYSIS OF EARLY-ONSET SCOLIOSIS INSTRUMENTATION USING GROWING-ROD AND GROWTH GAUIDANCE.pdf

EVALUATION OF SPINE STABILITY FOLLOWING TREATMENT OF DEGENERATED INTERVERTEBRAL DISCS WITH DISCOPLASTY

C. Techens[1,2], S. Montanari[1], F. Bereczki[2], P. E. Eltes[2], Á. Lazáry[2], L. Cristofolini[1]
[1]Department of Industrial Engineering, School of Engineering and Architecture, Alma Mater Studiorum - Università di Bologna, Bologna , Italy; [2]In Silico Biomechanics Laboratory, National Center for Spinal Disorders, Buda Health Center, Budapest, Hungary

ESB2021_1395-EVALUATION OF SPINE STABILITY FOLLOWING TREATMENT OF DEGENERATED INTERVERTEBRAL DISCS WITH_a.pdf

EVALUATION OF THE NON-LINEAR DYNAMIC RESPONSE OF SILICON NITRIDE BIOCERAMIC

X. Du[1], G. Blugan[2], S. J. Ferguson[1]
[1]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland; [2]Laboratory for High Performance Ceramics, Empa, Swiss Federal Laboratories for Materials Science and Technology, Dubendorf, Switzerland

ESB2021_1415-EVALUATION OF THE NON-LINEAR DYNAMIC RESPONSE OF SILICON NITRIDE BIOCERAMIC-1415.pdf

Relationship between postural alignment alteration and vertebral strength

C. Heidsieck[1], L. Gajny[1], C. Travert[2], W. Skalli[1]
[1]Arts et Metiers ParisTech, Institut de Biomécanique Humaine Georges Charpak, Paris, France; [2]Département de Chirurgie Orthopédique et Traumatologique, Groupe hospitalier Pitié-Salpêtrière, Paris France

ESB2021_1478-Relationship between postural alignment alteration and vertebral strength-1478.pdf

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5:15pm - 6:30pm

TE.1: Tissue engineering

Session Chair: **Andrea Remuzzi**
Session Chair: **Matteo Moretti**
https://teams.microsoft.com/l/channel/19%3a8f98bf8ee9e8495ebd28e74f348f7fbf%40thread.tacv2/TR07_Tissue%2520Eng?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Wrap me up and let me heal: in silico modeling of bone regeneration using a bioengineered periosteal membrane

L. Lafuente-Gracia[1,2], A. Carlier[3], L. Geris[1,2,4]
[1]Biomechanics section, Department of Mechanical Engineering, KU Leuven, Belgium; [2]Prometheus, Division of Skeletal Tissue Engineering, KU Leuven, Belgium; [3]Department cBITE, MERLN Institute, Maastricht University, The Netherlands; [4]Biomechanics research unit, GIGA in silico medicine, University of Liège, Belgium

ESB2021_1826-Wrap me up and let me heal-1826_a.pdf

MODELING THE PATHOPHYSIOLOGY OF THE HEART THROUGH A BEATING ORGAN-ON-CHIP PLATFORM

R. Visone[1], A. Mainardi[1,2], A. Redaelli[1], A. Marsano[2], P. Occhetta[1], M. Rasponi[1]
[1]Politecnico di Milano, Italy; [2]University Hospital Basel, Switzerland

ESB2021_1460-MODELING THE PATHOPHYSIOLOGY OF THE HEART THROUGH A BEATING ORGAN-ON-CHIP PLATFORM-1460.pdf

TUNABLE MONOPHASIC/BIPHASIC ELECTRICAL STIMULATOR FOR CARDIAC TISSUE ENGINEERING INVESTIGATIONS

S. Gabetti[1], A. Sileo[2], F. Montrone[1], G. Putame[1], A. Audenino[1], A. Marsano[2], D. Massai[1]
[1]PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Department of Surgery and Department of Biomedicine, University Hospital Basel, Switzerland

ESB2021_1512-TUNABLE MONOPHASICBIPHASIC ELECTRICAL STIMULATOR-1512_a.pdf

DESIGN AND VALIDATION OF A NOVEL, VERSATILE PLATFORM FOR BICOMPARTMENTAL CELL AND TISSUE CULTURES

L. P. Coppadoro[1], C. Foglieni[2], M. Lombardi[2], E. Pederzani[1], G. B. Fiore[1], M. Soncini[1]
[1]Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, P.zza Leonardo da Vinci 32, 20133 Milan, Italy; [2]2Cardiovascular Research Area, IRCCS San Raffaele Scientific Institute, Milano, Italy

ESB2021_1608-DESIGN AND VALIDATION OF A NOVEL, VERSATILE PLATFORM_1608_a.pdf

SCALED UP PROCEDURE TO PRODUCE 'LIVING' PERICARDIUM MATERIAL FOR PERSONALIZED CARDIAC VALVE REPAIR

S. Rizzi[1,2], D. Ventrella[3], S. Ferrari[1], B. Belgio[2], G. Polvani[4], M. L. Bacci[3], F. Boschetti[3], S. Mantero[3], M. Pesce[1]
[1]Centro cardiologico Monzino, IRCCS, Italy; [2]Poltecnico di Milano; [3]Università degli studi di Bologna; [4]Università degli studi di Milano

ESB2021_1630-SCALED UP PROCEDURE TO PRODUCE 'LIVING' PERICARDIUM MATERIAL-1630.pdf

TISSUE REGENERATION IMAGED IN VIVO USING A MINIATURIZED WINDOW FOR INTRAVITAL NONLINEAR MICROSCOPY

C. Conci[1], E. Jacchetti[1], L. Sironi[2], M. Collini[2], G. Chirico[2], G. Cerullo[3], R. Osellame[3], M. T. Raimondi[1]
[1]Department of Chemistry, Materials and Chemical Engineering Giulio Natta, Politecnico di Milano, Milan, Italy; [2]Univ. di Milano-Bicocca, Dipartimento di Fisica, Milan, Italy; [3]Istituto di Fotonica e Nanotecnologie (IFN)-CNR and Department of Physics, Politecnico di Milano, Milan, Italy

ESB2021_1558-TISSUE REGENERATION IMAGED IN VIVO USING A MINIATURIZED WINDOW-1558.pdf

COMPLETE TRANSCRIPTOME ANALYSIS OF MESENCHYMAL STEM CELLS CULTURED IN 3D SYNTHETIC NICHES

C. Testa[1,2], S. Oliveto[3], F. Donnaloja[2], P. Pinoli[1], E. Jacchetti[2], R. Osellame[4], G. Cerullo[4], S. Biffo[3], S. Ceri[1], M. T. Raimondi[2]
[1]DEIB, Department of Electronics, Information and Bioenegineering, Politecnico di Milano, Milano, Italy; [2]Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milano, Italy; [3]INGM, National Institute of Molecular Genetics "Romeo ed Enrica Invernizzi", Milano, Italy; [4]Istituto di Fotonica e Nanotecnologia (IFN)-CNR and Department of Physics, Politecnico di Milano, Milano, Italy

ESB2021_1562-COMPLETE TRANSCRIPTOME ANALYSIS OF MESENCHYMAL STEM CELLS CULTURED-1562.pdf

MAGNETO-RESPONSIVE CORE-SHELL MICROBEADS FOR ENGINEERING PERISTALSIS AND ALVEOLAR BRETHING IN-VITRO

L. Cacopardo, N. Guazzelli, A. Ahluwalia
University of Pisa, Italy

ESB2021_1430-MAGNETO-RESPONSIVE CORE-SHELL MICROBEADS FOR ENGINEERING PERISTALSIS AND ALVEOLAR BRETHING.pdf

Date: Tuesday, 13/July/2021

9:30am - 10:45am

AM-Bioprint.2: Additive manufacturing for biomedical applications and bioprinting

Session Chair: **Michele Conti**

https://teams.microsoft.com/l/channel/19%3ae25b1ebf1cb940c0abbfed7221fe62e0%40thread.tacv2/TR24_Additive%2520manufact%2520and%2520Bioprinting?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: CHALLENGES AND SOLUTIONS FOR ADDITIVE MANUFACTURING OF BIODEGRADABLE MAGNESIUM IMPLANTS

Y. Wang, G. Yuan
Shanghai Jiao Tong University, People's Republic of China.

ESB2021_118-PT CHALLENGES AND SOLUTIONS FOR ADDITIVE MANUFACTURING-118.pdf

DESIGN, MANUFACTURING AND ASSESSMENT OF A CUSTOMIZED TI6AL4V TALUS PROSTHESIS THROUGH SELECTIVE LASER MELTING

F. Berti[1], F. Danielli[1], A. Nespoli[2], L. La Barbera[1], G. Motalli[1], G. Mancinelli[1], M. Cavicchio[1], M. Colombo[1], F. Galbusera[3], N. Martinelli[3], T. Villa[1,3], L. Petrini[4]
[1]Department of Chemistry, Materials and Chemical Engineering “G. Natta”, Politecnico di Milano (Italy); [2]CNR ICMATE, Lecco (Italy); [3]IRCCS Istituto Ortopedico Galeazzi, Milano (Italy); [4]Department of Civil and Environmental Engineering, Politecnico di Milano (Italy)

ESB2021_1567-DESIGN, MANUFACTURING AND ASSESSMENT OF A CUSTOMIZED TI6AL4V TALUS PROSTHESIS THROUGH SELECTIVE.pdf

BIODEGRADABLE IMPLANTS FOR PELVIC ORGAN PROLAPSE REPAIR: 3D PRINTING AND CHARACTERIZATION

R. Rynkevic[1], M. E. Silva[2], J. L. Alves[3], A. A. Fernandes[4]
[1]LAETA, INEGI, Faculty of Engineering, University of Porto, Portugal; [2]LAETA, INEGI, Faculty of Engineering, University of Porto, Portugal; [3]LAETA, INEGI, Faculty of Engineering, University of Porto, Portugal; [4]LAETA, INEGI, Faculty of Engineering, University of Porto, Portugal

ESB2021_1629-BIODEGRADABLE IMPLANTS FOR PELVIC ORGAN PROLAPSE REPAIR-1629.pdf

4D PRINTED SUTERELESS CLIPS FOR INTESTINAL ANASTOMOSIS

I. Chiesa[1], S. Bittolo Bon[2], D. Morselli[3], M. Degli Esposti[3], P. Fabbri[3], C. De Maria[1], G. Giorgi[4], A. Morabito[5], L. Valentini[2]
[1]Department of Information Engineering and Research Center E. Piaggio, University of Pisa, Italy; [2]Dipartimento di Ingegneria Civile e Ambientale, Università degli Studi di Perugia, Terni, Italy; [3]Department of Civil Chemical, Environmental and Materials Engineering, Università di Bologna, Italy; [4]Dipartimento di Ingegneria Civile e Ambientale, Università degli Studi di Perugia, and CNR-SCITEC, Perugia, Italy; [5]Department of Pediatric Surgery, Meyer Children’s Hospital, Firenze, Italy and Dipartimento Neuroscienze, Psicologia, Area del Farmaco e della Salute del Bambino NEUROFARBA, Università degli Studi di Firenze, Italy

ESB2021_1749-4D PRINTED SUTERELESS CLIPS FOR INTESTINAL ANASTOMOSIS-1749.pdf

3D PRINTING OF MICROFLUIDIC DEVICES FOR CELL CULTURE

D. Baruffaldi[1,2], C. F. Pirri[1,2,3], F. Frascella[1,2]
[1]Dipartimento di Scienza Applicata e Tecnologia, Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Turin, Italy; [2]PolitoBIOMed Lab, Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Turin, Italy; [3]Center for Sustainable Futures @Polito, Istituto Italiano di Tecnologia, Torino, Italy

ESB2021_1759-3D PRINTING OF MICROFLUIDIC DEVICES FOR CELL CULTURE-1759.pdf

FABRICATION BY TWO PHOTON POLYMERIZATION OF 3D BIOCHIPS FOR CELL MOTILITY STUDIES

F. Sala[1,2], C. Ficorella[3], R. Martínez Vázquez[2], J. Käs[3], R. Osellame[2,1]
[1]Physic Department, Politecnico di Milano, Italy; [2]Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche, Italy; [3]Peter Debye Institute for Soft Matter Physics, University of Leipzig, Leipzig, Germany

ESB2021_1521-FABRICATION BY TWO PHOTON POLYMERIZATION OF 3D BIOCHIPS-1521.pdf

9:30am - 10:45am

CV-Mech.2: Cardiovascular mechanics

Session Chair: **Hao Gao**

https://teams.microsoft.com/l/channel/19%3adfc7d4fe37914150a419a66ecd7331f5%40thread.tacv2/TR01_Cardiovascular%2520Mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

3D STRETCH AND STRESS DISTRIBUTIONS OF HUMAN ARTERIES BASED ON TWO-LAYER MODEL CONSIDERING RESIDUAL STRESSES

K. Takamizawa
Private Researcher, Japan

ESB2021_1163-3D STRETCH AND STRESS DISTRIBUTIONS OF HUMAN ARTERIES BASED-1163.pdf

Calcification Characteristics and Abdominal Aortic Wall Stress

S. H. McLennan[1], Z. He[1], R. Mongrain[1], G. Soulez[2]
[1]Department of Mechanical Engineering, McGill University, Canada; [2]Centre de recherche du centre hospitalier de l’Université de Montréal, Canada

ESB2021_1229-Calcification Characteristics and Abdominal Aortic Wall Stress-1229.pdf

Permanent strain in bovine pericardium: role of collagen fibre crimp

A. Whelan[1,2,3,4], G. O'Brien[2], D. O'Reilly[4], C. Lally[1,2,3]
[1]Trinity Centre for Biomedical Engineering, Trinity College Dublin, Ireland; [2]Department of Mechanical, Manufacturing and Biomedical Engineering, Trinity College Dublin, Ireland; [3]Advanced Materials and Bioengineering Research Centre (AMBER), Trinity College Dublin, Ireland; [4]Structural Heart Division, Boston Scientific Corporation, Ireland

ESB2021_1422-Permanent strain in bovine pericardium-1422.pdf

A HYBRID ACTIVE CONTRACTION FOR MYOCARDIUM

H. Gao, D. Guan, X. Luo
University of Glasgow, United Kingdom

ESB2021_1442-A HYBRID ACTIVE CONTRACTION FOR MYOCARDIUM-1442.pdf

Regional differences in aortic function: Tri-layered modelling of the pig aorta

A. Giudici[1], B. Spronck[2,3], A. W. Khir[1]
[1]Biomedical Engineering Theme, Brunel University London, United Kingdom; [2]Department of Biomedical Engineering, Yale University, New Haven, CT, USA; [3]Department of Biomedical Engineering, Maastricht University, Maastricht, The Netherlands

ESB2021_1525-Regional differences in aortic function-1525_a.pdf

MECHANICAL IN SILICO MODEL OF WELL-ORGANIZED FIBROUS SCAFFOLDS FOR CARDIAC REGENERATION

N. Laita[1], M. A. Martinez[1,2], M. Castilho[3,4], M. Doblaré[1,2], E. Peña[1,2]
[1]Aragón Institute of Engineering Research (I3A), University of Zaragoza, Zaragoza, Spain; [2]Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine; [3]University Medical Center Utrecht, Utrecht, Netherlands; [4]Eindhoven University of Technology, Eindhoven, The Netherlands

ESB2021_1615-MECHANICAL IN SILICO MODEL OF WELL-ORGANIZED FIBROUS SCAFFOLDS-1615.pdf

Adding myocardial mechanics in a 3D fluid-structure interaction model of the left coronary bifurcation

I. Ríos-Ruiz[1], M. Á. Martínez[1,2], E. Peña[1,2]
[1]Aragón Institute of Engineering Research (I3A), University of Zaragoza, Spain; [2]CIBER-BBN: Centro de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina, Spain

ESB2021_1660-Adding myocardial mechanics in a 3D fluid-structure interaction model-1660.pdf

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9:30am - 10:45am

CV-Meth.2: Computational methods for cardiovascular applications

Session Chair: **Caitriona Lally**

https://teams.microsoft.com/l/channel/19%3af7d78c3c31894881a6fd6019be2f1ce2%40thread.tacv2/TR04_CompMethods%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

CFD-DERIVED RESISTANCE AS A CLINICAL INDICATOR FOR PROBLEMATIC AVFS

O. Ng[1], S. Gunasekera[1], S. Thomas[2,3], R. Varcoe[2,3], T. Barber[1]
[1]School of Mechanical and Manufacturing Engineering, University of New South Wales, NSW, Australia ; [2]School of Medicine, University of New South Wales, NSW, Australia ; [3]Prince of Wales Hospital, NSW,Australia

ESB2021_1231-CFD-DERIVED RESISTANCE AS A CLINICAL INDICATOR FOR PROBLEMATIC AVFS-1231.pdf

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IMPACT OF LEG MOVEMENT ON THE LOCAL HEMODYNAMICS OF FEMOROPOPLITEAL ARTERIES

L. Cestariolo[1], M. Colombo[1], G. Luraghi[1], M. Ravasi[1], A. Airoldi[1], C. Chiastra[1,2], G. Pennati[1]
[1]Politecnico di Milano, Italy; [2]Politecnico di Torino, Italy

ESB2021_1254-IMPACT OF LEG MOVEMENT ON THE LOCAL HEMODYNAMICS OF FEMOROPOPLITEAL ARTERIES-1254_a.pdf

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The Effect of Lumped Parameter Boundary Conditions in Image-Based Modelling of the Thoracic Aorta Through CFD

S. M. Black[1], P. Hall-Barrientos[2], K. Ritos[3], C. Maclean[4], A. Boukis[4], R. Brodie[4], A. Kazakidi[1]
[1]University of Strathclyde, Department of Biomedical Engineering, Glasgow, UK; [2]NHS Greater Glasgow and Clyde, Glasgow, UK; [3]University of Strathclyde, Department of Mechanical and Aerospace Engineering, Glasgow, UK; [4]Research and Development, Terumo Aortic, Glasgow, UK

ESB2021_1266-The Effect of Lumped Parameter Boundary Conditions-1266.pdf

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ASSESSING THE DISTURBED FLOW AND THE TRANSITION TO TURBULENCE IN THE ARTERIOVENOUS FISTULA

C. Vergara[1], S. Stella[2], L. Giovannacci[3], A. Quarteroni[4], G. Prouse[3]
[1]Labs, Dipatimento di CHimica, Materiali e Ingegneria Chimica, Politecnico di Milano, Italy; [2]MOX, Dipartimento di Matematica, Politecnico di Milano, Italy; [3]EOC-Ente Ospedaliero Cantonale, Lugano, Switzerland; [4]MOX, Dipartimento di Matematica, Politecnico di Milano, Italy & EPFL, Lausanne, Switzerland

ESB2021_1450-ASSESSING THE DISTURBED FLOW AND THE TRANSITION TO TURBULENCE-1450.pdf

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LARGE EDDY SIMULATION MODELS FOR PATIENT-SPECIFIC AORTIC HEMODYNAMICS

A. Ferrarini[1], M. Conti[1], A. Veneziani[2], F. Auricchio[1]
[1]Department of Civil Engineering and Architecture, University of Pavia, Italy; [2]Department of Mathematics, Department of Computer Science, Emory University, Atlanta, GA, USA

ESB2021_1452-LARGE EDDY SIMULATION MODELS FOR PATIENT-SPECIFIC AORTIC HEMODYNAMICS-1452.pdf

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TOWARDS A BETTER UNDERSTANDING OF THE FLOW BEHAVIORS IN FEMORO-POPLITEAL ARTERIES THROUGH OCT-BASED CFD MODELS

C. Gökgöl[1], Y. Ueki[2], D. Abler[1], N. Diehm[3], R. Engelberger[4], T. Otsuka[2], L. Räber[2], P. Büchler[1]
[1]ARTORG Center, University of Bern, Switzerland; [2]Dept. of Cardiology, Inselspital, Switzerland; [3]Vascular Institute Central Switzerland, Switzerland; [4]Dept. of Angiology, HFR Freiburg – Kantonsspital, Switzerland

ESB2021_1485-TOWARDS A BETTER UNDERSTANDING OF THE FLOW BEHAVIORS-1485.pdf

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EULERIAN-BASED WALL SHEAR STRESS TOPOLOGICAL SKELETON AS A TEMPLATE OF NEAR-WALL MASS TRANSPORT IN ARTERIES

G. De Nisco[1], V. Mazzi[1], K. Calò[1], M. Lodi Rizzini[1], C. Chiastra[1], J. J. Wentzel[2], D. A. Steinman[3], D. Gallo[1], U. Morbiducci[1]
[1]PoliToBIOMed Lab, DIMEAS, Politecnico di Torino, Italy; [2]Department of Cardiology, Biomedical Engineering, Erasmus MC, Netherlands; [3]Biomedical Simulation Laboratory, University of Toronto, Canada

ESB2021_1576-EULERIAN-BASED WALL SHEAR STRESS TOPOLOGICAL SKELETON AS A TEMPLATE-1576.pdf

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TURBULENT-LIKE ARTERIOVENOUS FISTULA FLOWS CAUSE WALL VIBRATIONS; A SPECIFIC STIMULUS FOR STENOSIS FORMATION?

M. Bozzetto[1], A. Souche[2], A. Remuzzi[3], K. Valen-Sendstad[4]
[1]University of Bergamo, Italy; [2]Simula Research Laboratory, Norway; [3]Simula Research Laboratory, Norway; [4]University of Bergamo, Italy

ESB2021_1873-TURBULENT-LIKE ARTERIOVENOUS FISTULA FLOWS CAUSE WALL VIBRATIONS A SPECIFIC STIMULUS-1873.pdf

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9:30am - 10:45am

Hard-Tissue.2: Hard tissue biomechanics

Session Chair: **Uwe Wolfram**

https://teams.microsoft.com/l/channel/19%3a51d82a4df16b420a9568e8c8b035296e%40thread.tacv2/TR14_Hard%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

EFFECTS OF STRESS GRADIENT BASED ON COLLAGEN ANISOTROPY IN ARTICULAR CARTILAGE ON MECHANICAL RESPONSE OF CHONDROCYTE

S. Fukuyama, Y. Morita, K. Yamamoto
Doshisha University, Japan

ESB2021_1705-EFFECTS OF STRESS GRADIENT BASED ON COLLAGEN ANISOTROPY-1705.pdf

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Human tibia implanted with titanium press-fit tray: a micro-CT zero-strain analysis with digital volume correlation

L. Wearne, S. Rapagna, M. Taylor, E. Perilli
Medical Device Research Institute, Flinders University, Adelaide, SA, Australia

ESB2021_1346-Human tibia implanted with titanium press-fit tray-1346.pdf

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DETERMINING HUMAN FEMUR BONE MECHANICAL ANISOTROPY: IMAGE-PROCESSING METHOD VS MICRO-FINITE ELEMENT MODELS

M. G. Branni[1], E. Perilli[2], M. Taylor[2], S. Martelli[1]
[1]School of Mechanical, Medical and Process Engineering, Queensland University of Technology, Australia; [2]Medical Device Res. Institute, College of Science & Engineering, Flinders University, Australia

ESB2021_1507-DETERMINING HUMAN FEMUR BONE MECHANICAL ANISOTROPY-1507.pdf

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Synchrotron image-guided damage assessment of human femoral bones

F. Buccino[1], G. Grossi[1], C. Colombo[1], P. Savadori[2], L. Zagra[2], G. Banfi[2], L. M. Vergani[1]
[1]Politecnico di Milano, Italy; [2]Istituto Ortopedico Galeazzi, Gruppo San Donato, Italy

ESB2021_1741-Synchrotron image-guided damage assessment of human femoral bones-1741_a.pdf

EFFECTS OF H-G SYNDROME ON MACRO AND MICRO MECHANICAL RESPONSE OF MURINE BONE SEGMENTS

D. Gastaldi[1], M. Baleani[2], R. Fognani[2], A. Festa[2], F. Baruffaldi[2], S. Squarzoni[3], P. Vena[1]
[1]Politecnico di Milano, Department of Chemistry Materials and Chemical Engineering, Giulio Natta, Italy; [2]IRCCS Istituto Ortopedico Rizzoli, Medical Technology Laboratory, Italy; [3]National Research Council, Institute of Molecular Genetics, Italy

ESB2021_1737-EFFECTS OF H-G SYNDROME ON MACRO AND MICRO MECHANICAL RESPONSE OF MURINE BONE SEGMENTS-1737.pdf

The micro- and nanoscale compressive behaviour of rehydrated mineralised collagen fibres

A. Groetsch[1,4], A. Gourrier[2], D. Casari[3], J. Schwiedrzik[4], J. Michler[4], P. K. Zysset[3], U. Wolfram[1]
[1]Heriot-Watt University, School of Engineering and Physical Sciences, Edinburgh, United Kingdom; [2]Université Grenoble Alpes, CNRS, LiPhy, 38000 Grenoble, France; [3]University of Bern, ARTORG Centre for Biomedical Engineering Research, Bern, Switzerland; [4]Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Mechanics of Materials and Nanostructures, Thun, Switzerland

ESB2021_1256-The micro- and nanoscale compressive behaviour of rehydrated mineralised collagen fibres-1256.pdf

Microstructural anisotropy and material gradients in mineralized fibrocartilage at the tendon-bone insertion

A. Tits[1], S. Blouin[2], J.-F. Kaux[1], P. Drion[1], G H. van Lenthe[3], R. Weinkamer[4], M. A Hartmann[2], D. Ruffoni[1]
[1]University of Liege, Belgium; [2]Ludwig Boltzmann Institute of Osteology, Vienna, Austria; [3]KU Leuven, Belgium; [4]Max Planck Institute of Colloids and Interfaces, Potsdam, Germany

ESB2021_1390-Microstructural anisotropy and material gradients-1390_a.pdf

9:30am - 10:45am

HM.2: Human movement

Session Chair: **Zimi Sawacha**

https://teams.microsoft.com/l/channel/19%3a37a8583e7c9c4ec9a5e0bae0fbae9e25%40thread.tacv2/TR17_Human%2520movement?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: MODELLING HUMAN LOCOMOTION FOR PERSONALIZED EXERCISE PRESCRIPTION FOR OSTEOPOROSIS

S. Martelli
Flinders University, Australia

ESB2021_117-PT MODELLING HUMAN LOCOMOTION FOR PERSONALIZED EXERCISE PRESCRIPTION FOR OSTEOPOROSIS-117.pdf

GAIT FATIGABILITY DURING THE 6-MIN WALK TEST IN PATIENTS WITH MUSCULAR DYSTROPHIES: A COMPARISON STUDY

F. A. Storm, G. Reni, E. Biffi
IRCCS E. MEDEA - Associazione La Nostra Famiglia, Italy

ESB2021_1382-GAIT FATIGABILITY DURING THE 6-MIN WALK TEST IN PATIENTS WITH MUSCULAR DYSTROPHIES-1382.pdf

A SUPERVISED CLASSIFICATION OF CHILDREN WITH FRAGILE X SYNDROME BASED ON GAIT ANALYSIS

W. J. Piatkowska[1], M. Romanato[1], F. Spolaor[1], A. Huang[1], F. Cibin[1], A. Ciniglio[1], R. Polli[2], A. Murgia[2], Z. Sawacha[1,3]
[1]Department of Information Engineering, University of Padova, Italy; [2]Department of Women and Children Health, University of Padova,; [3]Department of Medicine, DIMED, University of Padova,

ESB2021_1664-A SUPERVISED CLASSIFICATION OF CHILDREN WITH FRAGILE X SYNDROME BASED-1664.pdf

A face tracking approach to evaluate hypomimia in Parkinson's disease subjects

E. Pegolo[1], L. Ricciardi[2,3], D. Volpe[4], Z. Sawacha[1,5]
[1]University of Padua, Department of Information Engineering, Italy; [2]St George's University of London, Molecular and Clinical Sciences Institute, UK; [3]Medical Research Council Brain Network Dynamics Unit, Nuffield Department of Clinical Neurosciences, Oxford, UK; [4]Fresco Parkinson Center, Villa Margherita, S. Stefano, Vicenza, Italy; [5]University of Padua, Department of Medicine, Italy

ESB2021_1679-A face tracking approach to evaluate hypomimia in Parkinsons disease subjects-1679.pdf

GENDER DIFFERENCES OF PASSIVE KNEE KINEMATICS

F. Bucci[1], R. Al-Dirini[1], M. Taylor[1], S. Martelli[2]
[1]Flinders University, Australia; [2]QUT, Brisbane

ESB2021_1828-GENDER DIFFERENCES OF PASSIVE KNEE KINEMATICS-1828.pdf

9:30am - 10:45am

Mechano.2: Mechanobiology

Session Chair: **Ralph Müller**

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PT: MECHANO-MEDICINE: DECIPHERING MECHANO-SIGNALLING TO ELICIT CONTROL OVER PERIVASCULAR STEM CELL FATES

J. Cooper-White
The University of Queensland, Australia

ESB2021_120-PT MECHANO-MEDICINE DECIPHERING MECHANO-SIGNALLING-120.pdf

Effect of microgravity on calcium amount using a bone remodelling model

A. Pica[1], A. Marinozzi[2], F. Marinozzi[1], F. Bini[1]
[1]Sapienza University of Rome, Italy; [2]Campus Bio-Medico University, Italy

ESB2021_1610-Effect of microgravity on calcium amount using a bone remodelling model-1610.pdf

Assessing Cortical Bone Adaptation using a Multiscale, Mechanobiological Approach Based on Beam-Theory

C. Miller[1], E. Pickering[1], E. Dall'ara[2], P. Pivonka[1]
[1]Queensland University of Technology, Australia; [2]University of Sheffield, England

ESB2021_1659-Assessing Cortical Bone Adaptation using a Multiscale, Mechanobiological Approach Based-1659.pdf

Numerical analysis of effective pressure on microfluidic aspiration of a single cell before constriction

A. F. Abarca-Ortega[1,2], B. González-Bermúdez[1], M. Córcoles-Lucas[1], G. R. Plaza[1]
[1]Center for Biomedical Technology, Universidad Politécnica de Madrid, Madrid, Spain; [2]Departamento de Ingeniería Mecánica, Universidad de Santiago de Chile, Santiago, Chile

ESB2021_1698-Numerical analysis of effective pressure on microfluidic aspiration of a single cell before.pdf

EX VIVO MODEL OF CYCLIC LOADING ON CORTICAL BOVINE BONES INDUCES BONE REMODELING

J. Schiavi-Tritz, A. Remo, L. McNamara, T. Vaughan
Biomechanics Research Centre (BioMEC), Biomedical Engineering, College of Science and Engineering, National University of Ireland, Galway, Ireland

ESB2021_1767-EX VIVO MODEL OF CYCLIC LOADING ON CORTICAL BOVINE BONES INDUCES BONE REMODELING-1767.pdf

INTERPLAY OF MECHANICAL AND INFLAMMATORY CUES IN OSTEOARTHRITIS: A MULTISCALE IN-SILICO APPROACH

S. Mukherjee[1,2], R. Lesage[1,2], L. Geris[1,2,3]
[1]Prometheus, Division of Skeletal tissue Engineering, KU Leuven, Belgium; [2]Biomechanics Section, KU Leuven, Belgium; [3]GIGA In silico medicine, University of Liège, Belgium

ESB2021_1844-INTERPLAY OF MECHANICAL AND INFLAMMATORY CUES IN OSTEOARTHRITIS-1844_a.pdf

9:30am - 10:45am

Msk-imag.2: Imaging for muscoloskeletal applications

Session Chair: **Claudio Vergari**

https://teams.microsoft.com/l/channel/19%3a05d8d6c5ddf64163aaa13c35bee5f9dc%40thread.tacv2/TR10_Imaging%2520for%2520Musculoskeletal?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

CONTRAST-ENHANCED MICRO-CT FOR 3D VISUALISATION OF GAG CONTENT IN DIFFERENT CARTILAGE TISSUES

M. A Boos, K. S Stok
The University of Melbourne, Australia

ESB2021_1342-CONTRAST-ENHANCED MICRO-CT FOR 3D VISUALISATION OF GAG CONTENT-1342.pdf

A NANOPARTICLE-BASED CONTRAST AGENT FOR MICRO-COMPUTED TOMOGRAPHY IMAGING OF THE OSTEOCHONDRAL INTERFACE

M. Oliveira Silva, K. S Stok
The University of Melbourne, Australia

ESB2021_1343-A NANOPARTICLE-BASED CONTRAST AGENT FOR MICRO-COMPUTED TOMOGRAPHY IMAGING-1343.pdf

ROBUST ALIGNMENT OF RABBIT AND RAT JOINT SCANS FOR PRECLINICAL OSTEOARTHRITIS STUDIES

P. Durongbhan, C. E Davey, K. S Stok
The University of Melbourne, Australia

ESB2021_1345-ROBUST ALIGNMENT OF RABBIT AND RAT JOINT SCANS FOR PRECLINICAL OSTEOARTHRITIS STUDIES-1345.pdf

ENABLING REAL-TIME VISUALISATION OF IN VIVO CARTILAGE UNDER PRECISION MECHANICAL LOADING

R. N. Kour, J. Parker, K. Wang, H. S. Yoon, E. Schoof, K. S Stok
The University of Melbourne, Australia

ESB2021_1347-ENABLING REAL-TIME VISUALISATION OF IN VIVO CARTILAGE UNDER PRECISION MECHANICAL LOADING-1347.pdf

KINEMATIC ERRORS IN SCALED-GENERIC MUSCULOSKELETAL MODELS OF THE SHOULDER

M. Lavaill[1,2], S. Martelli[1,2], A. Gupta[1,2,3], G. Kerr[1,2], P. Pivonka[1,2]
[1]Queensland University of Technology, Australia; [2]Queensland Unit for Advanced Shoulder Research, Brisbane, Australia; [3]Greenslopes Private Hospital, Brisbane, Australia

ESB2021_1348-KINEMATIC ERRORS IN SCALED-GENERIC MUSCULOSKELETAL MODELS-1348.pdf

DEEP LEARNING-BASED PATCHWISE RESOLUTION ENHANCEMENT WITH QUILTING ALGORITHM

S. M. Sin[1], B. J. Chun[2], I. G. Jang[2]
[1]Mobility System Team, SOCAR, Seoul, Republic of Korea; [2]The Cho Chun Shik Graduate School of Green Transportation, KAIST, Daejeon, Republic of Korea

ESB2021_1681-DEEP LEARNING-BASED PATCHWISE RESOLUTION ENHANCEMENT WITH QUILTING ALGORITHM-1681.pdf

9:30am - 10:45am

Ocular.1: Ocular biomechanics

Session Chair: **Anna Pandolfi**

https://teams.microsoft.com/l/channel/19%3a19c93deeec6a4524ae33286769cb704d%40thread.tacv2/TR29_Ocular%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: TOWARDS PERSONALIZED BIOMECHANICAL SIMULATIONS TO OPTIMIZE REFRACTIVE INTERVENTIONS

P. Büchler
University of Bern, Switzerland

ESB2021_121-PT TOWARDS PERSONALIZED BIOMECHANICAL SIMULATIONS-121.pdf

ORGANIC NANOPARTICLES RESCUE VISION IN BLIND RETINAS

G. Lanzani
Politecnico di Milano and iit, Italy

ESB2021_1268-ORGANIC NANOPARTICLES RESCUE VISION IN BLIND RETINAS-1268.pdf

Computational modelling of the eye biomechanics after strabismus surgery

J. Grasa, A. P. Esteban, B. Calvo
Universidad de Zaragoza, Spain

ESB2021_1359-Computational modelling of the eye biomechanics after strabismus surgery-1359.pdf

Optimized protocol for pulsed corneal crosslinking (CXL) as a function of oxygen consumption and time

M. H Nambiar[1], M. A. Komninou[2], T. G. Seiler[2], B. E. Frueh[2], P. Büchler[1]
[1]ARTORG Center for Biomedical Engineering Research, University of Bern, Switzerland; [2]Universitätsklinik für Augenheilkunde, Inselspital, University of Bern, Switzerland

ESB2021_1355-Optimized protocol for pulsed corneal crosslinking-1355.pdf

DEVELOPMENT OF A NOVEL TEST BENCH FOR ASSESSING INTRAOCULAR DEVICE CORROSION AND PHARMACOKINETICS

M. Ferroni, F. De Gaetano, M. Pizzi, F. Inveninato, M. Annoni, F. Boschetti
Politecnico di Milano, Italy

ESB2021_1856-DEVELOPMENT OF A NOVEL TEST BENCH FOR ASSESSING INTRAOCULAR DEVICE CORROSION AND PHARMACOKINETICS.pdf

9:30am - 10:45am

Orth-dev.3: Implants and devices for orthopaedic applications

Session Chair: **Bernardo Innocenti**

https://teams.microsoft.com/l/channel/19%3a57027081610449b28ac6f3f78c40f85f%40thread.tacv2/TR11_Implant%2520and%2520Devices%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: CUSTOM-MADE DESIGN AND MANUFACTURING OF PROSTHESES AND ORTHOTICS

A. Leardini, C. Belvedere, P. Caravaggi
IRCCS Istituto Ortopedico Rizzoli, Italy

ESB2021_142-PT CUSTOM-MADE DESIGN AND MANUFACTURING OF PROSTHESES AND ORTHOTICS-142.pdf

A FINITE ELEMENT COMPARISON BETWEEN EXTRA- AND INTRAMEDULLARY IMPLANTS FOR TROCHANTERIC FRACTURE TREATMENT

A. Tanaka[1,2], L. La Barbera[1,3], P. Sfamurri[1], C. Ottardi[1], T. Villa[1]
[1]LaBS, Department of Chemistry, Materials and Chemical Engineering “Giulio Natta”, Politecnico di Milano, Italy; [2]Department of Orthopaedic Surgery, Kobe University Graduate School of Medicine, Japan; [3]Dept. of Mechanics, Polytechnique Montréal and Research Center CHU Sainte-Justine, Canada

ESB2021_1206-A FINITE ELEMENT COMPARISON BETWEEN EXTRA- AND INTRAMEDULLARY IMPLANTS-1206.pdf

What have we learned about the influence of total knee arthroplasty design-based parameters on the in-vivo knee joint kinematic from single plane fluoroscopic analyses?

P. Moewis[1], H. Hommel[2], A. Trepczynski[1], L. Krahl[1], G. Duda[1]

[1]Julius Wolff Institut, Charité-Universitätsmedizin Berlin, Germany; [2]Krankenhaus Märkisch-Oderland GmbH, Wriezen, Germany

ESB2021_1219-What have we learned about the influence of total knee arthroplasty design-based parameters-1219.pdf

BIOMECHANICAL ANALYSIS OF CEPHALOMEDULLARY NAILS FOR TROCHANTERIC FEMORAL FRACTURE FIXATION

T. Pastor[1,2], I. Zderic[1], D. Gehweiler[1], M. Knobe[2], B. Gueorguiev[1]
[1]AO Research Institute Davos, Davos, Switzerland; [2]Cantonal Hospital Lucerne, Lucerne, Switzerland

ESB2021_1378-BIOMECHANICAL ANALYSIS OF CEPHALOMEDULLARY NAILS FOR TROCHANTERIC FEMORAL FRACTURE FIXATION-1378.pdf

COMPUTATIONALLY OPTIMIZED IMPLANTS IMPROVE BIOMECHANICAL FIXATION STABILITIY OF COMPLEX PROXIMAL HUMERUS FRACTURES

D. Mischler[1], J. F. Schader[1,2], J. Dauwe[1,3], B. Gueorguiev[1], P. Varga[1]
[1]AO Research Institute, Switzerland; [2]Cantonal Hospital Graubuenden, Switzerland; [3]University Hospital Leuven, Belgium

ESB2021_1383-COMPUTATIONALLY OPTIMIZED IMPLANTS IMPROVE BIOMECHANICAL FIXATION STABILITIY-1383.pdf

EXPERIMENTAL ANALYSIS OF LIGAMENT TENSION IN NATIVE KNEE TO REACH FUNCTIONAL STABILITY

B. Innocenti[1], T. Paszicsnyek[2], E. Bori[1]
[1]ULB Université Libre de Bruxelles, Belgium; [2]Privatklinik Ragnitz, Graz, Austria

ESB2021_1369-EXPERIMENTAL ANALYSIS OF LIGAMENT TENSION IN NATIVE KNEE-1369.pdf

9:30am - 10:45am

Soft-Tissue.2: Soft tissue mechanics

Session Chair: **Olfa Trabelsi**

https://teams.microsoft.com/l/channel/19%3a1c67951192494ef19dedc6f6b20b4592%40thread.tacv2/TR15_Soft%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Viscoelastic properties of human liver: influence of Thiel preservation and comparison with animal tissue

S.-J. Estermann[1,2,3], S. Förster-Streffleur[1], L. Hirtler[4], J. Streicher[1], D. H. Pahr[1,3], A. Reisinger[1]
[1]Karl Landsteiner University of Health Sciences, Austria; [2]Austrian Center for Medical Innovation and Technology, Austria; [3]University of Technology Vienna, Austria; [4]Medical University of Vienna, Austria

ESB2021_1216-Viscoelastic properties of human liver-1216.pdf

COMPUTATIONAL MODELLING OF GASTRIC TISSUES: EXPERIMENTAL AND COMPUTATIONAL ACTIVITIES ON LSG RESECTED STOMACHS

I. Toniolo[1,2], C. Nostran[1], E. Ferrari[1], E. Fongaro[1], C. G. Fontanella[1,2], M. Foletto[2,3], E. L. Carniel[1,2]
[1]Department of Industrial Engineering of the University of Padova, Italy; [2]Centre for Mechanics of Biological Materials, University of Padova, Italy; [3]Azienda Ospedaliera of Padova, Italy.

ESB2021_1194-COMPUTATIONAL MODELLING OF GASTRIC TISSUES-1194.pdf

MECHANICAL BEHAVIOR OF INFRAPATELLAR AND SUPRAPATELLAR FAT PADS IN PATIENTS WITH END-STAGE OSTEOARTHRITIS

C. G. FONTANELLA[1], E. Belluzzi[2], A. Pozzuoli[2], M. Favero[3], P. Ruggeri[2], V. Macchi[4], E. L. Carniel[1]
[1]Department of Industrial Engineering, Centre for Mechanics of Bioloogical Materials,University of Padova, Italy; [2]Orthopedic Clinic, DiSCOG, University of Padova, Italy; [3]Rheumatology Unit, DIMED, University of Padova, Italy; [4]Department of Neuroscience, Institute of Human Anatomy, University of Padova, Italy

ESB2021_1296-MECHANICAL BEHAVIOR OF INFRAPATELLAR AND SUPRAPATELLAR FAT PADS-1296.pdf

Linear Variable Displacement Transducers Underestimate Global Ligament Strain

J. Schwer, F. Schall, S. P. Hacker, A. Ignatius, L. Dürselen, A. M. Seitz
Ulm University Medical Centre, Germany

ESB2021_1210-Linear Variable Displacement Transducers Underestimate Global Ligament Strain-1210_a.pdf

FINITE-ELEMENT MODELING OF VOLUME VARIATIONS IN PLANTAR VEINS

L. Tsimba[1,2], M. Aguirre[2], C. Chaigneau[1], D. Rastel[3], S. Avril[2]
[1]Sigvaris Group, France; [2]Mines Saint-Etienne, Univ Lyon, France; [3]Philangio SERURL, France

ESB2021_1860-FINITE-ELEMENT MODELING OF VOLUME VARIATIONS IN PLANTAR VEINS-1860.pdf

MECHANICAL CHARACTERISATION OF PANCREATIC TISSUE: PRELIMINARY IN-VITRO RESULTS

F. De Gaetano[1], G. Nappo[2], G. Capretti[2,3], A. Zerbi[2,3], M. L. Costantino[1]
[1]Politecnico di Milano, Milan, Italy; [2]IRCCS Humanitas – Pancreatic Surgery, Milan, Italy; [3]Hunimed, Humanitas University, Milan, Italy

ESB2021_1617-MECHANICAL CHARACTERISATION OF PANCREATIC TISSUE-1617.pdf

ANTERIOR CRUCIATE LIGAMENT TEAR SIMULATION USING FINITE ELEMENT METHOD

C. F. Santos[1], R. Bastos[2], R. Andrade[2], R. Pereira[2], M. Parente[1], J. Espregueira-Mendes[2], R. Natal Jorge[1]
[1]INEGI/FEUP- Institute of Science and Innovation in Mechanical and Industrial Engineering; [2]Clínica do Dragão, Espregueira-Mendes Sports Centre - FIFA Medical Centre of Excellence

ESB2021_1308-ANTERIOR CRUCIATE LIGAMENT TEAR SIMULATION USING FINITE ELEMENT METHOD-1308.pdf

9:30am - 10:45am

Spine.3: Spine

Session Chair: **Tomaso Villa**

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Effect of Chemical Environment on the Nanomechanics of Hyaluronan in Annulus Fibrosus: A Molecular Dynamics Investigation

S. Bhattacharya, D. Dubey
Indian Institute of Technology Delhi, India

ESB2021_1740-Effect of Chemical Environment on the Nanomechanics of Hyaluronan-1740.pdf

Mechanisms of lumbar disc herniation failure after 6DOF fatigue: effect of multiaxial loading

M. P. Russo, D. Ciric, D. B Amin, J. J Costi
Medical Device Research Institute, College of Science & Engineering, Flinders University, Adelaide, Australia

ESB2021_1498-Mechanisms of lumbar disc herniation failure after 6DOF fatigue-1498.pdf

THE EFFECT OF DEGENERATION ON INTERNAL STRAINS AND THE MECHANISM OF FAILURE IN HUMAN INTERVERTEBRAL DISC

S. Tavana[1], S. Masouros [2], N. Baxan[3], B. Freedman[4], U. Hansen[1], N. Newell[1]
[1]Dept. of Mechanical Engineering, Imperial College London, UK; [2]Dept. of Bioengineering, Imperial College London, UK; [3]Biological Imaging Center, Imperial College London, UK; [4]Dept. of Orthopedic surgery, Mayo Clinic, USA

ESB2021_1425-THE EFFECT OF DEGENERATION ON INTERNAL STRAINS AND THE MECHANISM OF FAILURE-1425_a.pdf

In-vitro modelling of the human intervertebral disc degeneration

E. D. Rivera Tapia, J. Meakin, T. Holsgrove
College of Engineering, Mathematics and Physical Sciences, University of Exeter, United Kingdom

ESB2021_1769-In-vitro modelling of the human intervertebral disc degeneration-1769.pdf

Kinematic analysis of dynamic lumbar spinal rhythms during flexion and return to neutral

A. Breen[1], D. De Carvalho[2], M. Funabashi[3], G. Kawchuk[4], I. Pagé[5], A. Wong[6], A. Breen[1]
[1]AECC University College, United Kingdom; [2]University of Newfoundland, St. John's, NL, Canada; [3]Canadian Memorial Chiropractic College, Toronto, Canada; [4]University of Alberta, Edmonton, Canada; [5]Université du Québec à Trois-Rivières, Canada; [6]The Hong Kong Polytechnic University, Hong Kong

ESB2021_1805-Kinematic analysis of dynamic lumbar spinal rhythms during flexion and return-1805.pdf

CERVICAL TOTAL DISC REPLACEMENT CAN RESTORE INTACT RANGE OF MOTION AND 3-D KINEMATICS

M. Vogt, L. Zengerle, R. Jonas, H.-J. Wilke
University of Ulm, Germany

ESB2021_1262-CERVICAL TOTAL DISC REPLACEMENT CAN RESTORE INTACT RANGE-1262.pdf

SPINE LENGTH EXCURSION DURING WALKING

V. Farinelli[1], C. Palmisano[2,3], F. Camuncoli[2], A. Favata[2], C. A. Frigo[2]
[1]Human Physiology Section of the De.P.T., Università degli Studi di Milano, Milan, Italy; [2]Department of Electronics, Information and Bioengineering, MBMC Lab, Politecnico di Milano, Milan, Italy; [3]Department of Neurology, University Hospital and JMU Würzburg, Würzburg, Germany

ESB2021_1362-SPINE LENGTH EXCURSION DURING WALKING-1362.pdf

10:45am - 11:00am **break-d2-1: Break**

11:00am - 12:15pm **Cell.3: Cellular and molecular biomechanics**

Session Chair: **Damien Lacroix**

https://teams.microsoft.com/l/channel/19%3a14ea6f3449684f5698dff33ab5c47781%40thread.tacv2/TR05_Cellular%2520and%2520Molecular%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: ON THE THERMODYNAMICS OF CELL SPREADING AND CONTRACTILITY

P. McGarry
NUI Galway, Ireland

ESB2021_1138-PT ON THE THERMODYNAMICS OF CELL SPREADING AND CONTRACTILITY-1138.pdf

ALTERATIONS OF SMOOTH MUSCLE CELL MECHANICS IN THORACIC AORTIC ANEURYSMS

C. Petit[1], A. A. Karkhaneh Yousefi[1], A. Guignandon[2], S. Avril[1]
[1]Mines Saint-Etienne - University of Lyon, SainBiose, Inserm U1059, France; [2]Université Jean Monnet - University of Lyon, SainBiose, Inserm U1059, France

ESB2021_1220-ALTERATIONS OF SMOOTH MUSCLE CELL MECHANICS IN THORACIC AORTIC ANEURYSMS-1220_a.pdf

THE REGULATION OF PHENOTYPIC CHANGES IN VASCULAR SMOOTH MUSCLE CELLS VIA STRAIN AND NOTCH SIGNALING

C. Karakaya[1], V. Visser[1], T. Ristori[1,2], C. Bouten[1], C. Sahlgren[1,3], S. Loerakker[1]
[1]Eindhoven University of Technology, The Netherlands; [2]Boston University, USA; [3]Åbo Akademi University, Finland

ESB2021_1808-THE REGULATION OF PHENOTYPIC CHANGES IN VASCULAR SMOOTH MUSCLE CELLS VIA STRAIN AND NOTCH_a.pdf

MECHANICAL CARACTERIZATION OF LAMIN COILED COIL 1B DOMAIN: FROM MONOMER TO TETRAMER CONFIGURATION

F. Donnaloja[1], F. Rigoldi[2], E. Jacchetti[1], M. T. Raimondi[1], M. Soncini[3]
[1]Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Italy; [2]Biology Department, MIT, USA; [3]Department of Electronics, Information and Bioengineering, Politecnico di Milano, Italy

ESB2021_1541-MECHANICAL CARACTERIZATION OF LAMIN COILED COIL 1B DOMAIN-1541.pdf

INVESTIGATING CELLULAR FORCE GENERATION DURING SPROUTING ANGIOGENESIS

M. Cóndor[1], D. Böhringer[2], A. Apolinar[3], J. A. Sanz-Herrera[3], J. Barrasa-Fano[1], B. Fabry[2], H. Van Oosterwyck[1]
[1]Department of Mechanical Engineering, KU Leuven, Leuven, Belgium; [2]Department of Physics, Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany; [3]Escuela Técnica Superior de Ingeniería, Universidad de Sevilla, Seville, Spain

ESB2021_1813-INVESTIGATING CELLULAR FORCE GENERATION DURING SPROUTING ANGIOGENESIS-1813.pdf

HALOGENATION AS A STRATEGY TO MODIFY THE PHYSICO-CHEMICAL PROPERTIES OF RESILIN-LIKE OLIGOPEPTIDES

L. Sori[1], A. Pizzi[1], A. Gautieri[2], A. M. Grande[3], F. Baldelli Bombelli[1], M. Soncini[2], P. Metrangolo[1]
[1]SupraBioNanoLab-DCMIC "Giulio Natta" - Politecnico di Milano, Italy; [2]Biomechanics Group-DEIB - Politecnico di Milano; [3]Department of Aerospace Science and Technology - Politecnico di Milano

ESB2021_1797-HALOGENATION AS A STRATEGY TO MODIFY THE PHYSICO-CHEMICAL PROPERTIES-1797.pdf

11:00am - 12:15pm **CV-Mech.3: Cardiovascular mechanics**

Session Chair: **Umberto Morbiducci**

https://teams.microsoft.com/l/channel/19%3adfc7d4fe37914150a419a66ecd7331f5%40thread.tacv2/TR01_Cardiovascular%2520Mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: PREDICTING FLOW AND PRESSURE IN THE CIRCULATION USING STRUCTURED–TREE MODELS

N. A Hill
University of Glasgow, United Kingdom

ESB2021_1135-PT PREDICTING FLOW AND PRESSURE IN THE CIRCULATION USING STRUCTURED–TREE MODELS-1135.pdf

Ultrasound-based Fluid-Structure Interaction modeling of Abdominal Aortic Aneurysms incorporating pre-stress

J. Fonken[1,2], E. Maas[1,2], A. Nievergeld[1,2], M. van Sambeek[1,2], F. van de Vosse[1], R. Lopata[1]
[1]Eindhoven University of Technology, the Netherlands; [2]Catharina Hospital Eindhoven, the Netherlands

ESB2021_1319-Ultrasound-based Fluid-Structure Interaction modeling-1319.pdf

COMPUTATION OF BLOOD FLOW IN PATIENT-SPECIFIC MODELS OF TETRALOGY OF FALLOT WITH MRI-OBTAINED INFLOW CONDITIONS

M. Boumpouli[1], E. Sauvage[2], C. Capelli[2], S. Schievano[2], A. Kazakidi[1]

[1]Department of Biomedical Engineering, University of Strathclyde, UK; [2]University College London, Institute of Cardiovascular Science & Great Ormond Street Hospital for Children, NHS Foundation Trust, London, UK

ESB2021_1397-COMPUTATION OF BLOOD FLOW IN PATIENT-SPECIFIC MODELS OF TETRALOGY OF FALLOT WITH MRI-OBTAINED.pdf

A COMPUTATIONAL FRAMEWORK FOR MICROSTRUCTURAL REMODELLING INDUCED BY HEMODYNAMIC ALTERATIONS

D. Bianchi[1], E. Monaldo[2], G. Vairo[3], M. Marino[3]
[1]DICAr, University of Pavia, Italy; [2]Department of Engineering, Roma Tre University, Italy; [3]DICII, University of Rome "Tor Vergata", Italy

ESB2021_1591-A COMPUTATIONAL FRAMEWORK FOR MICROSTRUCTURAL REMODELLING INDUCED-1591.pdf

A COMPUTATIONAL STUDY OF INTERSTITIAL FLOW ON SMOOTH MUSCLE CELLS IN HUMAN COMMON CAROTID ARTERY: THREE-LAYER MODEL

S. Altundemir[1], S. S. Lashkarinia[2], K. Pekkan[2], A. K. Uguz[1]
[1]Department of Chemical Engineering, Bogazici University, Turkey; [2]Department of Mechanical Engineering, Koc University, Turkey

ESB2021_1568-A COMPUTATIONAL STUDY OF INTERSTITIAL FLOW ON SMOOTH MUSCLE CELLS-1568.pdf

11:00am - 12:15pm

CV-Meth.3: Computational methods for cardiovascular applications

Session Chair: **Stephane Avril**

https://teams.microsoft.com/l/channel/19%3af7d78c3c31894881a6fd6019be2f1ce2%40thread.tacv2/TR04_CompMethods%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS: ACHIEVEMENTS AND FUTURE PERSPECTIVES

P. E. McHugh
NUI Galway, Ireland

ESB2021_125-PT COMPUTATIONAL METHODS FOR CARDIOVASCULAR APPLICATIONS ACHIEVEMENTS AND FUTURE PERSPECTIVES-12.pdf

Aortic hemodynamics assessment pre and post VSR surgery: A patient-specific 4D flow-based FSI model

G. Nannini[1], A. Caimi[1], M. C. Palumbo[1], S. Saitta[1], L. N. Girardi[2], M. Gaudino[2], J. W. Weinsaft[2], A. Redaelli[1]
[1]Department of Electronics Information and Bioengineering, Politecnico di Milano, Italia; [2]Department of Medicine (Cardiology), Weill Cornell College, New York, NY, USA

ESB2021_1255-Aortic hemodynamics assessment pre and post VSR surgery-1255.pdf

PATIENT-SPECIFIC LINEARIZATION OF ANISOTROPIC HYPERELASTIC MODELS FOR FSI ANALYSES OF AORTIC ANEURYSMS

E. Vignali[1], S. Avril[2], S. Celi[1]
[1]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [2]Mines Saint-Etienne, Université de Lyon, INSERM, U 1059 SAINBIOSE, France

ESB2021_1544-PATIENT-SPECIFIC LINEARIZATION OF ANISOTROPIC HYPERELASTIC MODELS-1544.pdf

VIRTUAL THORACIC ENDOVASCULAR AORTIC REPAIR (TEVAR): A FLUID-STRUCTURE INTERACTION STUDY

A. Ramella[1], E. Redaelli[1], G. Luraghi[1], M. Conti[2], S. Trimarchi[3], F. Migliavacca[1]
[1]Politecnico di Milano, Italy; [2]Università degli Studi di Pavia, Italy; [3]Università degli Studi di Milano, Italy

ESB2021_1646-VIRTUAL THORACIC ENDOVASCULAR AORTIC REPAIR-1646.pdf

Fluid-Structure Interaction of a Thin Elastic Leaflet – A Comparison of Computational Methods

M. McLoone[1], Y. Fan[2], R. Whiting[1], C. Conway[3], E. Roche[2], T. Vaughan[1], N. Quinlan[1]
[1]National University or Ireland Galway, Ireland; [2]Massachusetts Institute of Technology, USA; [3]Royal College of Surgeons in Ireland, Ireland

ESB2021_1743-Fluid-Structure Interaction of a Thin Elastic Leaflet – A Comparison of Computational M.pdf

Large-eddy simulation of a patient-specific aorta with aortic stenosis: an investigation into turbulence effects

E. L. Manchester[1], S. Pirola[1], M. Y. Salmasi[2], D. P O'Regan[3], T. Athanasiou[2], X. Y. Xu[1]
[1]Department of Chemical Engineering, Imperial College London, UK; [2]Department of Surgery and Cancer, St Mary's Hospital, Imperial College London, UK; [3]MRC London Institute of Medical Sciences Imperial College London, Hammersmith Hospital, London, UK

ESB2021_1261-Large-eddy simulation of a patient-specific aorta with aortic stenosis-1261.pdf

11:00am - 12:15pm

Hard-Tissue.3: Hard tissue biomechanics

Session Chair: **Dieter Pahr**

https://teams.microsoft.com/l/channel/19%3a51d82a4df16b420a9568e8c8b035296e%40thread.tacv2/TR14_Hard%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Compressive strength of Osteogenesis Imperfecta bone matrix is higher than controls and depends on mineralization

M. Indermaur[1], D. Casari[2], T. Kochetkova[2], C. Peruzzi[2], E. Zimmermann[3], F. Rauch[3], B. Willie[3], J. Michler[2], J. Schwiedrzik[2], P. Zysset[1]
[1]ARTORG Center for Biomedical Engineering Research/University of Bern, Switzerland; [2]Swiss Federal Laboratories for Material Science and Technology EMPA, Thun, Switzerland; [3]Shriners Hospital for Children, Montreal, Canada

ESB2021_1637-Compressive strength of Osteogenesis Imperfecta bone matrix is higher than controls and.pdf

The Effect of Mechanical Loading and PTH on Bone Adaptation in an OVX Mouse Model

V. S. Cheong[1,2], B. C Roberts[1,3], V. Kadirkamanathan[1,2], E. Dall'Ara[1,3]
[1]Insigneo Institute for in silico Medicine, University of Sheffield, United Kingdom; [2]Department of Automatic Control and Systems Engineering, University of Sheffield, United Kingdom; [3]Department of Oncology and Metabolism, University of Sheffield, United Kingdom

ESB2021_1482-The Effect of Mechanical Loading and PTH on Bone Adaptation-1482.pdf

INDIVIDUALIZED CYCLIC MECHANICAL LOADING ENHANCES THE REGENERATIVE RESPONSE OF BONE IN A MOUSE MODEL OF AGING

N. Mathavan, E. Wehrle, G. R Paul, D. Yilmaz, G. A Kuhn, R. Müller
ETH Zurich, Switzerland

ESB2021_1464-INDIVIDUALIZED CYCLIC MECHANICAL LOADING ENHANCES THE REGENERATIVE RESPONSE-1464.pdf

THE EFFECT OF ADVANCED GLYCATION END-PRODUCTS ON BONE FRACTURE MECHANICS

M. Britton, T. J Vaughan
National University of Ireland Galway, Ireland

ESB2021_1449-THE EFFECT OF ADVANCED GLYCATION END-PRODUCTS ON BONE FRACTURE MECHANICS-1449.pdf

PRELIMINARY RESULTS OF THE EFFECT OF LONG-TERM BISPHOSPHONATE TREATMENT ON PHYSICOCHEMICAL TRABECULAR PROPERTIES

A. Bonicelli[1,2], T. Tay[3], R. Stavri[3], U. Hansen[4], R. Abel[3], P. Zioupos[2]
[1]School of Health and Life Science, Northumbria University; [2]Cranfield Forensic Institute, Cranfield University; [3]MSk LAB, Imperial College London; [4]Dept Mechanical Engineering, Imperial College London

ESB2021_1465-PRELIMINARY RESULTS OF THE EFFECT OF LONG-TERM BISPHOSPHONATE TREATMENT-1465.pdf

ASSESSING BONE MATURITY: COMPOSITIONAL AND MECHANICAL PROPERTIES OF RIB CORTICAL BONE

A. Bonicelli[1,2], E. F. Kranioti[3], B. Xhemali[4], P. Zioupos[2]
[1]School of Health and Life Science, Northumbria University; [2]Cranfield Forensic Institute, Cranfield University,; [3]Dept of Forensic Sciences, University of Crete,; [4]Institute of Forensic Medicine of Tirana

ESB2021_1470-ASSESSING BONE MATURITY-1470.pdf

HOW TOUGH IS THE HUMAN SKULL?

L. A. Zambrano M.[1,2], J. Vander Sloten[3], N. Famaey[3], J. van Deursen[4], M. D. Gilchrist[1], A. Ni Anaidh[1]
[1]School of Mechanical and Materials Engineering, University College Dublin, Ireland; [2]Department of Aerospace, Mechanical and Electronics Engineering, IT Carlow, Ireland; [3]Mechanical Engineering Department, KU Leuven, Belgium; [4]Department of Materials Engineering, KU Leuven, Belgium

ESB2021_1495-HOW TOUGH IS THE HUMAN SKULL-1495.pdf

11:00am - 12:15pm

Impact.1: Impact/injury biomechanics

Session Chair: **Christophe Bastien**

https://teams.microsoft.com/l/channel/19%3a7e45ff3da1dd44bd80ec8585cd0af23d%40thread.tacv2/TR12%2520Impact%2520and%2520Injury%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

DEVELOPMENT OF A SIMPLIFIED AND BIOFIDELIC HUMAN SHOULDER SURROGATE FOR TESTING OF PADDED CLOTHING IN RUGBY UNION

A. Hughes, H. Driscoll, M. Carré
University of Sheffield, United Kingdom

ESB2021_1182-DEVELOPMENT OF A SIMPLIFIED AND BIOFIDELIC HUMAN SHOULDER SURROGATE-1182.pdf

THE KNEE JOINT MENISCUS IS A SHOCK ABSORBER

A. M. Seitz, K. Kreienbaum, J. Schwer, D. Warnecke, A. Ignatius, L. Dürselen
Institute of Orthopaedic Research and Biomechanics, Ulm University Medical Centre, Germany

ESB2021_1189-THE KNEE JOINT MENISCUS IS A SHOCK ABSORBER-1189.pdf

An explorative in vitro study analyzing the determinants of human rib fragility

C. Liebsch[1], S. Hübner[1], M. Palanca[2], L. Cristofolini[2], H.-J. Wilke[1]
[1]University of Ulm, Germany; [2]University of Bologna, Italy

ESB2021_1198-An explorative in vitro study analyzing the determinants-1198.pdf

INVESTIGATING THE EFFECTS OF INFILL QUANTITY ON THE FRICTIONAL RESPONSE OF IN VIVO SKIN

M. MacFarlane[1], C. Dyson[2], M. Douglas[3], P. Theobald[1]
[1]Cardiff School of Engineering, Cardiff University, United Kingdom; [2]Sports Labs Ltd., Edinburgh, United Kingdom; [3]World Rugby, Dublin, Ireland

ESB2021_1721-INVESTIGATING THE EFFECTS OF INFILL QUANTITY ON THE FRICTIONAL RESPONSE OF-1721.pdf

THE INFLUENCE OF FALL DIRECTION AND HIP PROTECTOR PADDING ON HIP FRACTURE RISK

E. S. Galliker[1], A. C. Laing[2], S. J. Ferguson[1], B. Helgason[1], I. Fleps[1]
[1]ETH Zurich, Switzerland; [2]University of Waterloo, Canada

ESB2021_1728-THE INFLUENCE OF FALL DIRECTION AND HIP PROTECTOR PADDING-1728.pdf

Dependency of femoral impact forces on posture and fall direction assessed with biofidelic Finite element models

G. Catani[1,2], A. Baker[1], P. Vena[2], S. J. Ferguson[1], B. Helgason[1], I. Fleps[1]
[1]Institute for Biomechanics, Laboratory for Orthopaedic Technology, ETH-Zürich; [2]LaBS-Laboratory of Biological Structure Mechanics, Politecnico di Milano

ESB2021_1781-Dependency of femoral impact forces on posture and fall direction assessed with biofidelic.pdf

A GENERIC MATHEMATICAL FORMULATION FOR SOFT TISSUE INJURY SEVERITY IN IMPACT SCENARIOS

C. Bastien[1], C. N. Sturgess[2], H. Davies[1], J. Hardwicke[3]
[1]Coventry University, United Kingdom; [2]University of Birmingham; [3]University Hospital of Coventry and Warwickshire

ESB2021_1880-A GENERIC MATHEMATICAL FORMULATION FOR SOFT TISSUE INJURY SEVERITY-1880.pdf

11:00am - 12:15pm

Msk.3: Musculoskeletal biomechanics

Session Chair: **Nicola Sancisi**

https://teams.microsoft.com/l/channel/19%3ad142c4ba1ecf4a929219f6efcae89fa6%40thread.tacv2/TR08_Musculoskeletal%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Modeling human-seat interaction can improve the accuracy of in silico maximum voluntary isometric tests

G. Davico[1,2], F. Bottin[1,2], M. Viceconti[1,2]
[1]Department of Industrial Engineering, Alma Mater Studiorum - University of Bologna, Italy; [2]Medical Technology Lab, IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy

ESB2021_1249-Modeling human-seat interaction can improve the accuracy of-1249.pdf

Wrist Load During Hand Grip Exercises with a new Inverse Dynamics Hand Model

L. Engelhardt[1,2], J. Schwer[2], M. Melzner[3,4], P. Christen[5], S. Dendorfer[3,4], U. Simon[1]
[1]Scientific Computing Centre Ulm, Germany; [2]Institute of Orthopaedic Research and Biomechanics, Centre for Trauma Research Ulm, Germany; [3]Laboratory for Biomechanics, Ostbayerische Technische Hochschule (OTH) Regensburg, Germany; [4]Regensburg Center of Biomedical Engineering, OTH and University Regensburg, Germany; [5]Institute for Biomechanics, ETH Zurich, Switzerland

ESB2021_1267-Wrist Load During Hand Grip Exercises with a new Inverse Dynamics Hand Model-1267.pdf

MEDIAL PROGRESSING AND NON-PROGRESSING KNEE OA SUBJECTS EXHIBIT DIFFERENCES IN LOADING DURING GAIT.

B. A. Killen[1], M. Willems[1], H. Hoang[2], S. Verschueren[3], I. Jonkers[1]
[1]Department of Movement Science, KU Leuven, Belgium; [2]School of Mechanical Medical & Process Engineering, QUT, Australia; [3]Department of Rehabilitation Science, KU Leuven, Belgium

ESB2021_1467-MEDIAL PROGRESSING AND NON-PROGRESSING KNEE OA SUBJECTS EXHIBIT DIFFERENCES-1467.pdf

How does the glenoid size affect rotator cuff loading? - A musculoskeletal analysis

J. Menze[1], H. Hess[1], S. J. Ferguson[2], M. Zumstein[3], N. Gerber[1], J. Burger[1], K. Gerber[1]
[1]sitem Center, University of Bern, Switzerland; [2]ETH Zürich, Switzerland; [3]University Hospital Bern, Inselspital, Switzerland

ESB2021_1566-How does the glenoid size affect rotator cuff loading-1566.pdf

DYNAMIC ANALYSIS OF TOTAL SHOULDER REPLACEMENTS USING A ROBOT-ASSISTED COMPUTATIONAL TEST METHOD

M. Kebbach[1], S. Herrmann[2], R. Grawe[3], E. Kleist[3], P. Augat[2], C. Woernle[3], R. Bader[1]
[1]Department of Orthopaedics, University Medicine Rostock, Germany; [2]Institute for Biomechanics; BG Unfallklinik Murnau, Germany; [3]Chair of Technical Dynamics, University of Rostock, Germany

ESB2021_1587-DYNAMIC ANALYSIS OF TOTAL SHOULDER REPLACEMENTS USING A ROBOT-ASSISTED COMPUTATIONAL TEST_a.pdf

ESTIMATING MUSCLE FORCES AND ADAPTATIONS DURING PLYOMETRIC HOPPING IN EMULATED HYPOGRAVITY

J. Cowburn[1,2], G. Serrancoli[4], S. Colyer[1,2], G. Pavei[3], A. Minetti[3], A. Salo[1,2,5], D. Cazzola[1,2]
[1]Department for Health, University of Bath, UK; [2]Centre for the Analysis of Motion, Entertainment Research and Applications, University of Bath, UK; [3]University of Milan, Italy; [4]Department of Mechanical Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain; [5]KIHU Research Institute for Olympic Sports, Jyväskylä, Finland

ESB2021_1663-ESTIMATING MUSCLE FORCES AND ADAPTATIONS DURING PLYOMETRIC HOPPING-1663_a.pdf

Dependency of Femoral Impact Forces and Strains on Muscle Activation during Falls in the Elderly

G. Biesso[1,2], A. Baker[1], P. Vena[2], S. J. Ferguson[1], B. Helgason[1], I. Fleps[1]
[1]Institute for Biomechanics, ETH Zürich, Switzerland; [2]Department of Chemistry, Materials and Chemical Engineering Giulio Natta, Laboratory of Biological Structure Mechanics (LaBS), Politecnico di Milano, Italy

ESB2021_1786-Dependency of Femoral Impact Forces and Strains on Muscle Activation during Falls-1786.pdf

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11:00am - 12:15pm

Orth-meth.1: Computational methods for orthopaedic applications

Session Chair: **Luca Modenese**

https://teams.microsoft.com/l/channel/19%3a0ab6907d523640f29f1b501dd6cbece7%40thread.tacv2/TR13_CompMethods%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Computational modeling of primary fixation of total knee arthroplasty

D. Janssen
Radboud university medical center, Netherlands, The

ESB2021_700-PT Computational modeling of primary fixation of total knee arthroplasty-700.pdf

The role of interface stresses on implant stability. An experimental-computational approach

M. Einafshar[1,2], A. Hashemi[1], H. van Lenthe[2]
[1]Amirkabir University of Technology, Biomedical Engineering Faculty, Biomechanics Group, Tehran, Iran; [2]KU Leuven, Department of Mechanical Engineering, Biomechanics Section, Leuven, Belgium

ESB2021_1336-The role of interface stresses on implant stability An experimental-computational approach-1336.pdf

Biomechanical analyses of mandibular fractures to support the design of novel fixation systems

V. Orassi[1,2,3], C. Rendenbach[2], S. Checa[1]
[1]Julius Wolff Institut, Charité – Universätsmedizin Berlin, Corporate Member of Freie Universität Berlin, Humboldt-Universität zu Berlin and Berlin Institute of Health, Berlin, Germany; [2]Department of Oral and Maxillofacial Surgery, Charité – Universätsmedizin Berlin, Corporate Member of Freie Universität Berlin, Humboldt-Universität zu Berlin and Berlin Institute of Health, Berlin, Germany; [3]Berlin-Brandenburg School for Regenerative Therapies, Berlin, Germany

ESB2021_1236-Biomechanical analyses of mandibular fractures to support the design of novel fixation_a.pdf

Towards optimization of plate fracture fixations at the distal radius: Using FEA to reduce the number of screws

A. Synek[1], S. F. Baumbach[2], D. H. Pahr[1,3]
[1]Institute of Lightweight Design and Structural Biomechanics, TU-Wien, Austria; [2]Department of General, Trauma and Reconstructive Surgery, LMU Munich, Munich, Germany; [3]Division Biomechanics, Karl Landsteiner University of Health Sciences, Krems, Austria

ESB2021_1271-Towards optimization of plate fracture fixations at the distal radius-1271.pdf

FINITE ELEMENT ANALYSIS OF EFFECT OF IMPLANT MALPOSITION IN BI-UNICOMPARTMENTAL KNEE PROSTHESIS

N. Armillotta[1], E. Bori[1], P. Antinolfi[2], B. Innocenti[1]
[1]Université Libre de Bruxelles, Belgium; [2]Università degli Studi di Perugia, Perugia, Italy

ESB2021_1418-FINITE ELEMENT ANALYSIS OF EFFECT OF IMPLANT MALPOSITION-1418.pdf

FEASIBILITY OF A STRAIN BASED EVALUATION OF BONE HEALING IN FRACTURES TREATED WITH AN EXTERNAL FIXATOR

L. Mattei[1], M. Gagliani[1], C. Curreli[2], F. Di Puccio[1]
[1]Dip. Ingegneria Civile e Industriale, Università di Pisa, Italia; [2]Dip. Ingegneria Industriale, Alma Mater Studiorum – Università di Bologna, Italia

ESB2021_1836-FEASIBILITY OF A STRAIN BASED EVALUATION OF BONE HEALING-1836.pdf

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11:00am - 12:15pm

Soft-Tissue.3: Soft tissue mechanics

Session Chair: **Ivana, Dusan Pajic-Lijakovic**

https://teams.microsoft.com/l/channel/19%3a1c67951192494ef19dedc6f6b20b4592%40thread.tacv2/TR15_Soft%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: WHY WILL VISCOSITY AND NONLINEARITY BIOMARKERS RECAST ELASTOGRAPHIC DIAGNOSIS?

G. Rus
University of Granada, Spain

ESB2021_110-PT WHY WILL VISCOSITY AND NONLINEARITY BIOMARKERS RECAST ELASTOGRAPHIC DIAGNOSIS-110.pdf

Optical Coherence Tomography imaging of skeletal muscle for multiscale mechanical characterization

M. Maillet[1], M. Kammoun[1], J.-F. Grosset[1], S. Avril[2], M.-C. Ho Ba Tho[1], O. Trabelsi[1]
[1]Université de technologie de Compiègne, CNRS, Biomechanics and Bioengineering, Centre de recherche Royallieu-CS 60319 -60203 Compiègne Cedex; [2]Center of Health Engineering, Ecole des Mines de Saint-Etienne, CNRS UMR 5307 LGF, Saint-Etienne, France

ESB2021_1371-Optical Coherence Tomography imaging of skeletal muscle-1371.pdf

A high-resolution ultrasonic approach to measuring intra-tissue cartilage strains

M. Pastrama[1], R. van Hees[2], I. Stavenuiter[1], K. Ito[1], R. Lopata[2], C. C. van Donkelaar[1]
[1]Orthopaedic Biomechanics, Department of Biomedical Engineering, Eindhoven University of Technology, The Netherlands; [2]Cardiovascular Biomechanics - PULS/e, Department of Biomedical Engineering, Eindhoven University of Technology, The Netherlands

ESB2021_1370-A high-resolution ultrasonic approach to measuring intra-tissue cartilage strains-1370.pdf

YARN-SCALE STRAIN MEASUREMENTS USING S-DIC IN ABDOMINAL WALL REPAIR MESHES

B. Pierrat[1], A. Le Ruyet[2], D. Simons[2], S. Avril[1]
[1]Mines Saint-Etienne, Univ Lyon, Univ Jean Monnet, INSERM, U 1059 Sainbiose, Centre CIS, Saint-Etienne, France; [2]Medtronic – Sofradim Production, Trévoux, France

ESB2021_1818-YARN-SCALE STRAIN MEASUREMENTS USING S-DIC IN ABDOMINAL WALL REPAIR MESHES-1818.pdf

BIOMECHANICS OF FIBROUS LIGAMENTOUS TISSUES: VOLUMETRIC ANALYSIS OF MICROSTRUCTURE UNDER INCREASING STRAIN

G. Marchiori[1], G. Cassiolas[2], N. Sancisi[3], M. Berni[1], M. Conconi[3], S. Zaffagnini[1], M. Fini[1], N. F. Lopomo[2], A. Parrilli[4]
[1]IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy; [2]University of Brescia, Department of Information Engineering, Brescia, Italy; [3]University of Bologna, Department of Industrial Engineering, Bologna, Italy; [4]Empa, Center for X-ray Analytics, Überlandstrasse 129, Dübendorf (Switzerland)

ESB2021_1717-BIOMECHANICS OF FIBROUS LIGAMENTOUS TISSUES-1717.pdf

A TORSIONAL WAVE SENSOR FOR MEASURING THE ANISOTROPY OF SOFT TISSUE IS FINALLY REAL

I. H Faris[1,2], J. Torres[1], A. Callejas[1,2], J. Melchor[2,3,4], G. Rus[1,2,3]
[1]Ultrasonics Lab, Dept. Structural Mechanics, University of Granada; [2]Instituto de Investigación Biosanitaria, ibs.GRANADA, 18012 Granada, Spain; [3]Excellence Research Unit "Modelling Nature" (MNat) University of Granada, Granada, Spain; [4]Department of Statistics and Operations Research, University of Granada, 18071 Granada, Spain

ESB2021_1814-A TORSIONAL WAVE SENSOR FOR MEASURING THE ANISOTROPY-1814.pdf

11:00am - 12:15pm

TE.2: Tissue engineering

Session Chair: **Diana Massai**

https://teams.microsoft.com/l/channel/19%3a8f98bf8ee9e8495ebd28e74f348f7fbf%40thread.tacv2/TR07_Tissue%2520Eng?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PRE-OSTEOBLAST CELLS IN THREE-DIMENSIONAL SPHEROIDS EXERT OSTEOCYTE-LIKENESS

J. Kim, T. Adachi
Institute for Frontier Life and Medical Sciences, Kyoto University, Japan

ESB2021_1258-PRE-OSTEOBLAST CELLS IN THREE-DIMENSIONAL SPHEROIDS EXERT OSTEOCYTE-LIKENESS-1258.pdf

BIOMECHANICAL PROPERTIES OF ACELLULAR MYOCARDIAL SCAFFOLDS

A. R. Babu, D. Bajhaiya, K. V. Sagar, T. Deepak
National Institute of Technology Rourkela, India

ESB2021_1504-BIOMECHANICAL PROPERTIES OF ACELLULAR MYOCARDIAL SCAFFOLDS-1504.pdf

DEVELOPMENT OF A VARIABLE STIMULATION CELL CULTURE SYSTEM USIGN IN-SITU FEEDBACK OF THE GENE RESPONSE

K. Tsuchiya[1], Y. Morita[2], K. Yamamoto[2]
[1]Doshisha University Graduate School, Japan; [2]Department of Biomedical Engineering, Doshisha University, Japan

ESB2021_1711-DEVELOPMENT OF A VARIABLE STIMULATION CELL CULTURE SYSTEM USIGN IN-SITU FEEDBACK OF THE GENE.pdf

Hydrogel viscoelasticity influences mechanotransduction and chondrogenesis of mesenchymal stem cells

M. Walker, M. Cantini
Centre for the Cellular Microenvironment, University of Glasgow, UK

ESB2021_1459-Hydrogel viscoelasticity influences mechanotransduction and chondrogenesis-1459.pdf

Characterization of directional fluid flow induced tissue growth in a 3D in vitro human bone defect model

B. W. M. de Wildt[1], F. Zhao[2], I. Lauwers[1], K. Ito[1], S. Hofmann[1]
[1]Orthopaedic Biomechanics, Department of Biomedical Engineering, Eindhoven University of Technology, The Netherlands; [2]Biomedical Engineering, Zienkiewicz Centre for Computational Engineering, Swansea University, United Kingdom

ESB2021_1302-Characterization of directional fluid flow induced tissue growth-1302.pdf

STEM CELL SECRETOME DECREASES ANNULAR MECHANICAL STRENGTH IN A LOADED ANNULUS FIBROSUS ORGAN CULTURE

G. Q. Teixeira[1], A. Ekkerlein[1], R. M. Goncalves[1,2], J. R. Ferreira[2], A. Ignatius[1], H.-J. Wilke[1], C. Neidlinger-Wilke[1]
[1]Institute of Orthopaedic Research and Biomechanics, Ulm University, Germany; [2]Instituto de Investigação e Inovação em Saúde (i3S), University of Porto, Portugal

ESB2021_1187-STEM CELL SECRETOME DECREASES ANNULAR MECHANICAL STRENGTH-1187.pdf

CFD evaluation of permeability in TPMS scaffolds

T. Pires, J. Santos, B. P. Gouveia, A. P. G. Castro, P. R. Fernandes
IDMEC, Instituto Superior Tecnico, Universidade de Lisboa, Portugal

ESB2021_1609-CFD evaluation of permeability in TPMS scaffolds-1609.pdf

EXPERIMENTAL EVALUATION OF PERMEABILITY IN TPMS SCAFFOLDS

J. E. Santos, T. Pires, B. Gouveia, A. Castro, P. Fernandes
Instituto Superior Técnico, University of Lisbon, Portugal

ESB2021_1574-EXPERIMENTAL EVALUATION OF PERMEABILITY IN TPMS SCAFFOLDS-1574.pdf

12:15pm - 12:30pm **break-d2-2: Break**

12:30pm - 1:15pm

CERENOVUS: Workshop: "Endovascular Stroke treatment and career paths in the biomedical industry"

https://teams.microsoft.com/l/channel/19%3aad23c05498ce473abf1925876d54bfe4%40thread.tacv2/SW_CERENOVUS?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm - 1:15pm

EXEMPLAR - DASSAULT SYSTEMES.2: Workshop: "EPYGON - Towards the implementation of ASME V&V 40-2018 for the structural assessment of EPYGON transcatheter mitral valve"

https://teams.microsoft.com/l/channel/19%3aa1e9bbbcb7d64f1685e4afd272b26670%40thread.tacv2/SW_EXEMPLAR%2520-%2520DASSAULT?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm - 1:15pm

PARAMETRIC DESIGN - ANSYS.2: Workshop: "How ANSYS transforms the orthopedic activity: from research to medical Innovation, from regulatory to clinical applications"

https://teams.microsoft.com/l/channel/19%3a5952b4a0cf9e460fb078b20a2f5079d3%40thread.tacv2/SW_PARAMETRIC%2520DESIGN%2520-%2520ANSYS?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm - 1:15pm

ZEISS: Workshop: "X-ray computed tomography and digital volume correlation in musculoskeletal research"

https://teams.microsoft.com/l/channel/19%3a8f64fbcd3eac4249a33f88868a649d32%40thread.tacv2/SW_ZEISS?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

1:15pm - **break-d2-3: Break**

1:30pm

1:30pm - 2:15pm

Key-2: Keynote Lecture Federica Caselli

Session Chair: **David Mitton**
Session Chair: **Gabriele Dubini**
https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

MICROFLUIDICS, ELECTRIC FIELDS AND MACHINE LEARNING: THE PERFECT MATCH FOR SINGLE-CELL ANALYSIS

F. Caselli
University of Rome Tor Vergata, Italy

ESB2021_1884-MICROFLUIDICS, ELECTRIC FIELDS AND MACHINE LEARNING-1884.pdf

2:15pm - 2:30pm

break-d2-4: Break

2:30pm - 3:30pm

Poster_CardioVasc 1: Poster session - Cardiovascular 1

Session Chair: **Claudio Chiastra**
https://teams.microsoft.com/l/channel/19%3a16157ba19c9644069b08627b11809a1e%40thread.tacv2/P01_Cardiovascular_1?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

FUNCTIONAL MITRAL REGURGITATION EX-VIVO MODEL IN DEER HEARTS FOR APPLICATION IN PRECLINICAL RESEARCH

M. Jaworek[1,2], E. Maroncelli[1], E. Salurso[1,2], F. Perico[1,2], C. Romagnoni[2,3], G. Gelpi[1,2,3], R. Rosa[2,3], A. Mangini[2,3], G. B. Fiore[1,2], R. Vismara[1,2]
[1]Department of Electronics, Information and Bioengineering, Politecnico di Milano, Milan, Italy;; [2]ForcardioLab – Fondazione per la Ricerca in Cardiochirurgia ONLUS, Milan, Italy;; [3]Cardiovascular Surgery Department, ASST Fatebenefratelli Luigi Sacco University Hospital, Milan, Italy

ESB2021_1406-FUNCTIONAL MITRAL REGURGITATION EX-VIVO MODEL IN DEER HEARTS-1406.pdf

Biomechanics of the Human Fetal Heart with Critical Aortic Stenosis and Evolving HLHS

C. W. Ong[1], M. Ren[2], H. Wiputra[2], J. Mojumder[3], W. X. Chan[2], A. Tulzer[4], G. Tulzer[4], M. Buist[2], C. Mattar[5], L. C. Lee[3], C. H. Yap[6]
[1]Institute of High Performance Computing, A*STAR, Singapore; [2]Dept of Biomedical Engineering, National University of Singapore, Singapore; [3]Dept of Mechanical Engineering, Michigan State University, USA; [4]Children's Heart Center Linz, Dept of Pediatric Cardiology, Kepler University Hospital, Austria; [5]Dept of Obstetrics and Gynecology, National University of Singapore, Singapore; [6]Dept of Bioengineering, Imperial College London, UK

ESB2021_1274-Biomechanics of the Human Fetal Heart with Critical Aortic Stenosis and Evolving HLHS-1274.pdf

MICRO-BEADS DECREASE THE RUPTURE THRESHOLD ON AN ATHEROMA CAP LABORATORY MODEL

A. Corti, A. De Paolis, T. Shameen, S. Weinbaum, L. Cardoso
The City College of New York, United States of America

ESB2021_1736-MICRO-BEADS DECREASE THE RUPTURE THRESHOLD ON AN ATHEROMA CAP LABORATORY MODEL-1736.pdf

Patient-specific modelling of blood flow in coronary arteries of Indian subjects

M. Singhal, R. Gupta
Indian Institute of Technology Guwahati, Assam, India

ESB2021_1636-Patient-specific modelling of blood flow in coronary arteries of Indian subjects-1636.pdf

DIGITAL TWIN OF CARDIOBAND® PROCEDURE FOR MITRAL VALVE REGURGITATION: IN SILICO APPROACH AND VALIDATION

E. Gasparotti[1,2], E. Vignali[1], E. Cerone[3], S. Berti[3], S. Celi[1]
[1]BioCardioLab, Fondazione Toscana G. Monasterio, Italy; [2]Dept. of Information Engineering, University of Pisa, Italy; [3]Adult Cardiology Unit, Fondazione Toscana Gabriele Monasterio, Italy

ESB2021_1569-DIGITAL TWIN OF CARDIOBAND® PROCEDURE FOR MITRAL VALVE REGURGITATION-1569_a.pdf

CHARACTERIZATION OF AN EX-VIVO PORCINE MODEL OF FUNCTIONAL TRICUSPID REGURGITATION

E. Salurso[1,2], M. Jaworek[1,2], F. Perico[1,2], G. Gelpi[1,2,3], C. Romagnoni[2,3], R. Rosa[2,3], M. Contino[2,3], G. B. Fiore[1,2], R. Vismara[1,2]
[1]Politecnico di Milano, Italy; [2]ForcardioLab – Fondazione per la Ricerca in Cardiochirurgia ONLUS, Milan, Italy; [3]Cardiovascular Surgery Department, ASST Fatebenefratelli Luigi Sacco University Hospital, Milan, Italy

ESB2021_1405-CHARACTERIZATION OF AN EX-VIVO PORCINE MODEL OF FUNCTIONAL TRICUSPID REGURGITATION-1405.pdf

IN-SILICO AND IN-VITRO MULTI-AXIAL FATIGUE STRENGTH ASSESSMENT OF NI-TI STENTS WITH POST-FAILURE ANALYSIS

F. Berti[1], L. Patriarca[2], L. Petrini[3]
[1]Department of Chemistry, Materials and Chemical Engineering "G. Natta", Politecnico of Milano (Italy); [2]Department of Mechanical Engineering, Politecnico di Milano (Italy); [3]Department of Civil and Environmental Engineering, Politecnico di Milano (Italy)

ESB2021_1563-IN-SILICO AND IN-VITRO MULTI-AXIAL FATIGUE STRENGTH ASSESSMENT-1563.pdf

INHIBITION OF THE ADHESIVE BEHAVIOR OF VON WILLEBRAND FACTOR DUE TO ENZYMATIC CLEAVAGE

C. Watson[1], S. Rizzo[2], S. Ward[1], A. Redaelli[2], K. Manning[1,3]
[1]Department of Biomedical Engineering, The Pennsylvania State University; [2]Department of Biomedical Engineering, Politecnico di Milano; [3]Department of Surgery, Penn State Hershey Medical Center

ESB2021_1792-INHIBITION OF THE ADHESIVE BEHAVIOR OF VON WILLEBRAND FACTOR DUE-1792.pdf

2:30pm - 3:30pm

Poster_CardioVasc 2: Poster session - CardioVascular 2

Session Chair: **Caitriona Lally**
https://teams.microsoft.com/l/channel/19%3aac08b5827652484fbf7bb556d0568eaf%40thread.tacv2/P02_Cardiovascular_2?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

DEEP LEARNING METHODS FOR PLAQUE TYPE CLASSIFICATION BASED ON THE US IMAGES OF CAROTID ARTERY

B. Arsic[1,2], S. Djorovic[2,3], M. Anic[2,3], I. Saveljic[2,4], I. Koncar[5], N. Filipovic[2,3]
[1]Faculty of Science, University of Kragujevac, Serbia; [2]Bioengineering Research and Development Center (BioIRC), Serbia; [3]Faculty of Engineering, University of Kragujevac, Serbia; [4]Institute of Information Technologies, Kragujevac, Serbia; [5]Faculty of Medicine, University of Belgrade, Serbia

ESB2021_1807-DEEP LEARNING METHODS FOR PLAQUE TYPE CLASSIFICATION BASED-1807.pdf

BENEFITS OF OCT-BASED CFD ANALYSES OF FEM-POP ARTERIES: ARE INTRA-ARTERIAL IMAGING MODALITIES NECESSARY?

C. Gökgöl[1], Y. Ueki[2], D. Abler[1], N. Diehm[3], R. Engelberger[4], T. Otsuka[2], L. Räber[2], P. Büchler[1]
[1]ARTORG Center, University of Bern, Switzerland; [2]Dept. of Cardiology, Inselspital, Switzerland; [3]Vascular Institute Central Switzerland, Switzerland; [4]Dept. of Angiology, HFR Freiburg – Kantonsspital, Switzerland

ESB2021_1486-BENEFITS OF OCT-BASED CFD ANALYSES OF FEM-POP ARTERIES-1486.pdf

A PARAMETRIC EQUATION FOR THE NON-INVASIVE ESTIMATION OF THE ELASTIC PROPERTIES OF MATERIALS

B. M. Fanni[1,2], E. Sauvage[3], S. Schievano[3], V. Positano[1], C. Capelli[3], S. Celi[1]
[1]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [2]Department of Information Engineering, University of Pisa, Italy; [3]Institute of Cardiovascular Science, University College of London, United Kingdom

ESB2021_1640-A PARAMETRIC EQUATION FOR THE NON-INVASIVE ESTIMATION-1640_a.pdf

MODELLING THE HAEMODYNAMIC ENVIRONMENT PRODUCED BY THE CREATION OF AN ARTERIOVENOUS FISTULA

G. Hyde-Linaker[1], P. Hall Barientos[2], A. Kazakidi[1]
[1]University of Strathclyde, United Kingdom; [2]Image Centre of Excellence, Queen Elizabeth University Hospital, Glasgow, UK

ESB2021_1864-MODELLING THE HAEMODYNAMIC ENVIRONMENT PRODUCED BY THE CREATION-1864.pdf

VENOUS ANEURYSM MODELISATION USING OPEN-SOURCE TOOLS

J. C. Cuevas, G. Fortuny, J. Herrero, J. M. López, D. Puigjaner
Universitat Rovira i Virgili, Av. Països Catalans 26, Tarragona, Catalunya, Spain

ESB2021_1775-VENOUS ANEURYSM MODELISATION USING OPEN-SOURCE TOOLS-1775.pdf

2:30pm - 3:30pm

Poster_Cell & Molec: Poster session - Cellular and Molecular

Session Chair: **Aurélie Carlier**
Session Chair: **Arti Ahluwalia**
https://teams.microsoft.com/l/channel/19%3a1a238bd2cc6c4455a529bb4b8db29fb8%40thread.tacv2/P03_Cellular%2520and%2520Molecular?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

THE EFFECT OF OMECAMTIV MECARBIL ON THE MECHANICAL CONTRACTILE PROPERTIES OF SLOW SKELETAL MUSCLE FIBERS

V. Berg, D. Shchepkin, S. Nabiev, S. Bershitsky, G. Kopylova
Institute of Immunology and Physiology, Russian Federation

ESB2021_1501-THE EFFECT OF OMECAMTIV MECARBIL ON THE MECHANICAL CONTRACTILE PROPERTIES OF SLOW SKELETAL.pdf

MOLECULAR DYNAMICS AND BINDING MECHANISMS OF VOLATILE ANESTHETICS TARGETING HUMAN TUBULIN

E. A. Zizzi, M. Cavaglià, M. A. Deriu, J. A. Tuszynski
PolitoBIOMedLab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy

ESB2021_1738-MOLECULAR DYNAMICS AND BINDING MECHANISMS OF VOLATILE ANESTHETICS TARGETING HUMAN TUBULIN-1738.pdf

STRUCTURAL AND FUNCTIONAL ANALYSIS OF HUMAN BITTER TASTE RECEPTORS

M. Malavolta, L. Pallante, M. A. Deriu
PolitoBIOMedLab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy

ESB2021_1806-STRUCTURAL AND FUNCTIONAL ANALYSIS OF HUMAN BITTER TASTE RECEPTORS-1806.pdf

THE EFFECT OF TYPE 1 DIABETES ON CONTRACTILE FUNCTION OF CARDIOMYOCYTES IN THE DIFFERENT HEART REGIONS

G. Kopylova[1], A. Kochurova[1], V. Berg[1], X. Butova[1], T. Myachina[1,2], A. Khohlova[1,2], D. Shchepkin[1]
[1]Institute of Immunology and Phisiology, Russian Federation; [2]Ural Federal University, Russian Federation

ESB2021_1714-THE EFFECT OF TYPE 1 DIABETES ON CONTRACTILE FUNCTION OF CARDIOMYOCYTES-1714.pdf

ULTRASOUND DRIVEN AMYLOID FIBRIL UNFOLDING INVESTIGATED BY MOLECULAR MODELLING

M. Miceli[1], S. Muscat[2], U. Morbiducci[1], M. Cavaglià[1], M. A. Deriu[1]
[1]Politecnico di Torino, Italy; [2]Dalle Molle Institute for Artificial Intelligence (IDSIA), Switzerland

ESB2021_1739-ULTRASOUND DRIVEN AMYLOID FIBRIL UNFOLDING INVESTIGATED-1739.pdf

SYNTHESIS AND CHARACTERIZATION OF A NOVEL BOTTLE-BRUSH MOLECULE INSPIRED BY THE AGGRECAN STRUCTURE

s. vesentini[1], r. romita[1], J. rojo[2]
[1]Politecnico di Milano, Italy; [2]Glycosystems Laboratory, Instituto de Investigaciones Químicas-Universidad de Sevilla, Spain

ESB2021_1243-SYNTHESIS AND CHARACTERIZATION OF A NOVEL BOTTLE-BRUSH MOLECULE INSPIRED-1243.pdf

Integrative modelling of chondrocyte mechanotransduction and biochemical stimulation

M. Segarra-Queralt, G. Piella, J. Noailly
Universitat Pompeu Fabra, Spain

ESB2021_1582-Integrative modelling of chondrocyte mechanotransduction and biochemical stimulation-1582.pdf

QUANTIFICATION OF MECHANOREGULATION FROM TIME-LAPSED IN VIVO MICRO-CT MOUSE DATA

F. C. Marques, A. C. Scheuren, E. Wehrle, R. Müller
ETH Zurich, Switzerland

ESB2021_1472-QUANTIFICATION OF MECHANOREGULATION FROM TIME-LAPSED-1472.pdf

AN INTEGRATED EXPERIMENTAL-THEORETICAL APPROACH OF SINGLE CELL MECHANICS AFTER IN-FLOW COMPRESSIVE FORCES

D. Dannhauser[1], M. I. Maremonti[1], I. Papallo[1], M. Martorelli[1], A. Gloria[2], V. Panzetta[1], P. A. Netti[1], F. Causa[1]
[1]University of Federico II, Italy; [2]National Research Council of Italy

ESB2021_1825-AN INTEGRATED EXPERIMENTAL-THEORETICAL APPROACH OF SINGLE CELL MECHANICS AFTER IN-FLOW.pdf

TAMOXIFEN RESISTANCE LEADS TO SOFTENING OF BREAST CANCER CELLS

B. Zbiral[1], A. Weber[1], M. dM Vivanco[2], J. L. Toca-Herrera[1]
[1]Institute for Biophysics, University of Natural Resources and Life Sciences, Vienna, Austria; [2]Cancer Heterogeneity Lab, CIC bioGUNE, Bizkaia Science and Technology Park, Derio, Spain

ESB2021_1787-TAMOXIFEN RESISTANCE LEADS TO SOFTENING OF BREAST CANCER CELLS-1787.pdf

DYNAMIC HIP SCREW (DHS): IN SILICO ASSESSMENT OF BONE HEALING USING FINITE ELEMENT ANALYSIS AND FUZZY LOGIC

P. Nag, S. Chanda
IIT Guwahati, India

ESB2021_1784-DYNAMIC HIP SCREW (DHS)-1784.pdf

MICROBIOME ON CHIP (MOC): A NOVEL MULTI-ORGAN PLATFORM FOR PERSONALIZED THERAPY IN CANCER

M. Ballerini[1], C. Catozzi[2], S. P. Ravenda[3], R. U. Fumagalli[3], M. Rasponi[1], L. Nezi[2]
[1]MiMic Lab, Department of Electronics, Information and Bioengineering, Politecnico di Milano, Italy; [2]Department of Experimental Oncology, IEO, European Institute of Oncology , Italy; [3]Division of Gastrointestinal Medical Oncology and Neuroendocrine Tumors, IEO, Italy

ESB2021_1477-MICROBIOME ON CHIP (MOC)-1477.pdf

HIGH-THROUGHPUT MECHANICAL SCREENING PLATFORM FOR ENGINEERED TISSUES IN WELL-PLATES

N. Antonovaite
Optics11 Life, Netherlands, The

ESB2021_1887-HIGH-THROUGHPUT MECHANICAL SCREENING PLATFORM FOR ENGINEERED TISSUES-1887.pdf

OSTEOCHONDRAL BIOREACTOR FOR DRUG SCREENING AND TOXICITY ASSESSMENTS

F. Donnaloja[1], G. De riccardis[1,2], D. Nichols[3,4], M. Avolio[1,2], M. T. Raimondi[1], R. Gottardi[2,5,6]
[1]Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milan, Italy; [2]Center for Cellular and Molecular Engineering, Department of Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, PA; [3]Department of Mechanical Engineering and Materials Science, University of Pittsburgh, Pittsburgh, PA; [4]Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA; [5]Fondazione Ri.MED, Palermo, PA; [6]Division of Pulmonary Medicine, Department of Pediatrics, University of Pennsylvania, Philadelphia, PA

ESB2021_1545-OSTEOCHONDRAL BIOREACTOR FOR DRUG SCREENING AND TOXICITY ASSESSMENTS-1545.pdf

2:30pm - 3:30pm

Poster_Emerg Biomech: Poster session - Emerging Topics in Biomechanics

Session Chair: **Daniele E. Schiavazzi**

https://teams.microsoft.com/l/channel/19%3a12dac97067994868bfe056255ff8356c%40thread.tacv2/P04_Emerging%2520Topics?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

MULTIFACTORIAL AND MULTIVARIATE ANALYSIS OF FUNCTIONALITY AND DYNAMICS IN OSTEOARTHRITIC GAIT

S. Tassani[1], L. Tio[2], F. Castro-Dominguez[2,3], J. Monfort[2,3], J. C. Monllau[2,4], M. A. GONZALEZ BALLESTER[1,5], J. Noailly[1]
[1]Bcn Medtech - Upf, Spain; [2]IMIM, Barcelona, Spain; [3]Rheumatology Department, Hospital del Mar, Barcelona, Spain; [4]Orthopedic Surgery and Traumatology Department, Hospital del Mar, Barcelona, Spain; [5]ICREA, Barcelona, Spain

ESB2021_1605-MULTIFACTORIAL AND MULTIVARIATE ANALYSIS OF FUNCTIONALITY AND DYNAMICS-1605.pdf

RECOVERY OF HYPOXIC REGIONS IN A RAT MODEL OF MICROEMBOLISM

T. Georgakopoulou, A. E. van der Wijk, E. N. T. P. Bakker, E. van Bavel
Amsterdam UMC, location AMC, Netherlands, The

ESB2021_1438-RECOVERY OF HYPOXIC REGIONS IN A RAT MODEL OF MICROEMBOLISM-1438.pdf

IN-SILICO AND IN-VITRO UNCERTANTY QUANTIFICATION OF INLET CONDITIONS OF THE AORTIC COMPLEX

E. Vignali[1], E. Gasparotti[1,2], A. Mariotti[3], M. V. Salvetti[3], S. Celi[1]
[1]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [2]Dept. of Information Engineering, University of Pisa, Italy; [3]Dept. of Aerospace Engineering, University of Pisa, Italy

ESB2021_1543-IN-SILICO AND IN-VITRO UNCERTANTY QUANTIFICATION OF INLET CONDITIONS OF THE AORTIC COMPLEX-1543.pdf

TOWARDS OBJECTIVISATION OF PAIN: RESEARCH AND DEVELOPMENT OF PAIN STIMULUS DEVICE

K. Šileikytė, J. Griskevicius
Vilnius Tech, Lithuania

ESB2021_1387-TOWARDS OBJECTIVISATION OF PAIN-1387.pdf

SIMULATIONS OF COMPETITIVE LIGAND BINDING AT THE CELL – EXTRACELLULAR MATRIX INTERFACE

Z. Karagöz, T. Geuens, V. LaPointe, M. van Griensven, A. Carlier
Department of Cell Biology–Inspired Tissue Engineering, MERLN Institute for Technology-Inspired Regenerative Medicine, Netherlands, The

ESB2021_1223-SIMULATIONS OF COMPETITIVE LIGAND BINDING AT THE CELL – EXTRACELLULAR MATRIX INTERFACE-1223.pdf

A clinical trial to assess the effectiveness of 3D models for complex cardiac surgical planning

K. Capellini[1,2], E. Gasparotti[1,2], E. Vignali[1], L. Ait Ali[3], M. Cantinotti[4], P. Tripicchio[5], M. Murzi[6], S. Celi[1]
[1]Fondazione Toscana Gabriele Monasterio, Italy; [2]Dept. of Information Engineering, University of Pisa, Italy; [3]Institute of Clinical Physiology, CNR, Italy; [4]Paediatric Cardiology Unit, Fondazione Toscana G. Monasterio, Italy; [5]Perceptual Robotics Lab, TeCIP Institute, Scuola Superiore Sant'Anna, Italy; [6]Adult Cardiology Unit, Fondazione Toscana G. Monasterio, Italy

ESB2021_1861-A clinical trial to assess the effectiveness of 3D models-1861_a.pdf

IMPROVING SURGICAL OUTCOMES IN CRANIOFACIAL SURGERY BY MEANS OF BIOFIDELIC 3D PRINTED DIGITAL MATERIALS

S. Ajami[1,2], B. G. Andikoetxea[1], N. Rodriguez-Florez[3,4], J. Ong[2], G. James[2], N. u. O. Jeelani[2], D. Dunaway[2], S. Schievano[1,2], A. Borghi[1,2]
[1]University College London, United Kingdom; [2]Great Ormond Street Hospital, London, United Kingdom; [3]Ikerbasque, Spain; [4]Universidad de Navarra, Spain

ESB2021_1570-IMPROVING SURGICAL OUTCOMES IN CRANIOFACIAL SURGERY-1570.pdf

3D BIOPRINTING OF A PHOTOCURABLE AND THERMOSENSITIVE BIOINK FOR SKIN TISSUE ENGINEERING

M. Torre[1], S. M. Giannitelli[1], E. Mauri[1], M. Gori[2], M. Trombetta[1], A. Rainer[1,3]
[1]Università Campus Bio-Medico di Roma, Rome, Italy; [2]Institute of Biochemistry and Cell Biology (IBBC), National Research Council (CNR), Rome, Italy; [3]Institute of Nanotechnology (NANOTEC), National Research Council (CNR), Lecce

ESB2021_1847-3D BIOPRINTING OF A PHOTOCURABLE AND THERMOSENSITIVE BIOINK-1847.pdf

PATIENT-SPECIFIC VASCULAR MODELS FOR HANDS-ON TRAINING IN TRANSCATHETER OPERATIONS

F. Perico[1], M. Jaworek[1], E. Salurso[1], G. Gelpi[1,2], F. A. Viola[3], M. Caironi[3], G. B. Fiore[1], R. Vismara[1]
[1]Politecnico di Milano, Italy; [2]Cardiovascular Surgery Department, ASST Fatebenefratelli Luigi Sacco University Hospital, Milan, Italy; [3]Center for Nano Science and Technology @PoliMi, Istituto Italiano di Tecnologia, Milan, Italy

ESB2021_1410-PATIENT-SPECIFIC VASCULAR MODELS FOR HANDS-ON TRAINING-1410.pdf

2:30pm - 3:30pm

Poster_Loc-Rehab 1: Poster session - Locomotion and Rehabilitation 1

Session Chair: **Ilse Jonkers**

https://teams.microsoft.com/l/channel/19%3a44ccd47dce6c40a9884ecc1dec04ec4b%40thread.tacv2/P05_Locomotion%2520and%2520Rehabilitation?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

ALTERATIONS OF BILATERAL GAIT SYNERGIES IN DOWN SYNDROME

D. C. Pardo Ramos[1], A. Santuz[2], M. Zago[1], G. Casarico[1], M. E. Manunza[1], C. Condoluci[3], A. Arampatzis[2], M. Galli[1]
[1]DEIB,Politecnico di Milano, Italy; [2]Department of Training and Movement Sciences, Humboldt-Universität Zu Berlin, Germany; [3]IRCCS San Raffaele Pisana, Rome

ESB2021_1225-ALTERATIONS OF BILATERAL GAIT SYNERGIES IN DOWN SYNDROME-1225.pdf

The study of upper extremity motions under partial gravity

T. Volkova, C. Nicollier, V. Gass
Space Innovation, École Polytechnique Fédérale de Lausanne, Switzerland

ESB2021_1618-The study of upper extremity motions under partial gravity-1618.pdf

ASSESSMENT OF PATIENT POSTURAL STABILITY ACCORDING TO THE FORCE PLATE AND VICON

E. Mukhametova[1], R. Khamatnurova[2], A. Militskova[1], I. Dyatlova[3], E. Semenova[1,3], V. Yaikova[1,3], O. Sachenkov[3]
[1]Scientific and Clinical Center of Precision and Regenerative Medicine, Russia; [2]Goethe-Universität Frankfurt am Main, Germany; [3]Kazan Federal University, Russia

ESB2021_1754-ASSESSMENT OF PATIENT POSTURAL STABILITY ACCORDING-1754.pdf

Quantification of the effects of a treatment of hypomimia in Parkinson's disease: a preliminary study

E. Pegolo[1], L. Ricciardi[2,3], D. Volpe[4], Z. Sawacha[1,5]
[1]University of Padua, Department of Information Engineering, Italy; [2]St George's University of London, Molecular and Clinical Sciences Institute, UK; [3]Medical Research Council Brain Network Dynamics Unit, Nuffield Department of Clinical Neurosciences, Oxford, UK; [4]Fresco Parkinson Center, Villa Margherita, S. Stefano, Vicenza, Italy; [5]University of Padua, Department of Medicine, Italy

ESB2021_1693-Quantification of the effects of a treatment of hypomimia-1693.pdf

REAL WORLD MOTION ANALYSIS IN CHILDREN: A RELIABILITY AND REPEATABILITY ASSESSMENT

A. Ciniglio[1], F. Michieletto[1], F. Cibin[2], F. Spolaor[1], A. Guiotto[1], Z. Sawacha[1,3]
[1]Dept. of Information Engineering, University of Padova, Italy; [2]BBSoF S.r.l., Italy; [3]Dept. of Medicine, University of Padova, Italy

ESB2021_1657-REAL WORLD MOTION ANALYSIS IN CHILDREN-1657.pdf

Gait analysis to establish an individual postoperative treatment after fractures of the tibia

A. Uhl[1], M. Roland[1], K. Wickert[1], M. Orth[2], T. Pohlemann[2], S. Diebels[1]
[1]Universität des Saarlandes, Germany; [2]Saarland University Medical Center, Germany

ESB2021_1408-Gait analysis to establish an individual postoperative treatment after fractures-1408.pdf

Development of a numerical 2D model of an amputated lower limb for objective evaluation of the liner

V. Plesec, G. Harih
Faculty of Mechanical Engineering, University of Maribor, Slovenia

ESB2021_1311-Development of a numerical 2D model of an amputated lower limb-1311.pdf

SPM differences in topspin backhand between Chinese and Polish female table tennis players

S. Winiarski, Z. Bańkosz
Department of Biomechanics, University School of Physical Education in Wroclaw, Poland

ESB2021_1816-SPM differences in topspin backhand between Chinese and Polish female table tennis players-1816.pdf

OPTIMIZATION THE MOVEMENT OF A SKIER WITH A DOUBLE POLING TECHNIQUE: MATHEMATICAL MODEL BASED ON THE RACE DATA

D. Parshin[1], A. Kubyak[2]
[1]Lavrentyev Institute of Hydrodynamics SB RAS, Russian Federation; [2]Novosibirsk State University (Novosibirsk, Russian Federation)

ESB2021_1627-OPTIMIZATION THE MOVEMENT OF A SKIER WITH A DOUBLE POLING TECHNIQUE-1627.pdf

FATIGUE ALTERS TURNS KINEMATICS IN FEMALE SOCCER PLAYERS

M. Zago[1], F. Bertozzi[2], F. Salaorni[1], C. Brunetti[1], A. Gatti[1], C. Sforza[2], M. Galli[1]
[1]Politecnico di Milano, Italy; [2]Università degli Studi di Milano, Italy

ESB2021_1222-FATIGUE ALTERS TURNS KINEMATICS IN FEMALE SOCCER PLAYERS-1222.pdf

EFFECTS OF LEG DOMINANCE AND BALL CONDITION ON PEAK LOWER LIMB MUSCLE ACTIVATION DURING MAXIMAL INSTEP KICKS

R. Rabello[1], F. Bertozzi[1], M. Zago[2,3], C. Sforza[1]
[1]Università degli Studi di Milano, Italy; [2]Politecnico di Milano, Milan, Italy; [3]E4Sport Lab, Politecnico di Milano, Italy

ESB2021_1475-EFFECTS OF LEG DOMINANCE AND BALL CONDITION ON PEAK LOWER LIMB MUSCLE ACTIVATION DURING MAXIMAL.pdf

POLICE SPECIFIC PHYSICAL FITNESS OF MEN AND WOMEN WITH DIFFERENT BODY HEIGHTS

J.-P. Goldmann[1,3], M. Sanno[1,3], S. Grothe[1,3], A. Droszez[1], J. Mester[2,3]
[1]Institute of Biomechanics and Orthopaedics, German Sport University Cologne; [2]Institute of Training Science and Sport Informatics, German Sport University Cologne; [3]German Research Centre of Elite Sport, German Sport University Cologne

ESB2021_1253-POLICE SPECIFIC PHYSICAL FITNESS OF MEN AND WOMEN WITH DIFFERENT BODY HEIGHTS-1253.pdf

Validity and reliability of kinematic indexes during Nine Hole Peg Test for manual dexterity assessment

F. Temporiti[1,2,3], S. Mandaresu[1], A. Calcagno[1], S. Coelli[1], E. Monfardini[1], I. Lozza[1], R. Gatti[2,3], A. M. Bianchi[1], M. Galli[1]
[1]Politecnico di Milano, Italy; [2]Humanitas Clinical Institute, Italy; [3]Humanitas University, Italy

ESB2021_1301-Validity and reliability of kinematic indexes during Nine Hole Peg Test-1301.pdf

STIMULATION OF THE FOOT SOLE BY A NOVEL, 3D-PRINTED SHOE TECHNOLOGY – A PRELIMINARY USER STUDY

D. Baumgartner[1], P. Bischof[1], B. Sommer[2], C. Bauer[2]
[1]ZHAW, Institute for Mechanical Systems; [2]ZHAW, Institute for Physiotherapy

ESB2021_1838-STIMULATION OF THE FOOT SOLE BY A NOVEL, 3D-PRINTED SHOE TECHNOLOGY – A PRELIMINARY USER S.pdf

2:30pm - 3:30pm

Poster_Msk-Orth 1: Poster session - Muscoloskeletal and Orthopaedics 1

Session Chair: **Veronica Cimolin**

https://teams.microsoft.com/l/channel/19%3a9561b8b5878f483aa2caaaa60baeec16%40thread.tacv2/P06_Musculoskeletal%2520and%2520Ortho_1?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

ABOUT GENERALIZATION AND INTERCHANGEABILITY OF HAND KINEMATIC SYNERGIES

V. Gracia-Ibáñez, M. Vergara, J. L. Sancho-Bru, A. Roda-sales, N. J. Jarque-Bou, V. Bayarri-Porcar
Universitat Jaume I, Spain

ESB2021_1192-ABOUT GENERALIZATION AND INTERCHANGEABILITY OF HAND KINEMATIC SYNERGIES-1192.pdf

SETTING A STANDARD FOR ADHESIVE COUPLANT FOR ACOUSTIC EMISSION TESTING ON SKIN

P. E. Blaikie[1], P. Anderson[1], D. Crivelli[2], C. Holt[1]
[1]Cardiff University, United Kingdom; [2]Unaffiliated, United Kingdom

ESB2021_1685-SETTING A STANDARD FOR ADHESIVE COUPLANT FOR ACOUSTIC EMISSION TESTING-1685.pdf

ANALYSIS AND COMPARISON OF TRADITIONAL AND OPERATOR FREE HAND-HELD DYNAMOMETER

A. Modrego[1], R. Marginet i Assens[2], R. Jauregui[1], S. Balocco[2]
[1]DyCare, Spain; [2]University of Barcelona, Spain

ESB2021_1248-ANALYSIS AND COMPARISON OF TRADITIONAL AND OPERATOR FREE HAND-HELD DYNAMOMETER-1248.pdf

INTERFERENCE ON PLANTAR AFFERENTS IN BLINDS ALTERS THEIR POSTURAL STRATEGY TO KEEP POSTURAL CONTROL

R. B. Parreira[1], J. B P Lopes[1], L. B Cordeiro[2], D. C. Cardoso[2], M. Galli[3], C. S Oliveira[1,2]
[1]School of Medical Sciences, Santa Casa de São Paulo, Brazil; [2]University Center of Anapolis, Brazil; [3]Department of Electronics, Information and Bioengineering, Politecnico di Milano

ESB2021_1176-INTERFERENCE ON PLANTAR AFFERENTS IN BLINDS ALTERS THEIR POSTURAL STRATEGY-1176.pdf

THE EFFECTS OF TRIPLE ARTHRODESIS ON SOLEUS AND PERONEUS BREVIS MUSCLES, AND ON KNEE FLEXION/EXTENSION DURING GAIT

S. Hejazi[1], W. Herzog[2], G. Rouhi[1]
[1]Faculty of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran; [2]Faculty of Kinesiology, University of Calgary, Calgary, Canada

ESB2021_1203-THE EFFECTS OF TRIPLE ARTHRODESIS ON SOLEUS AND PERONEUS BREVIS MUSCLES, AND ON KNEE.pdf

The effect of additional mass by body amor on police specific performance

M. Zedler[1,3], M. Sanno[1,3], S. Grothe[1,3], A. Droszez[1], J. Mester[2,3], J.-P. Goldmann[1,3]
[1]German Sport University Cologne, Germany; [2]Institute of Training Science and Sport Informatics, German Sport University Cologne, Germany; [3]The German Research Centre of Elite Sports, German Sport University Cologne, Germany

ESB2021_1294-The effect of additional mass by body amor on police specific performance-1294.pdf

A musculoskeletal model for ACL injury prevention in high knee flexion conditions

D. Pavan[1], S. Van Rossom[2], H. Hoang[2], I. Jonkers[2], Z. Sawacha[1,3]
[1]University of Padua, Dept. of Information Engineering, Italy; [2]KU Leuven, Dept. of Movement Sciences, Belgium; [3]University of Padua, Dept. of Medicine, Italy

ESB2021_1709-A musculoskeletal model for ACL injury prevention-1709.pdf

ALTERATIONS IN SPECTRAL ATTRIBUTES OF SURFACE ELECTROMYOGRAPHY IN CHILDREN WITH FRAGILE X SYNDROME

W. J. Piatkowska[1], M. Romanato[1], F. Spolaor[1], A. Destro[1], R. Polli[2], A. Murgia[2], Z. Sawacha[1,3]
[1]Department of Information Engineering, University of Padova, Italy; [2]Department of Women and Children Health, University of Padova, Italy; [3]Department of Medicine, DIMED, University of Padova, Italy

ESB2021_1667-ALTERATIONS IN SPECTRAL ATTRIBUTES OF SURFACE ELECTROMYOGRAPHY IN CHILDREN WITH FRAGILE X.pdf

LARGER MUSCLE FIBERS AND FIBER BUNDLES MANIFEST SMALLER ELASTIC MODULUS IN PARASPINAL MUSCLES OF RATS AND HUMANS

M. Malakoutian[1], M. Theret[2], S. Yamamoto[3], I. Dehghan-Hamani[1], M. Lee[3], J. Street[3], F. Rossi[2], S. H. M. Brown[4], T. R. Oxland[1,3]
[1]Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada; [2]Department of Medical Genetics and School of Biomedical Engineering, University of British Columbia, Vancouver, Canada; [3]Department of Orthopaedics, University of British Columbia, Vancouver, Canada; [4]Department of Human Health and Nutritional Sciences, University of Guelph, Guelph, Canada

ESB2021_1494-LARGER MUSCLE FIBERS AND FIBER BUNDLES MANIFEST SMALLER ELASTIC MODULUS-1494.pdf

MUSCLE OPTIMIZATION SCALING APPROACH FOR MODEL-BASED MUSCLE FORCES ESTIMATION IN PARKINSONIAN GAIT

M. Romanato[1], F. Volpin[1], D. Volpe[2], Z. Sawacha[1]
[1]Department of Information Engineering, University of Padova, Italy; [2]Fresco Parkinson Center, Villa Margherita, S. Stefano, Vicenza, Italy

ESB2021_1647-MUSCLE OPTIMIZATION SCALING APPROACH FOR MODEL-BASED MUSCLE FORCES ESTIMATION-1647.pdf

BIOMECHANICAL INVESTIGATION OF BONE SCREW HEAD DESIGN FOR EXTRACTING STRIPPED SCREW HEADS

K. Khalaf[1], M. Nikkhoo[2]
[1]Khalifa University, United Arab Emirates; [2]Azad University, Department of Biomedical Engineering, Iran

ESB2021_1278-BIOMECHANICAL INVESTIGATION OF BONE SCREW HEAD DESIGN-1278.pdf

CURRENT ISSUES ON THE UPPER LIMB MUSCULOSKELETAL MODELS: THE MUSCULAR ACTIVATION ODDITY

D. A. Rueda, D. F. Villegas
Universidad Industrial de Santander, Colombia

ESB2021_1556-CURRENT ISSUES ON THE UPPER LIMB MUSCULOSKELETAL MODELS-1556.pdf

2:30pm - 3:30pm

Poster_Msk-Orth 2: Poster session - Muscoloskeletal and Orthopaedics 2

Session Chair: **Dieter Pahr**

https://teams.microsoft.com/l/channel/19%3acb14d07df1074ed6835c289544fba7e0%40thread.tacv2/P07_Musculoskeletal%2520and%2520Ortho_2?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

« TACTILE » – USABILITY OF AN AUTOMATED, TWO-POINT DISCRIMINATION TEST FOR LOW BACK PAIN

D. Baumgartner, C. Höchner, R. Kuster, D. Textor
ZHAW, Institute for Mechanical Systems

ESB2021_1845-« TACTILE » – USABILITY OF AN AUTOMATED, TWO-POINT DISCRIMINATION TEST-1845.pdf

THE EFFECT OF CURVE LOCATION ON THE SEVERITY INDEX FOR ADOLESCENT IDIOPATHIC SCOLIOSIS

C. Vergari[1], W. Skalli[1], K. Abelin-Genevois[2], J.-C. Bernard[2], Z. Hu[3], J. C. Y. Cheng[3], W. C. W. Chu[3], A. Assi[4], M. Karam[4], I. Ghanem[4], T. Bassani[5], F. Galbusera[5], L. M. Sconfienza[5], M. Bruno-Brayda[5], I. Courtois[6], E. Ebermeyer[6], T. Langlais[7], R. Vialle[7], J. Dubousset[1]
[1]Institut de Biomécanique Humaine Georges Charpak, Arts et Métiers ParisTech, France; [2]Department of Orthopaedic Surgery, Centre médico-chirurgical et de réadaptation des Massues, France; [3]Scoliosis Research Laboratory, The Prince of Wales Hospital, The Chinese University of Hong Kong; [4]Laboratory of Biomechanics and Medical Imaging, University of Saint-Joseph, Lebanon; [5]IRCCS Istituto Ortopedico Galeazzi, Italy; [6]Hopital Bellevue, France; [7]Department of Paediatric Orthopaedics, Armand Trousseau Hospital, France

ESB2021_1172-THE EFFECT OF CURVE LOCATION ON THE SEVERITY INDEX-1172.pdf

DEVELOPING PATIENT-SPECIFIC FE MODELS OF THE THORACOLUMBAR SPINE USING STATISTICAL SHAPE MODELS AND MESH MORPHING

M. Rasouligandomani[1], A. del Arco[2], F. Galbusera[3], J. Noailly[1], M. A. González Ballester[1,4]
[1]BCN MedTech, DTIC, University of Pompeu Fabra, Spain; [2]Hospital del Mar, Spain; [3]Laboratory of Biological Structures Mechanics, IRCCS Istituto Ortopedico Galeazzi, Italy; [4]ICREA, Spain

ESB2021_1671-DEVELOPING PATIENT-SPECIFIC FE MODELS OF THE THORACOLUMBAR SPINE USING STATISTICAL SHAPE MODELS.pdf

IS IT POSSIBLE TO PREDICT SCREW LOOSENING BY MEASURING THE INSERTION TORQUE? AN IN VITRO STUDY

J. U. Jansen[1], L. Zengerle[1], C. Hackenbroch[2], Y. Tao[1], H.-J. Wilke[1]
[1]Institute of Orthopaedic Research and Biomechanics, Ulm University, Germany; [2]Department of Radiology, German Armed Forces Hospital Ulm, Germany

ESB2021_1300-IS IT POSSIBLE TO PREDICT SCREW LOOSENING BY MEASURING THE INSERTION TORQUE AN-1300.pdf

Role of Type I Collagen-hyaluronan Interfacial Interactions on the Mechanics of Annulus Fibrosus

S. Bhattacharya, D. Dubey
Indian Institute of Technology Delhi, India

ESB2021_1734-Role of Type I Collagen-hyaluronan Interfacial Interactions-1734.pdf

ANALYSIS OF MECHANICAL PROPERTIES OF SPAYED CANINE LUMBAR VERTEBRAE

E. Kostenko, A. Maknickas, R. Stonkus
Vilnius Gediminas Technical University, Lithuania

ESB2021_1177-ANALYSIS OF MECHANICAL PROPERTIES OF SPAYED CANINE LUMBAR VERTEBRAE-1177.pdf

A BIOMECHANICAL APPROACH TO EVALUATE PERFORMANCE OF SCOLIOSIS BRACES

A. Yahyaiee Bavil, A. Karimi Dastgerdi, G. Rouhi
Amirkabir University of Technology, Iran, Islamic Republic of

ESB2021_1167-A BIOMECHANICAL APPROACH TO EVALUATE PERFORMANCE OF SCOLIOSIS BRACES-1167.pdf

Biomechanical impact of intervertebral disc simulated damage

S. Montanari[1], C. Techens[1,2], L. Cristofolini[1]
[1]Alma Mater Studiorum - Università di Bologna, Italy; [2]National Center for Spinal Disorders - Budapest, Hungary

ESB2021_1340-Biomechanical impact of intervertebral disc simulated damage-1340.pdf

Stress changes in growth plates of an adolescent idiopathic scoliotic spine following unilateral muscle weakening

Z. Kamal, G. Rouhi
University of Twente, The Netherlands

ESB2021_1633-Stress changes in growth plates of an adolescent idiopathic scoliotic spine following unilateral.pdf

Secondary Stability and Debonding of Osseointegrated Acetabular Cup Implants

K. Immel[1,2], V.-H. Nguyen[3,4], R. A. Sauer[1,5], G. Haiat[2]
[1]Aachen Institute for Advanced Study in Computational Engineering Science (AICES), RWTH Aachen University, Templergraben 55, 52056 Aachen, Germany; [2]CNRS, Laboratoire Modélisation et Simulation Multi Echelle, MSME UMR 8208 CNRS, 61 Avenue du Général de Gaulle, 94010 Créteil Cedex, France; [3]Université Paris-Est Créteil, CNRS, MSME, 94010 Créteil, France; [4]Université Gustave Eiffel, MSME, 77454 Marne-la-Vallée, France; [5]Faculty of Civil and Environmental Engineering, Gdańsk University of Technology, ul. Narutowicza 11/12, 80-233 Gdańsk, Poland

ESB2021_1218-Secondary Stability and Debonding of Osseointegrated Acetabular Cup Implants-1218.pdf

STABILITY OF REVISION ACETABULAR RECONSTRUCTIONS: CAN A SYNTHETIC MATERIAL REPLACE BONE GRAFT FOR DEFECT FILLING?

F. Morosato[1], F. Traina[2], R. A. Schierjott[3], G. Hettich[3], T. Grupp[3], L. Cristofolini[1]
[1]University of Bologna, Italy; [2]Chirurgia Protesica, IRCCS Rizzoli Orthopaedic Institute, Bologna, Italy; [3]Aesculap AG, Research & Development, Tuttlingen, Germany

ESB2021_1213-STABILITY OF REVISION ACETABULAR RECONSTRUCTIONS-1213.pdf

DEVELOPMENT OF A SUBJECT-SPECIFIC MUSCULOSKELETAL MODEL OF THE THUMB

D. Sciacca, M. Vanneste, B. Killen, E. Vereecke
KU Leuven, Belgium

ESB2021_1474-DEVELOPMENT OF A SUBJECT-SPECIFIC MUSCULOSKELETAL MODEL OF THE THUMB-1474.pdf

2:30pm - 3:30pm

Poster_Msk-Orth 3: Poster session - Muscoloskeletal and Orthopaedics 3

Session Chair: **Claudia Mazzà**

https://teams.microsoft.com/l/channel/19%3a1089f4d8470a4508977c5566a9707fb9%40thread.tacv2/P08_Musculoskeletal%2520and%2520Ortho_3?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Ultrasound-based evaluation of cartilage damage after in vivo articulation with metal implants

M. Pastrama[1], J. Spierings[1], P. van Hugten[2], K. Ito[1], R. Lopata[3], C. C. van Donkelaar[1]
[1]Orthopaedic Biomechanics, Department of Biomedical Engineering, Eindhoven University of Technology, The Netherlands; [2]Department of Orthopaedics, Maastricht UMC+, Maastricht, The Netherlands; [3]Cardiovascular Biomechancs - PULS/e, Department of Biomedical Engineering, Eindhoven University of Technology, The Netherlands

ESB2021_1373-Ultrasound-based evaluation of cartilage damage after-1373.pdf

INVESTIGATION OF KNEE FLEXION UNDER ORTHOSTATIC PHISIOLOGICAL LOADS THROUGH DYNAMIC MRI

M. Conconi[1], M. Berni[2], N. Sancisi[1], F. De Carli[3], G. Monetti[3], V. Parenti Castelli[1]
[1]Dept. of Industrial Engineering - DIN, University of Bologna, Italy; [2]Medical Technology Laboratory, Istituto Ortopedico Rizzoli - IOR, Bologna, Italy; [3]Primus Medical Center, Forlì, Italy

ESB2021_1169-INVESTIGATION OF KNEE FLEXION UNDER ORTHOSTATIC PHISIOLOGICAL LOADS THROUGH DYNAMIC MRI-1169.pdf

Pilot hole overdrilling increases screw perforation risk in locked plating of complex proximal humerus fractures

B. Burkhard[1,2], C. Schopper[1,3], D. Ciric[1,4], D. Mischler[1], B. Gueorguiev[1], P. Varga[1]
[1]AO Research Institute Davos, Switzerland; [2]ETH Zurich, Switzerland; [3]University Hospital Ulm, Germany; [4]Flinders University, Australia

ESB2021_1361-Pilot hole overdrilling increases screw perforation risk-1361.pdf

BIOMECHANICAL ANALYSIS OF DIFFERENT STEM FEATURES IN TOTAL KNEE ARTHROPLASTY

B. Innocenti, S. Pianigiani, E. Bori
ULB Université Libre de Bruxelles, Belgium

ESB2021_1368-BIOMECHANICAL ANALYSIS OF DIFFERENT STEM FEATURES-1368.pdf

CAN PERIOTEST® QUANTIFY SPINAL PEDICLE SCREW STABILITY IN AGREEMENT WITH PULL-OUT TEST AND ACOUSTIC MODAL ANALYSIS?

M. Einafshar[1,2], A. Hashemi[1], H. van Lenthe[2]
[1]Amirkabir University of Technology, Biomedical Engineering Faculty, Biomechanics Group, Tehran, Iran; [2]KU Leuven, Department of Mechanical Engineering, Biomechanics Section, Leuven, Belgium

ESB2021_1337-CAN PERIOTEST® QUANTIFY SPINAL PEDICLE SCREW STABILITY-1337.pdf

FINITE ELEMENT ANALYSIS FOR MECHANICAL RESISTANCE OF A 3D PRINTED RADIAL HEAD PROSTHESIS IN CASE OF BONE-RESORPTION

S. Pianigiani, R. Verga, A. Toni
Adler Ortho, Italy

ESB2021_1208-FINITE ELEMENT ANALYSIS FOR MECHANICAL RESISTANCE-1208.pdf

FATIGUE LIFE ASSESSMENT OF TWO HYBRID PLATE DESIGNS FOR CANINE PANCARPAL ARTHRODESIS

I. Zderic[1], P. Varga[1], U. Styger[1], B. Gueorguiev[1], L. Drenchev[2], E. Asimus[3], B. Saunders[4], M. Kowaleski[5], R. J. Boudrieau[5], L. Déjardin[6]
[1]AO Research Institute Davos, Switzerland; [2]Bulgarian Academy of Sciences, Institute of Metal Science 'Acad. A. Balevski', Bulgaria; [3]École Nationale Vétérinaire de Toulouse, France; [4]Texas A&M University, USA; [5]Tufts University, USA; [6]Michigan State University, USA

ESB2021_1517-FATIGUE LIFE ASSESSMENT OF TWO HYBRID PLATE DESIGNS-1517.pdf

BONE-IMPLANT FIXATION QUALITY MEASUREMENTS IMPROVED BY ATTACHABLE FEMORAL IMPLANT EXTENSIONS

G. Athanassoulis Makris[1], L. Pastrav[1], Q. Goossens[1], M. Mulier[2], W. Desmet[3], K. Denis[1]
[1]KU Leuven, Department of Mechanical Engineering, Smart Instrumentation, Belgium; [2]UZ Leuven, Orthopaedic Surgery Department, Belgium; [3]KU Leuven, Department of Mechanical Engineering, MSD Section, Belgium

ESB2021_1523-BONE-IMPLANT FIXATION QUALITY MEASUREMENTS IMPROVED-1523.pdf

PLAYER'S PERCEPTION OF INTERACTIONS CAUSING SKIN INJURIES FROM ARTIFICIAL TURF

M. MacFarlane[1], C. Dyson[2], M. Douglas[3], P. Theobald[1]
[1]Cardiff School of Engineering, Cardiff University, United Kingdom; [2]Sports Labs Ltd., Edinburgh, United Kingdom; [3]World Rugby, Dublin, Ireland

ESB2021_1722-PLAYER'S PERCEPTION OF INTERACTIONS CAUSING SKIN INJURIES-1722.pdf

EXPERIMENTAL HEAD INJURY INVESTIGATION – HEAD IMPACT WITH LOOSE OBJECTS IN VEHICLE DURING VEHICULAR FRONTAL CRASH

J. Hruby[1], B. P. Wham[2], Z. Krobot[3], M. Semela[4], A. Vemola[5], F. Wyrwol[6]
[1]Brno University of Technology, Czech Republic; [2]Colorado University Boulder, USA; [3]Brno University of Defense, Czech Republic; [4]Brno University of Technology, Czech Republic; [5]Brno University of Technology, Czech Republic; [6]Czech Technical University in Prague, Czech Republic

ESB2021_1730-EXPERIMENTAL HEAD INJURY INVESTIGATION – HEAD IMPACT WITH LOOSE OBJECTS-1730.pdf

2:30pm - 3:30pm

Poster_Other Biomech: Poster session - Other Topics in Biomechanics

Session Chair: **Michele Marino**
https://teams.microsoft.com/l/channel/19%3a2da463e6811b45978f3c965047b91407%40thread.tacv2/P09_Other%2520Topics?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PROTOCOL TO EVALUATE THE RELATIONSHIP BETWEEN BREATHING, POSTURE AND STABILITY.

A. Buritica[1], C. Matencio[2], J. Noailly[2], J. Ramírez[1], S. Tassani[2]
[1]Universidad Nacional de Colombia, Colombia.; [2]Universidad Pompeu Fabra

ESB2021_1843-PROTOCOL TO EVALUATE THE RELATIONSHIP BETWEEN BREATHING, POSTURE AND STABILITY-1843.pdf

ELECTROSPINNING SMART FIBROUS SCAFFOLDS FROM SMALL PEPTIDES FOR TISSUE ENGINEERING APPLICATION

L. Sori[1], A. Pizzi[1], L. Draghi[1], A. Gautieri[2], F. Baldelli Bombelli[1], M. Soncini[2], P. Metrangolo[1]
[1]Politecnico di Milano, Italy; [2]Biomechanics Group-DEIB - Politecnico di Milano

ESB2021_1798-ELECTROSPINNING SMART FIBROUS SCAFFOLDS FROM SMALL PEPTIDES-1798.pdf

THERMOPLASTIC GRAIN REFINMENT OF THE COMMERCIALY PURE TITANIUM FOR THE BIOMEDICAL APPLICATIONS

J. Bańczerowski[1], M. Pawlikowski[1], K. Skalski[2], T. Płociński[3]
[1]Warsaw University of Technology - Institute of Mechanics and Polygraphy, Poland; [2]Łukasiewicz Research Network - Institute of Precision Mechanics, Poland; [3]Warsaw University of Technology - Faculty of Materials Science and Engineering, Poland

ESB2021_1251-THERMOPLASTIC GRAIN REFINMENT OF THE COMMERCIALY PURE TITANIUM-1251.pdf

INVESTIGATION ON PRIMARY STABILITY OF DENTAL IMPLANTS IN LOADING-UNLOADONG TEST: A MICRO FINITE ELEMENT STUDY

P. Akhlaghi, S. Khorshidparast, G. Rouhi
Amirkabir University of Technology, Iran, Islamic Republic of

ESB2021_1695-INVESTIGATION ON PRIMARY STABILITY OF DENTAL IMPLANTS-1695.pdf

WEAR ANALYSIS OF DIFFERENT MONOLITHIC CERAMIC MATERIALS AGAINST NATURAL TEETH

A. M. Fouda[1,2], C. Bourauel[1]
[1]Oral Technology, University Hospital Bonn, Germany; [2]Department of Fixed Prosthodontics, Suez Canal University, Egypt

ESB2021_1731-WEAR ANALYSIS OF DIFFERENT MONOLITHIC CERAMIC MATERIALS AGAINST NATURAL TEETH-1731.pdf

THE EFFECTS ON TEMPORO-MANDIBULAR JOINT CAUSED BY ORTHODONTIC INTER ARCH ELASTICS: A FINITE ELEMENT STUDY

Y. Zhang, L. Keilig, I. Dörsam, C. Bourauel
Oral Technology, Bonn University, Germany

ESB2021_1412-THE EFFECTS ON TEMPORO-MANDIBULAR JOINT CAUSED BY ORTHODONTIC INTER ARCH ELASTICS-1412.pdf

CORRELATION BETWEEN CONDENSING FORCE AND LATERAL STABILITY OF SCREWS

A. Irastorza-Landa, S. Lehmann, A. Saade, P. Heuberger
Nobel Biocare Services AG, Switzerland

ESB2021_1269-CORRELATION BETWEEN CONDENSING FORCE AND LATERAL STABILITY-1269.pdf

MOMENTA TRANSFERED TO DENTAL IMPLANT-BONE AND TOOTH- PDL-BONE CONSTRUCTS UNDER IMPACT LOADING

A. Karimi Dastgerdi[1], A. Yahyaiee Bavil[1], M. M. Dehghan[2], S. Farzad-Mohajeri[2], H. R. Barikani[3], G. Rouhi[1]
[1]Amirkabir University of Technology, Iran, Islamic Republic of; [2]University of Tehran, Iran, Islamic Republic of; [3]Tehran University of Medical Sciences, Iran, Islamic Republic of

ESB2021_1168-MOMENTA TRANSFERED TO DENTAL IMPLANT-BONE AND TOOTH- PDL-BONE CONSTRUCTS UNDER IMPACT.pdf

Biomechanical simulation platform for patient specific refractive interventions

M. H. Nambiar[1], H. Studer[2], A. S. Roy[3], P. Büchler[1]
[1]ARTORG Center for Biomedical Engineering Research, University of Bern, Switzerland; [2]Optimo Medical AG, Switzerland; [3]Narayana Nethralaya Eye Clinic, India

ESB2021_1398-Biomechanical simulation platform for patient specific refractive interventions-1398.pdf

Hierarchical clustering of muscle activation during dog locomotion: a simulation study

H. Stark, M. S. Fischer, E. Andrada
Friedrich-Schiller-University Jena, Germany

ESB2021_1600-Hierarchical clustering of muscle activation during dog locomotion-1600.pdf

2:30pm **Poster_Tissue Biomech 1: Poster session - Tissue Mechanics 1**

-
3:30pm

Session Chair: **Simona Celi**
https://teams.microsoft.com/l/channel/19%3a906f87136ce34a2db1f75e59a64a5e06%40thread.tacv2/P10_Tissue_mech_1?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

DXA-BASED 3D MODELS CAPTURE THE EFFECT OF OSTEOPOROSIS PHARMACOLOGICAL TREATMENTS ON BONE STRENGTH

C. Ruiz Wills[1], R. Winzenrieth[2], S. Di Gregorio[3], L. Del Río[3], L. Humbert[2], J. Noailly[1]
[1]BCN MedTech, Universitat Pompeu Fabra, Spain; [2]3D-Shaper Medical; [3]CETIR Grup Mèdic

ESB2021_1417-DXA-BASED 3D MODELS CAPTURE THE EFFECT OF OSTEOPOROSIS PHARMACOLOGICAL TREATMENTS-1417.pdf

In situ X-ray computed tomography for the evaluation of bone regeneration induced by magnesium-based fibres

R. Bonithon[1], C. Lupton[1], G. W. Blunn[2], F. Witte[3,4], G. Tozzi[1]
[1]School of Mechanical and Design Engineering, University of Portsmouth, United Kingdom; [2]School of Pharmacy and Biomedical Science, University of Portsmouth, United Kingdom; [3]Biotrics bioimplants, Berlin, Germany; [4]Department of Prosthodontics, Geriatric Dentistry and Craniomandibular Disorders, University of Berlin, Germany.

ESB2021_1793-In situ X-ray computed tomography for the evaluation-1793.pdf

CORRELATION BETWEEN NANOSTRUCTURE AND MECHANICAL PROPERTIES OF BIOMATERIAL-MEDIATED REGENERATED BONE

M. Peña Fernández[1,2], A. P. Kao[2], G. Blunn[2], G. Tozzi[2]
[1]Heriot-Watt University, United Kingdom; [2]University of Portsmouth, United Kingdom

ESB2021_1594-CORRELATION BETWEEN NANOSTRUCTURE AND MECHANICAL PROPERTIES-1594.pdf

Isolating lacunar morphology to study the influence of bone lacunar network in damage progression

F. Buccino[1], S. Bagherifard[1], M. Ghidini[1], C. A. Biffi[2], L. M. Vergani[1]
[1]Politecnico di Milano, Italy; [2]CNR, ICMATE, Lecco, Italy

ESB2021_1748-Isolating lacunar morphology to study the influence-1748.pdf

Determination of material porperties of human tibial cortical and trabecular bone

K. L. Wickert[1], M. Roland[1], M. Orth[2], T. Pohlemann[2], S. Diebels[1]
[1]Saarland University - Chair of Applied Mechanics, Germany; [2]Saarland University Hospital - Clinic for Trauma, Hand and Reconstructive Surgery, Germany

ESB2021_1534-Determination of material porperties of human tibial cortical and trabecular bone-1534.pdf

Plate and Rod Networks describe Load Transfer in Trabecular Bone

M. Walle[1,2], M. Abbasian[1,2], D. Yeritsyan[1,2], R. Oftadeh[1,2], A. Nazarian[1,2,3]
[1]Musculoskeletal Translational Innovation Initiative, Beth Israel Deaconess Medical Center, Boston, USA; [2]Harvard Medical School, Boston, USA; [3]Yerevan State Medical University, Yerevan, Armenia

ESB2021_1414-Plate and Rod Networks describe Load Transfer in Trabecular Bone-1414.pdf

EXPERIMENTAL MODAL ANALYSIS FOR THE DETERMINATION OF BONE REPLICATE MATERIAL PROPERTIES.

M. Timmermans[1], G. Athanassoulis Makris[1], Q. Goossens[1], L. Pastrav[1], W. Desmet[2], K. Denis[1]
[1]KU Leuven, Department of Mechanical Engineering, BMe, Belgium; [2]KU Leuven, Department of Mechanical Engineering, LMSD, Belgium

ESB2021_1283-EXPERIMENTAL MODAL ANALYSIS FOR THE DETERMINATION-1283.pdf

NANOMECHANICAL EVALUATION OF ARGOPECTEN PURPURATUS UNDER UPWELLING SCENARIOS

I. Benjumeda-Wijnhoven[1], D. Ebenstein[2], L. Ramajo[3], C. Millán[1], J. F. Vivanco[4]
[1]Facultad de Artes Liberales, Universidad Adolfo Ibáñez, Chile; [2]Biomedical Engineering Department, Bucknell University, Lewisburg, PA, USA; [3]Centro de Estudios Avanzados en Zonas Áridas (CEAZA), Chile; [4]Facultad de Ingeniería y Ciencias, Universidad Adolfo Ibáñez, Chile

ESB2021_1850-NANOMECHANICAL EVALUATION OF ARGOPECTEN PURPURATUS UNDER UPWELLING SCENARIOS-1850.pdf

2:30pm
-
3:30pm

Poster_Tissue Biomech 2: Poster session - Tissue Mechanics 2

Session Chair: **David Mitton**
https://teams.microsoft.com/l/channel/19%3aaefd072467c6487796a9241b9f4ca146%40thread.tacv2/P11_Tissue_mech_2?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

SIMULATION OF RED BLOOD CELL DEFORMATION AND TRANSMEMBRANE MASS DIFFUSION IN A COUETTE SHEAR FLOW

H. Valtchanov[1], R. Cecere[2], R. Mongrain[1]
[1]McGill University, Canada; [2]McGill University Health Center, Canada

ESB2021_1820-SIMULATION OF RED BLOOD CELL DEFORMATION AND TRANSMEMBRANE MASS DIFFUSION-1820.pdf

Characterization of Viscoelastic Properties of Synthetic Graft Materials and Aortic Tissue using Hysteretic Methods

R. Mongrain[1], C. Zikry[1,3], S. McLennan[1,4], R. Leask[2], R. Cartier[3], G. Soulez[4]
[1]Department of Mechanical Engineering, McGill University, Canada; [2]Department of Chemical Engineering, McGill University, Canada; [3]Department of Surgery, University of Montreal, Canada; [4]Department of Radiology, University of Montreal, Canada

ESB2021_1790-Characterization of Viscoelastic Properties of Synthetic Graft Materials and Aortic Tissue using.pdf

INDENTATION METHOD USING SPHERICAL INDENTERS. DETERMINING THE ERRORS WHILE USING HERTZ EQUATION

S.-V. Kontomaris[1], A. Malamou[2], A. Stylianou[3,4]
[1]CyprusAthens Metropolitan College; [2]National Technical University of Athens, Greece; [3]Univercity of Cyprus; [4]European University Cyprus

ESB2021_1611-INDENTATION METHOD USING SPHERICAL INDENTERS DETERMINING THE ERRORS WHILE USING HERTZ.pdf

NANOINDENTATION OF PDMS SUBSTRATES WITH TUNABLE STIFFNESS FOR CARDIAC MECHANOBIOLOGY INVESTIGATIONS

G. Serino[1], G. Bernava[2], A. T. Lugas[1], S. Gabetti[1], F. Midei[1], M. Terzini[1], U. Morbiducci[1], A. Audenino[1], M. Pesce[2], D. Massai[1]
[1]Politecnico di Torino, Italy; [2]Centro Cardiologico Monzino, Italy

ESB2021_1447-NANOINDENTATION OF PDMS SUBSTRATES WITH TUNABLE STIFFNESS-1447.pdf

USAGE OF THE ABAQUS – ADAPTIVE QUASI-LINEAR VISCOELASTIC MODEL FOR ARBITRARY LOAD PREDICTION

M. Frank, O. J. Aryeetey, D. H. Pahr
Karl Landsteiner University of Health Sciences, Austria

ESB2021_1280-USAGE OF THE ABAQUS – ADAPTIVE QUASI-LINEAR VISCOELASTIC MODEL-1280.pdf

TOWARDS VALIDATION OF AN IN SILICO MODEL OF TRABECULAR BONE REMODELLING IN CAUDAL MURINE VERTEBRA

D. BOARETTI, F. C. MARQUES, E. WEHRLE, R. MÜLLER
ETH ZÜRICH, Switzerland

ESB2021_1339-TOWARDS VALIDATION OF AN IN SILICO MODEL OF TRABECULAR BONE REMODELLING IN CAUDAL MURINE.pdf

ANALYSIS OF THE INTRASTRIATAL DELIVERY OF COLLAGEN USING A BIPHASIC COMPUTATIONAL MODEL

I. Syntouka, P. Riches, A. Kazakidi
Department of Biomedical Engineering, University of Strathclyde, UK

ESB2021_1399-ANALYSIS OF THE INTRASTRIATAL DELIVERY OF COLLAGEN USING A BIPHASIC COMPUTATIONAL MODEL-1399.pdf

Simulating the stoma effect on the abdominal wall

L. Tuset Serra[1], D. Puigjaner Riba[1], J. Herrero Sabartés[2], J. M. López Besora[1], G. Fortuny Anguera[1]
[1]Departament d'Enginyeria Informàtica i Matemàtiques. Universitat Rovira i Virgili. Catalunya; [2]Departament d'Enginyeria Química. Universitat Rovira i Virgili. Catalunya

ESB2021_1201-Simulating the stoma effect on the abdominal wall-1201.pdf

2:30pm - 3:30pm **Poster: Poster session**

3:30pm - 3:45pm **break-d2-5: Break**

3:45pm - 4:45pm **Huiskes&PhD: Huiskes & PhD session**
Session Chair: **Harry van Lenthe**
Session Chair: **Markus Heller**
https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

4:45pm - 5:00pm **break-d2-6: Break**

5:00pm - 6:00pm **Biomat.2: Biomaterials**
Session Chair: **Miguel Castilho**
https://teams.microsoft.com/l/channel/19%3aabf41579f20e4eaeb1dd086f63dac6e9%40thread.tacv2/TR27_Biomaterials?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Study of the mechanical properties of the perspective nanocellulose-based dura mater substitute

A. Lipovka[1], D. Parshin[1], A. Kharchenko[2]
[1]LIH SB RAS, Russian Federation; [2]Novosibirsk Research Institute of Traumatology and Orthopaedics n.a. Ya.L. Tsivyan

ESB2021_1780-Study of the mechanical properties of the perspective nanocellulose-based dura mater.pdf

COMPUTATIONAL MODELLING AND CRACK ANALYSIS OF BIOINSPIRED VOXEL-BASED MULTI-MATERIAL COMPOSITES

M. Cruz Saldivar[1], M. J. Mirzaali[1], E. L. Doubrovski[2], A. A. Zadpoor[1]
[1]Department of Biomechanical Engineering, Faculty of Mechanical, Maritime, and Materials Engineering, Delft University of Technology (TU Delft), The Netherlands; [2]Faculty of Industrial Design Engineering (IDE), Delft University of Technology (TU Delft), The Netherlands

ESB2021_1427-COMPUTATIONAL MODELLING AND CRACK ANALYSIS OF BIOINSPIRED VOXEL-BASED MULTI-MATERIAL_a.pdf

A computational model of interactions between parylene structures and peripheral nerves

P. N. Sergi[1], N. De la Oliva[2], J. del Valle[2], X. Navarro[2], S. Micera[1,3]
[1]Scuola Superiore Sant'Anna; [2]Institut de Neurociències, Universitat Autònoma de Barcelona; [3]Ecole Polytechnique Federale de Lausanne

ESB2021_1654-A computational model of interactions between parylene structures and peripheral nerves-1654.pdf

Citric acid crosslinking of methylcellulose hydrogels

L. Bonetti[1], L. De Nardo[1,2], f. Variola[3], S. Farè[1]
[1]Politecnico di Milano - Dept Chemistry, Materials and Chemical Engineering, Italy; [2]National Interuniversity Consortium of Materials Science and Technology (INSTM), 50121 Florence, Italy; [3]Department of Mechanical Engineering, University of Ottawa, Ottawa, ON, K1N 6N5, Canada

ESB2021_1882-Citric acid crosslinking of methylcellulose hydrogels-1882.pdf

BIAXIAL MECHANICAL CHARACTERIZATION OF SILK-BASED MULTI-LAYERED VASCULAR GRAFT FOR SMALL VESSELS

P. Vena[1], L. D'Andrea[1], M. Alloisio[1], M. A. Costa Angeli[1], M. Biagiotti[2], V. Vincoli[2], A. Alessandrino[2], G. Freddi[2], D. Gastaldi[1]
[1]Politecnico di Milano, Italy; [2]Silk Biomaterials

ESB2021_1720-BIAXIAL MECHANICAL CHARACTERIZATION OF SILK-BASED MULTI-LAYERED VASCULAR GRAFT-1720.pdf

5:00pm - 6:00pm **CB.2: Computational biology**
Session Chair: **Alfons Hoekstra**
https://teams.microsoft.com/l/channel/19%3abae7a12746e64558bcc1224938580f2c%40thread.tacv2/TR23_Comp%2520Biology?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: MULTISCALE MODELING OF VEIN GRAFT ADAPTATION: A PREDICTIVE TOOL TO IDENTIFY TARGETS FOR IMPROVED CLINICAL OUTCOMES

S. Berceli
University of Florida

ESB2021_1161-PT MULTISCALE MODELING OF VEIN GRAFT ADAPTATION A PREDICTIVE TOOL-1161.pdf

BIOMECHANICAL LINK BETWEEN RED BLOOD CELL DYNAMICS AND VASCULAR REMODELLING DURING ANGIOGENESIS

Q. Zhou[1], L. T. Edgar[2], T. Krüger[1], M. O. Bernabeu[2]
[1]School of Engineering, Institute for Multiscale Thermofluids, The University of Edinburgh, UK; [2]Centre for Medical Informatics, Usher Institute, The University of Edinburgh, UK

ESB2021_1531-BIOMECHANICAL LINK BETWEEN RED BLOOD CELL DYNAMICS AND VASCULAR REMODELLING DURING ANGIOGENESIS-1.pdf

Detailed Blood Cell Flow Mechanics In Curved Vessel Geometry

C. J. Spieker[1], G. Závodszky[1], M. van der Kolk[1], P. H. Mangin[2], C. Gachet[2], A. G. Hoekstra[1]
[1]Computational Science Laboratory, Informatics Institute, Faculty of Science, University of Amsterdam, Science Park 904, Amsterdam 1098 XH, the Netherlands; [2]Université de Strasbourg, INSERM, EFS Grand-Est, BPPS UMR-S 1255, FMTS, France

ESB2021_1329-Detailed Blood Cell Flow Mechanics In Curved Vessel Geometry-1329.pdf

Thrombosis in portal vein reconstructions: Simulation of postsurgical blood clot formation

V. Dušková, A. Jonášová, S. Plánička, J. Vimmr
Department of Mechanics and NTIS, Faculty of Applied Sciences, University of West Bohemia, Czech Republic
ESB2021_1358-Thrombosis in portal vein reconstructions-1358.pdf

5:00pm - 6:00pm

CV-Impl.4: Implants and devices for cardiovascular applications

Session Chair: **Keefe Manning**

https://teams.microsoft.com/l/channel/19%3ad29cbbb044b543f58199d8f1a24724a4%40thread.tacv2/TR02_Implants%2520and%2520Devices%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Frequency Effects on TAVR Turbulent Fluid Mechanics Within an Accelerated Environment

S. Ponnaluri[1], M. Sacks[2], K. Manning[1,3]
[1]Department of Biomedical Engineering, Pennsylvania State University, University Park, PA, USA; [2]Willerson Center, Institute for Computational and Engineering Sciences, Department of Biomedical Engineering, University of Texas, Austin, USA; [3]Department of Surgery, Penn Sate Hershey Medical Center, Hershey, PA, USA
ESB2021_1623-Frequency Effects on TAVR Turbulent Fluid Mechanics-1623.pdf

WALL SHEAR STRESS TOPOLOGICAL SKELETON FEATURES IN HEMODYNAMIC MODELS OF STENTED CORONARY ARTERIES

V. Mazzi, C. Chiastra, D. Gallo, U. Morbiducci
PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy
ESB2021_1461-WALL SHEAR STRESS TOPOLOGICAL SKELETON FEATURES IN HEMODYNAMIC MODELS-1461_a.pdf

Patient-Specific Reconstruction of Coronary Artery Stents with Lumens Based on Optical Coherence Tomography

W. Wu[1], B. Khan[1], M. Sharzehee[1], S. Zhao[1], S. Samant[1], A. Panagopoulos[1], J. Makadia[1], F. Muhammad[1], F. Migliavacca[2], G. A. Dubini[2], C. Chiastra[3], I. S. Chatzizisis[1]
[1]Cardiovasclar Biology and Biomechanics Laboratory, Cardiovascular Division, University of Nebraska Medical Center, Omaha, Nebraska, USA; [2]Laboratory of Biological Structure Mechanics (LaBS), Department of Chemistry, Materials and Chemical Engineering “Giulio Natta,” Politecnico di Milano, Milan, Italy; [3]PoliToBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Turin, Italy
ESB2021_1865-Patient-Specific Reconstruction of Coronary Artery Stents with Lumens Based-1865.pdf

COUPLED EXPERIMENTAL-NUMERICAL STRATEGY FOR DIGITAL TWIN DEVELOPMENT OF A POLIMERIC CORONARY STENT

L. Antonini[1], B. Isella[1], D. Hossain[1], F. Berti[1], G. Poletti[1], G. Dubini[1], L. Petrini[2], G. Pennati[1]
[1]LaBS – Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Milan, Italy; [2]Dept. of Civil and Environmental Engineering, Politecnico di Milano, Milan, Italy
ESB2021_1586-COUPLED EXPERIMENTAL-NUMERICAL STRATEGY FOR DIGITAL TWIN DEVELOPMENT-1586_a.pdf

Effect of stent overlap on lumen gain and tissue damage

R. He[1], L. Zhao[1], V. V. Silberschmidt[1], Y. Liu[1], F. Vogt[2]
[1]Loughborough University, United Kingdom; [2]University Hospital Aachen, Germany
ESB2021_1241-Effect of stent overlap on lumen gain and tissue damage-1241.pdf

Assessment of Friction for Catheters Design Interacting with Soft Viscoelastic Vascular Tissue

R. Mongrain[1], Z. He[1,3], R. Leask[2], G. Soulez[3]
[1]Department of Mechanical Engineering, McGill University, Canada; [2]Department of Chemical Engineering, McGill University, Canada; [3]Department of Radiology, University of Montreal, Canada
ESB2021_1788-Assessment of Friction for Catheters Design Interacting with Soft Viscoelastic Vascular.pdf

5:00pm - 6:00pm

CV-Mech.4: Cardiovascular mechanics

Session Chair: **John LaDisa**

https://teams.microsoft.com/l/channel/19%3adfc7d4fe37914150a419a66ecd7331f5%40thread.tacv2/TR01_Cardiovascular%2520Mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Markers of wall vulnerability in aortic aneurysms

E. s Di Martino
University of Calgary, Canada
ESB2021_1124-PT Markers of wall vulnerability in aortic aneurysms-1124.pdf

HEMODYNAMIC EVALUATION OF RECONSTRUCTED ARCH GEOMETRY AFTER NORWOOD PROCEDURE VS A NON-OPERATED CONTROL

A. Blanch Granada[1], M. M. Samyn[2], J. R. Cava[2], S. S. Handler[2], J. F. Gerardin[2,4], V. Hraška[3], B. Goot[2], J. F. Jr. LaDisa[1,4]
[1]Department of Biomedical Engineering, Marquette University and Medical College of Wisconsin, Milwaukee, WI, USA; [2]Pediatrics-Division of Cardiology at the Medical College of Wisconsin, Herma Heart Institute, and Children’s Wisconsin; Milwaukee, WI, USA; [3]Surgery - Division of Pediatric Cardiothoracic Surgery at the Medical College of Wisconsin, Herma Heart Institute, and Children’s Wisconsin; Milwaukee, WI, USA; [4]Medicine - Division of Cardiovascular Medicine at the Medical College of Wisconsin, Herma Heart Institute, and Children’s Wisconsin; Milwaukee, WI, USA
ESB2021_1802-HEMODYNAMIC EVALUATION OF RECONSTRUCTED ARCH GEOMETRY AFTER NORWOOD PROCEDURE VS A NON-OPERATED.pdf

Local in vitro evaluation of the biomechanical properties of the ascending aortic aneurysms

S. LIN[1], M.-C. Morgant[1,2], A. Cochet[1,2], A. Lalande[1,2], O. Bouchot[1,2]
[1]ImViA, university of burgund, Dijon, France; [2]Dijon University Hospital, Dijon, France
ESB2021_1275-Local in vitro evaluation of the biomechanical properties of the ascending aortic aneurysms-1275_a.pdf

Garments’ Influences on blood perfusion to foot microcirculation during Intermittent pneumatic compression

B. Wang[1], Z. Sun[1], W. Ren[2], Y. Wang[1], Y. Fan[1]
[1]Beijing Advanced Innovation Centre for Biomedical Engineering, School of Biological Science and Medical Engineering, Beihang University, Beijing, China; [2]National Research Center for Rehabilitation Technical Aids, Ministry of Civil Affairs of the PRC, Beijing, China
ESB2021_1628-Garments’ Influences on blood perfusion to foot microcirculation during Intermittent pneumatic c.pdf

5:00pm - 6:00pm

Ergo-Rehab.1: Ergonomics/Occupational biomechanics/Rehabilitation

Session Chair: **Veronica Cimolin**

https://teams.microsoft.com/l/channel/19%3a70721cfbfa724fa7b16a39df6d5b8329%40thread.tacv2/TR20_Ergonomics-Occupational-Rehabilitation?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Musculoskeletal lower back load of accoucheurs during delivery

M. Melzner[1,2], K. Ismail[3,4], Z. Rušavý[3,5], V. Kališ[3,5], F. Süß[1,2], S. Dendorfer[1,2]
[1]Laboratory for Biomechanics, Ostbayerische Technische Hochschule (OTH) Regensburg, Germany; [2]Regensburg Center of Biomedical Engineering, OTH and University Regensburg, Germany; [3]Biomedical Center, Faculty of Medicine in Pilsen, Charles University, Pilsen, Czech Republic; [4]Department of Obstetrics and Gynecology, Faculty of Medicine in Pilsen, Charles University, Czech Republic; [5]Department of Obstetrics and Gynecology, University Hospital, Pilsen, Czech Republic

ESB2021_1184-Musculoskeletal lower back load of accoucheurs during delivery-1184.pdf

Stress reactivity of muscular imbalances in healthy and back pain patients: The influence of personality

S. Kubowitsch[1], F. Suess[1,2], S. Dendorfer[1,2]
[1]Ostbayerische Technische Hochschule (OTH) Regensburg, Labratory for Biomechanics, Germany; [2]Regensburg Center of Biomedical Engineering, OTH and University of Regensburg, Germany

ESB2021_1669-Stress reactivity of muscular imbalances in healthy and back pain patients-1669.pdf

CONTINENT WOMEN MAY HAVE A BETTER BALANCE BETWEEN ABDOMINALS AND PELVIC FLOOR MUSCLES THAN INCONTINENT

A. M. Carvalhais[1,2], T. Da Roza[3], R. Natal Jorge[2,4]
[1]CESPU- Instituto Politécnico de Saúde do Norte, Porto, Portugal, Portugal; [2]LAETA, INEGI; [3]Laboratory of Biomechanics, Center For Health and Sports Sciences (CEFID), Universidade do Estado de Santa Catarina (UDESC), Florianópolis, Brazil; [4]Faculdade de Engenharia, Universidade Do Porto, Porto, Portugal

ESB2021_1834-CONTINENT WOMEN MAY HAVE A BETTER BALANCE BETWEEN ABDOMINALS AND PELVIC FLOOR MUSCLES THAN.pdf

Diabetic Shoe Upper Pressures: Preliminary Approach to Identify Relative Levels of Comfort and Injury

P. Martins, A. Marques
ISEP - Instituto Superior de Engenharia do Porto, Portugal

ESB2021_1848-Diabetic Shoe Upper Pressures-1848.pdf

T-CHAIR - NOVEL THERAPY DEVICE IN NEUROREHABILITATION A FEASIBILITY STUDY

P. Bischof, M. Wenger, D. Baumgartner
ZHAW, IMES Institute for Mechanical Systems

ESB2021_1854-T-CHAIR - NOVEL THERAPY DEVICE IN NEUROREHABILITATION A FEASIBILITY STUDY-1854.pdf

BIOMECHANICAL ANALYSIS OF CYCLISTS DELIVERIES POSTURE'S

N. Yanguma Muñoz, K. A. Giraldo, B. D. Solorzano Quevedo, C. J. Cifuentes De La-Portilla
Universidad de Los Andes, Colombia

ESB2021_1622-BIOMECHANICAL ANALYSIS OF CYCLISTS DELIVERIES POSTURES-1622.pdf

5:00pm - 6:00pm

Hard-Tissue.4: Hard tissue biomechanics

Session Chair: **Jakob Schwiedrzik**

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PT: BONE FRACTURE TOUGHNESS: LESSONS LEARNT FROM BRITTLE BONES

A. CARRIERO
THE CITY COLLEGE OF NEW YORK, United States of America

ESB2021_135-PT BONE FRACTURE TOUGHNESS LESSONS LEARNT FROM BRITTLE BONES-135.pdf

INFLUENCE OF STRESS REDISTRIBUTIONS IN µFEA ON THE PREDICTED FAILURE LOAD OF RADIUS SEGMENTS

M. Stipsitz[1], P. K. Zysset[2], D. H. Pahr[1,3]
[1]TU-Wien, Austria; [2]University of Bern, Switzerland; [3]Karl Landsteiner University of Health Sciences, Austria

ESB2021_1215-INFLUENCE OF STRESS REDISTRIBUTIONS IN µFEA ON THE PREDICTED FAILURE LOAD OF RADIUS SEGMENTS-1215.pdf

DENSITY PLAYS A SUPERIOR ROLE OVER SHAPE IN OSTEOPOROTIC HIP FRACTURE RISK ASSESSMENT

A. Aldieri[1], M. Terzini[1], P. Bhattacharya[2], M. Paggiosi[2], R. Eastell[2], A. Audenino[1], C. Bignardi[1], U. Morbiducci[1]
[1]Politecnico di Torino, Italy; [2]University of Sheffield

ESB2021_1578-DENSITY PLAYS A SUPERIOR ROLE OVER SHAPE IN OSTEOPOROTIC HIP FRACTURE RISK ASSESSMENT-1578.pdf

Site-specific changes in collagen orientation in osteogenesis imperfecta mouse bone

A. Docaj, A. Carriero
City University of New York-City College, United States of America

ESB2021_1849-Site-specific changes in collagen orientation in osteogenesis imperfecta mouse bone-1849.pdf

5:00pm - 6:00pm

Mechano.3: Mechanobiology

Session Chair: **Manuela Teresa Raimondi**

https://teams.microsoft.com/l/channel/19%3af07b298ef3034459a8476de6ec152fe6%40thread.tacv2/TR06_Mechanobiology?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Nuclear Pore Complex Mechanobiology

M. Mofrad
University of California Berkeley, United States of America

ESB2021_1067-PT Nuclear Pore Complex Mechanobiology-1067.pdf

STEM CELL MORPHOLOGY CONTROLS PROTEIN NUCLEAR IMPORT WITHIN A BIOENGINEERED 3D NICHE

E. Jacchetti[1], R. Nasehi[1], L. Boeri[1], V. Parodi[1], A. Negro[2], D. Albani[3], R. Osellame[4], G. Cerullo[4], J. F. Rodriguez Matas[1], M. T. Raimondi[1]
[1]Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milano, Italy; [2]Department of Biomedical Sciences, University of Padua, Padua, Italy; [3]Department of Neuroscience, Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Milan, Italy; [4]Istituto di Fotonica e Nanotecnologie (IFN)-CNR and Department of Physics, Politecnico di Milano, Milano, Italy

ESB2021_1284-STEM CELL MORPHOLOGY CONTROLS PROTEIN NUCLEAR IMPORT-1284.pdf

Aging-related biophysical changes lead to T-cell stiffening, loss of migration and cellular divergence

B. González-Bermúdez[1], H. Kobayashi[2], A. Abarca-Ortega[1], M. Córcoles-Lucas[1], M. González-Sánchez[2], M. de la Fuente[2], G. V. Guinea[1], G. R. Plaza[1]
[1]Universidad Politécnica de Madrid, Spain; [2]Universidad Complutense de Madrid, Spain

ESB2021_1632-Aging-related biophysical changes lead to T-cell stiffening, loss-1632.pdf

INCREASED NUCLEAR PERMEABILITY BASED ON LAMIN A/C RUPTURES AS A CONSEQUENCE OF APPLIED IN-FLOW FORCES

M. I. Maremonti, D. Dannhauser, V. Panzetta, P. A. Netti, F. Causa
University of Federico II, Italy

ESB2021_1653-INCREASED NUCLEAR PERMEABILITY BASED ON LAMIN AC RUPTURES AS A CONSEQUENCE-1653.pdf

5:00pm - 6:00pm

Orth-meth.2: Computational methods for orthopaedic applications

Session Chair: **Ilse Jonkers**

https://teams.microsoft.com/l/channel/19%3a0ab6907d523640f29f1b501dd6cbece7%40thread.tacv2/TR13_CompMethods%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

COMPUTATIONAL STATIC COMPARISON OF FEMORAL RECONSTRUCTION MODELS

I. López[1], J. Echeverry[1], V. Domínguez[2,3], V. Araújo[3]
[1]Universidad de La Sabana; [2]Tecnológico de Monterrey; [3]Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra

ESB2021_1560-COMPUTATIONAL STATIC COMPARISON OF FEMORAL RECONSTRUCTION MODELS-1560.pdf

DEPENDENCY OF LOWER LIMB JOINT REACTIONS ON FEMORAL ANTEVERSION

L. Modenese[1], C. Carty[2]
[1]Imperial College London, United Kingdom; [2]Griffith University, Australia

ESB2021_1680-DEPENDENCY OF LOWER LIMB JOINT REACTIONS ON FEMORAL ANTEVERSION-1680.pdf

Influence of femoral torsion on hip loading during gait in asymptomatic adults

E. De Pieri[1,2], B. Friesenbichler[3], R. List[3], S. Monn[3], N. C. Casartelli[3,4], M. Leunig[5], S. J. Ferguson[2]
[1]University of Basel Children's Hospital, Basel, Switzerland; [2]Institute for Biomechanics, ETH Zurich, Zürich, Switzerland; [3]Human Performance Lab, Schulthess Clinic, Zürich, Switzerland; [4]Laboratory of Exercise and Health, ETH Zurich, Schwezenbach, Switzerland; [5]Department of Orthopaedic Surgery, Schulthess Clinic, Zürich, Switzerland

ESB2021_1706-Influence of femoral torsion on hip loading during gait-1706.pdf

IMPROVING THE COMMUNICATION BETWEEN AN EMG-BASED HMI FOR HAND PROSTHETIC USERS WITH ANN

M. C. Mora[1], J. Colzy[2], J. V. García-Ortiz[1], J. Cerdá-Boluda[3]
[1]Universitat Jaume I, Spain; [2]Université Paris Sud; [3]Universitat Politècnica de València

ESB2021_1751-IMPROVING THE COMMUNICATION BETWEEN AN EMG-BASED HMI-1751.pdf

Experimental Validation of a Finite Element Model of Periprosthetic Femoral Fracture in a Stumbling Scenario

M. Saemann[1], M. Darowski[1], R. Bader[1], M. Sander[2], D. Kluess[1]
[1]Biomechanics and Implant Technology Research Laboratory, Department of Orthopaedics, Rostock University Medical Center, Germany; [2]Institute of Structural Mechanics, University of Rostock, Germany

ESB2021_1824-Experimental Validation of a Finite Element Model of Periprosthetic Femoral Fracture-1824.pdf

INDIVIDUALIZED SIMULATION OF THE MECHANICAL FRACTURE ENVIRONMENT AFTER TIBIAL EXCHANGE NAILING

M. Roland[1], M. Orth[2], J. Gawlitza[3], A. Uhl[1], K. Wickert[1], T. Pohlemann[2], S. Diebels[1], B. Braun[4]
[1]Saarland University, Chair of Applied Mechanics, Germany; [2]Saarland University Hospital – Clinic for Trauma, Hand and Reconstructive Surgery, Germany; [3]Technical University of Munich, Institute of Diagnostic and Interventional Radiology, Germany; [4]University Hospital Tuebingen, Department of Trauma and Reconstructive Surgery, BG Hospital Tuebingen, Germany

ESB2021_1532-INDIVIDUALIZED SIMULATION OF THE MECHANICAL FRACTURE ENVIRONMENT AFTER TIBIAL EXCHANGE.pdf

5:00pm - 6:00pm

Spine.4: Spine

Session Chair: **La Barbera Luigi**

https://teams.microsoft.com/l/channel/19%3a6c533dfc4fe141b79f06b34b62f96265%40thread.tacv2/TR09_Spine?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

An in vitro methodology to assess intervertebral disc intervention mechanics

A. R. Dixon, J. P. Warren, M. Mengoni, R. K. Wilcox
University of Leeds, United Kingdom

ESB2021_1273-An in vitro methodology to assess intervertebral disc intervention mechanics-1273.pdf

Assessment of deformations in human metastatic vertebrae with Digital Volume Correlation

G. Cavazzoni[1,2], M. Palanca[2], L. Cristofolini[1], E. Dall'Ara[2]
[1]Alma Mater Studiorum - University of Bologna, Italy; [2]University of Sheffield, UK

ESB2021_1471-Assessment of deformations in human metastatic vertebrae with Digital Volume Correlation-1471.pdf

Examining the biomechanical behavior of the human lumbar spine under combined loading using a novel in-vitro test protocol

N. Wilmanns[1], A. Beckmann[1], L. F. Nicolini[1], C. Herren[2], R. Sobottke[3], F. Hildebrand[2], J. Siewe[4,5], P. Kobbe[2], B. Markert[1], M. Stoffel[1]
[1]Institute of General Mechanics, RWTH Aachen, Germany; [2]Department for Trauma and Reconstructive Surgery, University Hospital RWTH Aachen, Germany; [3]Department of Orthopaedics and Trauma Surgery, Rhein-Maas Klinik, Germany; [4]Department of Spine Surgery, Klinikum Leverkusen gGmbH, Germany; [5]Faculty of Medicine, University Hospital of Cologne, Germany

ESB2021_1484-Examining the biomechanical behavior of the human lumbar spine under combined loading using a.pdf

ENZYMATIC DIGESTION WITH CHONDROITINASE OR PAPAIN: METHODS TO INDUCE DISC DEGENERATION FOR IN VITRO TESTING?

J. U. Jansen[1], G. Quelhas Teixeira[1], A. Vernengo[2], S. Grad[2], C. Neidlinger-Wilke[1], H.-J. Wilke[1]
[1]Institute of Orthopaedic Research and Biomechanics, Ulm University, Germany; [2]AO Research Institute Davos, Switzerland

ESB2021_1672-ENZYMATIC DIGESTION WITH CHONDROITINASE OR PAPAIN-1672.pdf

EMG-ASSISTED MODELLING PROVIDES PHYSIOLOGICAL NECK MUSCLE ACTIVATION PATTERNS DURING CONTACT SPORT EVENTS

P. Silvestros[1], C. Pizzolato[2], E. Preatoni[1], D. G. Lloyd[2], H. S. Gill[3], D. Cazzola[1]
[1]Department for Health, University of Bath, United Kingdom; [2]School of Allied Health Sciences, Griffith University, Gold Coast, Australia; [3]Department of Mechanical Engineering, University of Bath, United Kingdom

ESB2021_1240-EMG-ASSISTED MODELLING PROVIDES PHYSIOLOGICAL NECK MUSCLE ACTIVATION PATTERNS DURING CONTACT.pdf

5:00pm - 6:00pm

Sport.1: Sport biomechanics

Session Chair: **Carlo Albino Frigo**

https://teams.microsoft.com/l/channel/19%3a98a7f956d27342bab104754156cc4c92%40thread.tacv2/TR19_Sport%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Clinical Estimation of the Use of the Hip and Knee Extensors during Athletic Movements

R. K. Straub[1], A. Horgan[2], A. J. Barrack[1], L. Mosesian[1], C. M. Powers[1]
[1]University of Southern California, USA; [2]Trinity College, Ireland

ESB2021_1181-Clinical Estimation of the Use of the Hip and Knee Extensors during Athletic Movements-1181.pdf

KNEE KINEMATICS OF ACL INJURY IN PROFESSIONAL FOOTBALL PLAYERS USING A MODEL-BASED IMAGE-MATCHING ANALYSIS

S. Stillavato[1], M. Galli[1], M. Tarabini[1], S. Lucarno[2], F. Della Villa[3], M. Zago[1]
[1]Politecnico di Milano, Italy; [2]AC Milan SpA, Italy; [3]Isokinetic Medical Group, Italy

ESB2021_1221-KNEE KINEMATICS OF ACL INJURY IN PROFESSIONAL FOOTBALL PLAYERS USING A MODEL-BASED IMAGE-MATCHING.pdf

OPTIMIZATION OF THE CYCLING KINEMATIC ANALYSIS. METHODOLOGY COMPARATIVE.

E. Martín Sosa[1], E. Soler Vizán[2], J. Mayo Núñez[1], J. Ojeda Granja[1]
[1]University of Seville, Spain; [2]Health System of Andalusia

ESB2021_1306-OPTIMIZATION OF THE CYCLING KINEMATIC ANALYSIS METHODOLOGY COMPARATIVE-1306.pdf

RELIABILITY AND ACCURACY OF ACL QUICK CHECK, AN ON FIELD METHODOLOGY FOR ACL RISK OF INJURY SCREENING

A. Ciniglio[1], M. Donadello[1], F. Spolaor[1], A. Guiotto[1], D. Pavan[1], F. Cibin[2], Z. Sawacha[1,3]
[1]Dept. of Information Engineering, University of Padova, Italy; [2]BBSoF S.r.l., Italy; [3]Dept. of Medicine, University of Padova, Italy

ESB2021_1655-RELIABILITY AND ACCURACY OF ACL QUICK CHECK, AN ON FIELD METHODOLOGY-1655.pdf

ON FIELD COM ACCELERATION ASSESSMENT IN HOCKEY PLAYERS: COMPARISON OF 3 APPROACHES BASED ON VIDEO ANALYSIS AND PLANTAR PRESSURE DATA

A. Scaldaferro[1], A. Ciniglio[1], G. Maistrello[1], F. Spolaor[1], A. Guiotto[1], F. Cibin[2], Z. Sawacha[1,3]
[1]University of Padua, Italy; [2]BBSoF S.r.l., Padova, Italy; [3]Dept. Medicine, University of Padova, Padova, Italy

ESB2021_1702-ON FIELD COM ACCELERATION ASSESSMENT IN HOCKEY PLAYERS-1702.pdf

Unattenuated vertical walls in trampoline parks are safer than attenuated vertical walls

D. Eager, I. Hossain, E. Lind, K. Ishac
University of Technology Sydney, Australia

ESB2021_1349-Unattenuated vertical walls in trampoline parks are safer than attenuated vertical walls-1349.pdf

5:00pm - 6:00pm

VVUQ.2: Verification, validation and uncertainties quantification

Session Chair: **Lorenza Petrini**

https://teams.microsoft.com/l/channel/19%3a5e24b1015ced4eaa933e9b3e7059321d%40thread.tacv2/TR22_VVUQ?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: New trends in stochastic cardiovascular modeling

D. E. Schiavazzi
University of Notre Dame, United States of America

ESB2021_413-PT New trends in stochastic cardiovascular modeling-413.pdf

ON THE VALIDATION OF CORONARY STENT DEPLOYMENT SIMULATIONS: IN-VITRO AND IN-VIVO DATA AS COMPARATORS

G. Poletti[1], L. Antonini[1], F. Berti[1], G. Karanasiou[2], D. Fotiadis[2], F. Migliavacca[1], L. Petrini[3], G. Pennati[1]
[1]LaBS – Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Milan, Italy; [2]Dept. of Biomedical Research, FORTH-IMBB, Ioannina, Greece; [3]Dept. of Civil and Environmental Engineering, Politecnico di Milano, Milan, Italy.

ESB2021_1835-ON THE VALIDATION OF CORONARY STENT DEPLOYMENT SIMULATIONS-1835.pdf

CFD/UQ INTEGRATED APPROACH FOR PATIENT-SPECIFIC STUDIES OF AORTIC COARCTATION

M. N. Antonuccio[1,2], S. Perondi[3], B. M. Fanni[2,3], K. Capellini[2,3], S. Celi[2]
[1]École MINES Saint'Étienne, France; [2]BioCardioLab, Fondazione Toscana G. Monasterio, Italy; [3]Dept. of Information Engineering, University of Pisa, Italy

ESB2021_1554-CFDUQ INTEGRATED APPROACH FOR PATIENT-SPECIFIC STUDIES-1554_a.pdf

Validation of Analog Instruments on a Novel Minimally Invasive Spinal Fusion Simulator

B. Stott, M. Driscoll
McGill University, Canada

ESB2021_1291-Validation of Analog Instruments on a Novel Minimally Invasive Spinal Fusion Simulator-1291.pdf

6:00pm - 7:00pm

Assembly: ESB General Assembly

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Date: Wednesday, 14/July/2021

9:30am - 10:45am

A&P.1: Animal and plant biomechanics

Session Chair: **Mauro Malvè**

https://teams.microsoft.com/l/channel/19%3a1951a79d03d94c22bd701559d45cc76f%40thread.tacv2/TR25_Animal%2520and%2520Plant%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

UNCOVERING STABILITY PRINCIPLES OF AVIAN BIPEDAL UNEVEN LOCOMOTION

E. Andrada, O. Mothes, D. Arnold, J. Denzler, M. S. Fischer, R. Blickhan
Friedrich-Schiller-University Jena, Germany

ESB2021_1209-UNCOVERING STABILITY PRINCIPLES OF AVIAN BIPEDAL UNEVEN LOCOMOTION-1209.pdf

FEM simulation of knee joint in dogs: Effects of joint loading correlate with bone density

H. Stark, E. Andrada, M. S. Fischer
Friedrich-Schiller-University Jena, Germany

ESB2021_1598-FEM simulation of knee joint in dogs-1598.pdf

Injuries in greyhound racing: Number of starters

K. Ishac, D. Eager
University of Technology Sydney, Australia

ESB2021_1625-Injuries in greyhound racing-1625.pdf

MICROMECHANICAL CONSEQUENCES OF OCEAN ACIDIFICATION FOR COLD-WATER CORALS

U. Wolfram[1], A. Ozel[1], M. Peña-Fernández[1], E. Smith[1], S. Hennige[2]
[1]Heriot-Watt University, United Kingdom; [2]University of Edinburgh, United Kingdom

ESB2021_1224-MICROMECHANICAL CONSEQUENCES OF OCEAN ACIDIFICATION-1224.pdf

Modelling Salbutamol Particle Transport and Deposition in the Cat Upper Airways

R. Fernández-Parra[1,2], P. Pey[3], G. Benchekroun[1], C. Reinero[4], M. Malvè[5]
[1]École Nationale Vétérinaire d'Alfort, Maisons-Alfort, France; [2]Universidad Católica de Valencia, Spain; [3]Department of Veterinary Medical Science, University of Bologna, Ozzano dell'Emilia, Italy; [4]University of Missouri, Columbia, USA; [5]Public University of Navarre, Spain

ESB2021_1333-Modelling Salbutamol Particle Transport and Deposition-1333.pdf

9:30am - 10:45am

Biof&Resp.1: Biofluid and respiratory mechanics

Session Chair: **Sean McGinty**

https://teams.microsoft.com/l/channel/19%3a2081d60fb92d46459ea5b53887f869be%40thread.tacv2/TR26_Biofluid%2520and%2520Respiratory%2520mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Reducing thromboembolic events in blood vessels and artificial pumps

L. Prahl Wittberg
KTH, Sweden

ESB2021_133-PT Reducing thromboembolic events in blood vessels and artificial pumps-133.pdf

VESSEL COMPRESSION BIASES THE PARTITIONING OF RED BLOOD CELLS AT A DOWNSTREAM BIFURCATION

R. Enjalbert, D. Hardman, T. Krüger, M. O. Bernabeu
University of Edinburgh, United Kingdom

ESB2021_1593-VESSEL COMPRESSION BIASES THE PARTITIONING OF RED BLOOD CELLS-1593.pdf

Fluid Mechanics and Gene Expressions of the Chick Embryonic Model of Hypoplastic Left Heart Syndrome

S. Ho[1], W. X. Chan[1], C. H. Yap[2]
[1]National University of Singapore, Singapore; [2]Imperial College London, United Kingdom

ESB2021_1226-Fluid Mechanics and Gene Expressions of the Chick Embryonic Model of Hypoplastic Left Heart.pdf

Coupling oxygen delivery and radiation damage through a 3D-1D multiscale model of microvascular flow

R. Rosati[1,2], L. Possenti[2,3], D. Cerroni[1], A. Cicchetti[3], M. L. Costantino[2], T. Rancati[3], P. Zunino[1]
[1]MOX, Dept. of Math., Politecnico di Milano; [2]LaBS, Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano; [3]Prostate cancer program, Fondazione IRCCS Istituto Nazionale dei Tumori, Italy

ESB2021_1551-Coupling oxygen delivery and radiation damage through a 3D-1D multiscale model-1551.pdf

Comparing time-efficient Particle Release Maps for liver tumor targeting with embolizing microparticles

T. Bomberna[1,2], G. Maleux[3,4], C. Debbaut[1,2]
[1]IBiTech-bioMMeda, UGent, Belgium; [2]Cancer Research Institute Ghent (CRIG), Ghent; [3]University Hospitals Leuven, Belgium; [4]KU Leuven, Belgium

ESB2021_1385-Comparing time-efficient Particle Release Maps for liver tumor targeting with embolizing.pdf

DETERMINING LUNG OBSTRUCTION USING FORCED OSCILLATION TECHNIQUE AND MACHINE LEARNING

J. Xi[1], J. Xi[2], M. Talaat[1], X. A. Si[3]
[1]University of Massachusetts, Lowell, United States of America; [2]Martin Luther King High School, Riverside; [3]Department of Aerospace, Industrial, and Mechanical Engineering, California Baptist University

ESB2021_1883-DETERMINING LUNG OBSTRUCTION USING FORCED OSCILLATION TECHNIQUE AND MACHINE LEARNING-1883.pdf

9:30am - 10:45am

CV-Mech.5: Cardiovascular mechanics

Session Chair: **Christian Vergara**

https://teams.microsoft.com/l/channel/19%3adfc7d4fe37914150a419a66ecd7331f5%40thread.tacv2/TR01_Cardiovascular%2520Mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Effects of Cardiac Geometric Remodeling during Heart Failure on Cardiac Function

Y. Zheng[1], W. X. Chan[1], C. H. Yap[2]
[1]National University of Singapore, Singapore; [2]Imperial College London, UK

ESB2021_1230-Effects of Cardiac Geometric Remodeling during Heart Failure-1230.pdf

Haemodynamics in patient-specific aortae of Turner syndrome children with MRI-obtained aortic inflow

L. Johnston[1], R. Allen[2], P. Hall-Barrientos[2], A. Mason[2], A. Kazakidi[1]
[1]Department of Biomedical Engineering, University of Strathclyde, United Kingdom; [2]Royal Hospital for Children, Queen Elizabeth University Hospital, UK

ESB2021_1234-Haemodynamics in patient-specific aortae of Turner syndrome children with MRI-obtained aortic.pdf

MRI-BASED FLUID-STRUCTURE INTERACTION ANALYSIS OF THE BICUSPID AORTIC VALVE BIOMECHANICS

F. Sturla[1,2], M. Emendi[2,3], R. P. Ghosh[3], M. Bianchi[3], F. Piatti[1], F. R. Pluchinotta[2,1], D. Giese[4], M. Lombardi[1], A. Redaelli[2], D. Bluestein[3]

[1]IRCCS Policlinico San Donato, San Donato Milanese, Italy; [2]Politecnico di Milano, Milano, Italy; [3]Stony Brook University, Stony Brook, NY, USA; [4]Siemens Healthcare GmbH, Erlangen, Germany

ESB2021_1239-MRI-BASED FLUID-STRUCTURE INTERACTION ANALYSIS OF THE BICUSPID AORTIC VALVE BIOMECHANICS-1239.pdf

Numerical and experimental hemodynamic study in an in-vitro 3D printed patient-specific carotid artery bifurcation.

M. Nagargoje, R. Gupta
IIT Guwahati

ESB2021_1500-Numerical and experimental hemodynamic study in an in-vitro 3D printed patient-specific carotid.pdf

Impact of Non-Newtonian Blood Behavior on Left Ventricle 4D Flow Energetics

A. Riva[1,2], F. Sturla[2,1], A. Caimi[1], S. Pica[2], D. Giese[3], P. Milani[4], G. Palladini[4], M. Lombardi[2], A. Redaelli[1], E. Votta[1,2]
[1]Politecnico di Milano, Milan, Italy; [2]IRCCS Policlinico San Donato, San Donato Milanese, Italy; [3]Siemens Healthcare GmbH, Erlangen, Germany; [4]Fondazione IRCCS Policlinico San Matteo and Department of Molecular Medicine, University of Pavia, Pavia, Italy

ESB2021_1524-Impact of Non-Newtonian Blood Behavior on Left Ventricle 4D Flow Energetics-1524_a.pdf

TUNABLE MAGNETIC HYDROGEL FOR CARDIOMYOCYTES TRAINING

B. Le Roi, B. M Maoz
Tel Aviv University, Israel

ESB2021_1642-TUNABLE MAGNETIC HYDROGEL FOR CARDIOMYOCYTES TRAINING-1642.pdf

3D characterization of crack propagation during the onset of a dissection using X-ray microtomography on pressurized aortic segments

J. Brunet[1], B. Pierrat[1], J. Adrien[2], E. Maire[2], N. Curt[1], B. Lane[1], P. Badel[1]
[1]Mines Saint-Etienne, Univ Lyon, Univ Jean Monnet, INSERM, U 1059 Sainbiose, Centre CIS, F - 42023, Saint-Etienne, France; [2]INSA-Lyon, Université de Lyon, MATEIS CNRS UMR5510, Villeurbanne, France

ESB2021_1228-3D characterization of crack propagation during the onset of a dissection using X-ray_a.pdf

9:30am - 10:45am

CV-Meth.4: Computational methods for cardiovascular applications

Session Chair: **Miguel A. Martinez**

https://teams.microsoft.com/l/channel/19%3af7d78c3c31894881a6fd6019be2f1ce2%40thread.tacv2/TR04_CompMethods%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Analyses of blood flow through mechanical trileaflet and bileaflet valves

A. Nieroda, M. Pawlikowski
Warsaw University of Technology, Poland

ESB2021_1338-Analyses of blood flow through mechanical trileaflet and bileaflet valves-1338.pdf

Impact of computational modeling strategies on patient-specific TAVI simulations

A. Lauditi[1], A. Caimi[1], F. Sturla[1,2], F. De Marco[2], F. Bedogni[2], N. Brambilla[2], L. Testa[2], E. Votta[1], A. Redaelli[1]
[1]Politecnico di Milano, Italy; [2]IRCCS Policlinico San Donato, San Donato Milanese, Italy

ESB2021_1489-Impact of computational modeling strategies on patient-specific TAVI simulations-1489.pdf

NITINOL STENT OVERSIZING IN PATIENT-SPECIFIC FEMORAL ARTERIES: AN EXPERIMENTAL AND FINITE ELEMENT STUDY

M. Bernini[1,3], M. Colombo[2], L. Antonini[2], C. Dunlop[3], R. Hellmuth[3], C. Chiastra[2,4], W. Ronan[1], T. J. Vaughan[1]
[1]Biomechanics Research Centre (BMEC), School of Engineering and Informatics, National University of Ireland Galway (Ireland); [2]LaBS, Dept. Chem., Materials and Chem. Eng., Politecnico di Milano (Italy; [3]Vascular Flow Technologies, Dundee (UK); [4]PoliToBIOMed Lab, Dept. Mechanical and Aerospace Engineering, Politecnico di Torino (Italy)

ESB2021_1505-NITINOL STENT OVERSIZING IN PATIENT-SPECIFIC FEMORAL ARTERIES-1505.pdf

PATIENT-SPECIFIC PROSTHETIC AORTIC VALVE: A HIGH-FIDELITY APPROACH TO REDUCE SIMULATION TIME

L. Geronzi[1,2], E. Gasparotti[1,2], C. Groth[3], U. Cella[3], M. E. Biancolini[3], S. Celi[1]
[1]BioCardioLab, Bioengineering Unit, Fondazione Toscana "G. Monasterio", Heart Hospital, Massa, Italy; [2]Department of Information Engineering, University of Pisa, Pisa, Italy; [3]Department of Enterprise Engineering, University of Rome Tor Vergata, Roma, Italy

ESB2021_1577-PATIENT-SPECIFIC PROSTHETIC AORTIC VALVE-1577_a.pdf

Towards Accurate and Efficient Simulations of Positive Displacement Artifical Hearts

J. Bornoff[1], N. Singh[1], M. Carnarius[1], R. Gill[1], A. Najar[2], I. L. Pieper[2], A. Cookson[1], K. Fraser[1]
[1]University of Bath, United Kingdom; [2]Scandinavian Real Heart AB, Sweden

ESB2021_1639-Towards Accurate and Efficient Simulations of Positive Displacement Artifical Hearts-1639.pdf

Approaches to the virtual flow-diverter device deployment and the forecasting its possible complications

D. Tikhvinskii[1], I. Kuianova[2], D. Kislitsyn[3], K. Orlov[3], D. Parshin[2]
[1]Novosibirsk State University, Russian Federation; [2]Lavrentyev Institute of Hydrodynamics, Russian Federation; [3]Meshalkin Research Centre of Circulation Pathology, Russian Federation

ESB2021_1675-Approaches to the virtual flow-diverter device deployment and the forecasting its possible.pdf

AN INVERSE ELASTOSTATIC ALGORITHM WITH EXACT LINEARIZATION TO DETERMINE UNLOADED VASCULAR GEOMETRY IN ANISOTROPIC VACULAR TISSUE

B. Fantaci, C. Franceschelli, G. Luraghi, J. F. Rodriguez Matas
Politecnico di Milano, Italy

ESB2021_1331-AN INVERSE ELASTOSTATIC ALGORITHM WITH EXACT LINEARIZATION-1331.pdf

9:30am - 10:45am

Hard-Tissue.5: Hard tissue biomechanics

Session Chair: **David Mitton**

https://teams.microsoft.com/l/channel/19%3a51d82a4df16b420a9568e8c8b035296e%40thread.tacv2/TR14_Hard%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: NOVEL DEVELOPMENTS IN EXPERIMENTAL MICROMECHANICS AND THEIR APPLICATION TO MINERALIZED TISSUES

J. Schwiedrzik
Empa, Switzerland

ESB2021_365-PT NOVEL DEVELOPMENTS IN EXPERIMENTAL MICROMECHANICS AND THEIR APPLICATION-365.pdf

PATIENT- SPECIFIC MULTISCALE MODELING OF A NORMAL GAIT CYCLE: STRAIN DISTRIBUTION IN FEMORAL NECK

Z. Altai[1,2], E. Montefiori[1,2], B. van Veen[1,2], M. Paggiosi[1,3], E. V. McCloskey[1,3], M. Viceconti[4,5], C. Mazzà[1,2], X. Li[1,2]
[1]INSIGNEO Institute for in silico medicine, The University of Sheffield, UK; [2]Department of Mechanical Engineering, The University of Sheffield, UK; [3]Mellanby Centre for Bone Research, Department of Oncology and Metabolism, The University of Sheffield, UK; [4]Laboratorio di Tecnologia Medica, IRCCS Istituto Ortopedico Rizzoli, Italy; [5]Department of Industrial Engineering, Alma Mater Studiorum, University of Bologna, Italy

ESB2021_1285-PATIENT- SPECIFIC MULTISCALE MODELING OF A NORMAL GAIT CYCLE-1285.pdf

EFFECT OF MGP PROTEIN ON MURINE BONE : A COMBINED MORPHOLOGICAL AND BIOMECHANICAL INVESTIGATION

C. LAURENT[1], A. MARANO[2], A. BALDIT[1], M. FERRARI[3], O. PERROUD[1], J.-C. PERRIN[3], A. BIANCHI[2], H. KEMPF[2]
[1]CNRS UMR 7239 LEM3 - Université de Lorraine, Vandœuvre-lès-Nancy, France; [2]CNRS UMR 7365 IMoPA - Université de Lorraine, Vandœuvre-lès-Nancy, France; [3]CNRS UMR 7563 LEMTA - Université de Lorraine, Vandœuvre-lès-Nancy, France

ESB2021_1552-EFFECT OF MGP PROTEIN ON MURINE BONE-1552.pdf

A MOLECULAR DYNAMICS INVESTIGATION INTO THE STRUCTURAL ROLE OF NON-COLLAGENOUS PROTEINS IN BONE BIOMECHANICS

M. Tavakol, T. Vaughan
National University of Ireland, Galway, Ireland

ESB2021_1678-A MOLECULAR DYNAMICS INVESTIGATION INTO THE STRUCTURAL ROLE-1678.pdf

CHARACTERISATION OF CRANIAL BONE MORPHOLOGY AND MECHANICS IN INFANTS WITH CRANIOSYNOSTOSIS

S. Ajami[1,2], N. Rodriguez-Florez[3,4], J. Ong[2], G. James[2], N U O. Jeelani[2], D. Dunaway[2], P. Ferretti[1], S. Schievano[1,2], A. Borghi[1,2]
[1]University College London, United Kingdom; [2]Great Ormond Street Hospital, London, United Kingdom; [3]Ikerbasque, Spain; [4]Universidad de Navarra, Spain

ESB2021_1575-CHARACTERISATION OF CRANIAL BONE MORPHOLOGY AND MECHANICS-1575.pdf

Bone mechanoregulation allows subject-specific in vivo estimation of microstructural tissue loading history

M. Walle[1], F. C. Marques[1], N. Ohs[1], M. Blauth[2], R. Müller[1], C. J. Collins[1]
[1]Institute for Biomechanics, ETH Zurich, Switzerland; [2]Department for Trauma Surgery, Innsbruck University Hospital, Austria

ESB2021_1394-Bone mechanoregulation allows subject-specific in vivo estimation-1394.pdf

9:30am - 10:45am

IST.2: In silico trials and clinical biomechanics

Session Chair: **Marco Viceconti**

https://teams.microsoft.com/l/channel/19%3a4ac5d81a695a4a4789f6d5248c68bd87%40thread.tacv2/TR21_In%2520Silico%2520trials%2520and%2520Clinical%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: MODELLING STROKE AND STROKE TREATMENT, PAVING THE WAY FOR IN-SILICO STROKE TRIALS

A. Hoekstra[1], C. Majoie[2]
[1]University of Amsterdam, Netherlands, The; [2]Amsterdam University Medical Centers

ESB2021_106-PT MODELLING STROKE AND STROKE TREATMENT, PAVING THE WAY-106.pdf

Development of a low dimensional parametric model of high-fidelity virtual intra-arterial thrombectomy

S. Bridio[1], G. Luraghi[1], M. Belloni[1], A. García-González[2], S. Pant[3], F. Migliavacca[1], J. F. Rodriguez Matas[1]
[1]Politecnico di Milano, Italy; [2]Universitat Politècnica de Catalunya-BarcelonaTech, Spain; [3]Swansea University, Wales, UK

ESB2021_1506-Development of a low dimensional parametric model of high-fidelity virtual intra-arterial_a.pdf

A PIPELINE FOR IN SILICO PREDICTION OF CORONARY STENTING SHORT TERM OUTCOMES

L. Antonini[1], G. Poletti[1], F. Berti[1], P. Tsompou[2], A. Sakellarios[2], G. Karanasiou[2], D. Fotiadis[2], G. Pennati[1], L. Petrini[3]
[1]aBS – Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Milan, Italy; [2]Dept. of Biomedical Research, FORTH-IMBB, GR 45110 Ioannina, Greece; [3]Dept. of Civil and Environmental Engineering, Politecnico di Milano, Milan, Italy

ESB2021_1658-A PIPELINE FOR IN SILICO PREDICTION OF CORONARY STENTING SHORT TERM OUTCOMES-1658.pdf

CLINICAL VALIDATION FOR REGULATORY QUALIFICATION OF IN SILICO TRIALS METHODOLOGIES

M. Viceconti, G. Davico, C. Curreli, A. La Mattina
Alma Mater Studiorum - University of Bologna, and Medical Technology Lab, IRCCS Istituto Ortopedico Rizzoli, Italy

ESB2021_1235-CLINICAL VALIDATION FOR REGULATORY QUALIFICATION OF-1235.pdf

Towards in silico phase III clinical trials for osteoporosis drugs: cohort expansion with anatomic statistical atlas

A. A. La Mattina[1,2], M. Taylor[3], F. Baruffaldi[2], M. Viceconti[1,2]
[1]Department of Industrial Engineering, Alma Mater Studiorum - University of Bologna, Italy; [2]Medical Technology Lab, IRCCS Istituto Ortipedico Rizzoli, Bologna, Italy; [3]Medical Device Research Institute, Flinders University, Adelaide, Australia

ESB2021_1571-Towards in silico phase III clinical trials for osteoporosis drugs-1571.pdf

REPORTING AND STANDARDISATION OF PLATE WORKING LENGTH (BRIDGE SPAN) IN FRACTURE HEALING STUDIES

M. Heyland[1], G. Russow[1,2], L. Becker[1,2], G. N. Duda[1], D. Wulsten[1], K. Schmidt-Bleek[1], R. Seemann[2], S. Märdian[2]
[1]Julius Wolff Institut, Charité – Universitätsmedizin, Berlin, Germany; [2]Center for Musculoskeletal Surgery, Charité – Universitätsmedizin, Berlin, Germany

ESB2021_1247-REPORTING AND STANDARDISATION OF PLATE WORKING LENGTH-1247.pdf

9:30am - 10:45am

Mechano.4: Mechanobiology

Session Chair: **Maurizio Pesce**

https://teams.microsoft.com/l/channel/19%3af07b298ef3034459a8476de6ec152fe6%40thread.tacv2/TR06_Mechanobiology?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

IMAGE-BASED ANALYSIS OF FLOW-INDUCED STRAIN ON THE OSTEOCYTE PROCESS VIA TETHERING ELEMENTS

Y. Yokoyama[1], Y. Kameo[1,2], T. Adachi[1,2]
[1]Department of Micro Engineering, Graduate School of Engineering, Kyoto University, Japan; [2]Institute for Frontier Life and Medical Sciences, Kyoto University, Japan

ESB2021_1353-IMAGE-BASED ANALYSIS OF FLOW-INDUCED STRAIN ON THE OSTEOCYTE PROCESS VIA TETHERING ELEMENTS-1353.pdf

EFFECT OF FLUID FLOW RATE AND DROPLET SIZE ON SPATIAL AEROSOL DISTRIBUTION DURING PRESSURIZED INTRAPERITONEAL AEROSOL CHEMOTHERAPY (PIPAC)

M. Rahimi Gorji[1,2,3], G. Ghorbaniasl[4], S. Cosyns[1,3], W. Willaert[1,3], W. Ceelen[1,3], C. Debbaut[1,3]
[1]Laboratory for Experimental Surgery, Department of Human Structure and Repair, Ghent University, Belgium; [2]IBiTech – bioMMeda, Ghent University, Ghent, Belgium; [3]CRIG – Cancer Research Institute Ghent, Belgium; [4]Vrije Universiteit Brussel (VUB), Brussels, Belgium

ESB2021_1435-EFFECT OF FLUID FLOW RATE AND DROPLET SIZE ON SPATIAL AEROSOL DISTRIBUTION DURING PRESSURIZED_a.pdf

The missing link in Frost's mechanostat: Direct relationship between local strain and cortical adaptation in the mouse tibia

E. I. M. Pickering, P. Pivonka
Queensland University of Technology, Australia

ESB2021_1499-The missing link in Frost's mechanostat-1499.pdf

NANOMECHANICAL FINGER-PRINTS OF SOLID TUMORS AS A TREATMENT MONITORING BIOMARKER

A. Stylianou[1,2], C. Voutouri[1], F. Mpekris[1], T. Stylianopoulos[1]
[1]Univercity of Cyprus, Cyprus; [2]European University Cyprus, Cyprus

ESB2021_1602-NANOMECHANICAL FINGER-PRINTS OF SOLID TUMORS AS A TREATMENT MONITORING BIOMARKER-1602.pdf

Clutch model implementation for residual stresses in ECM

V. Panzetta[1], C. De Clemente[1], S. Fusco[2], P. A. Netti[1]
[1]Università degli Studi di Napoli, Federico II, Italy; [2]Università degli Studi del Molise, Campobasso, Italy

ESB2021_1645-Clutch model implementation for residual stresses-1645.pdf

Collective mechanosensing in infected cell cultures

F. Serrano-Alcalde[1], M. J. Gómez-Benito[1], P. Radhakrishnan[2], J. A. Theriot[2], E. E. Bastounis[2], J. M. García-Aznar[1]
[1]Aragón Institute of Engineering Research (I3A), University of Zaragoza, Spain; [2]Department of Biology and Howard Hughes Medical Institute, University of Washington, USA

ESB2021_1690-Collective mechanosensing in infected cell cultures-1690.pdf

VERSATILE BIOREACTOR COMBINING PERFUSION AND PEMF STIMULATION FOR BONE MECHANOBIOLOGY RESEARCH

B. Masante[1], S. Gabetti[1], A. Cochis[2], G. Putame[1], E. Fiume[3], I. Armando[1], A. Sanginario[4], F. Baino[3], L. Rimondini[2], E. Vernè[3], C. Bignardi[1], D. Massai[1]
[1]PolitoBIOMed Lab, Dept. of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Dept. of Health Sciences, CAAD, University of Piemonte Orientale, Italy; [3]Dept. of Applied Science and Technology, Politecnico di Torino, Italy; [4]Dept. of Electronics and Telecommunications, Politecnico di Torino, Italy

ESB2021_1701-VERSATILE BIOREACTOR COMBINING PERFUSION AND PEMF STIMULATION-1701.pdf

9:30am - 10:45am

Orth-meth.3: Computational methods for orthopaedic applications

Session Chair: **Dennis Janssen**

https://teams.microsoft.com/l/channel/19%3a0ab6907d523640f29f1b501dd6cbece7%40thread.tacv2/TR13_CompMethods%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

THE INFLUENCE OF CORONAL SPLITS OF COMPLEX TIBIAL PLATEAU FRACTURES ON IMPLANT STRESS DISTRIBUTIONS

S. Samsammi[1,2], S. Herrmann[3,4], R. Pätzold[3,5], M. Winkler[3], P. Augat[3,4]
[1]Department of Mechanical Engineering, Imperial College London, South Kensington Campus, London, UK; [2]Department of Orthopaedics, Physical Medicine and Rehabilitation, University Hospital, LMU Munich, Munich, Germany; [3]Institute for Biomechanics, Berufsgenossenschaftliche Unfallklinik, Murnau, Germany; [4]Institute of Biomechanics, Paracelsus Medical University, Austria; [5]Department of Trauma Surgery, Trauma Center Murnau, Murnau, Germany

ESB2021_1191-THE INFLUENCE OF CORONAL SPLITS OF COMPLEX TIBIAL PLATEAU FRACTURES-1191_a.pdf

PREDICTION OF SCREW PERFORATION IN THE PROXIMAL HUMERUS USING MICRO FINITE ELEMENT ANALYSES

V. C. Panagiotopoulou[1,2], M. Ovesy[3], B. Gueorguiev[1], G. Richards[1], P. Zysset[3], P. Varga[1]
[1]AO Research Institute Davos, Switzerland; [2]University of Patras, Greece; [3]University of Bern, Switzerland

ESB2021_1468-PREDICTION OF SCREW PERFORATION IN THE PROXIMAL HUMERUS USING MICRO FINITE ELEMENT ANALYSES-1468.pdf

The influence of implant alignment on bone strain in total ankle replacement: An FE Study

B. Halcrow, R. K Wilcox, C. L Brockett
University of Leeds, United Kingdom

ESB2021_1476-The influence of implant alignment on bone strain-1476.pdf

INTER-OPERATOR VARIABILITY IN A FINITE ELEMENT MODEL OF FEMURS WITH AND WITHOUT SIMULATED METASTATIC DEFECTS

A. Levillain[1], M. Gardegaront[2], S. Ali Agha[1], F. Bermond[2], D. Mitton[2], H. Follet[1]
[1]Univ Lyon, Université Claude Bernard Lyon 1, INSERM, LYOS UMR 1033, 69008 Lyon, France; [2]Univ Lyon, Université Claude Bernard Lyon 1, Univ Eiffel, LBMC UMR_T9406, 69622 Lyon, France

ESB2021_1526-INTER-OPERATOR VARIABILITY IN A FINITE ELEMENT MODEL-1526.pdf

CONTRALATERAL IS NOT A CONTROL: AN IN VIVO HR-PQCT MICRO-FE STUDY OF HAND DOMINANCE IN THE HEALING DISTAL RADIUS

C. J. Collins[1], P. R. Atkins[1], N. Ohs[1], L. Horling[2], K. Stock[2], P. Christen[3], M. Blauth[2], R. Müller[1]
[1]Institute for Biomechanics, ETH Zurich, Switzerland; [2]Department for Trauma Surgery, Innsbruck University Hospital, Austria; [3]Institute for Information Systems, FHNW, Switzerland

ESB2021_1542-CONTRALATERAL IS NOT A CONTROL-1542.pdf

REDUCED TRABECULAR BONE GROWTH IN AN ADOLESCENT FEMALE CYSTIC FIBROSIS RAT MODEL

M. Awadalla[1], E. Perilli[1], S. Martelli[1], K. Morgan[2], M. Kitchen[2], P. Cmielewski[3,4], A. McCarron[3,4], D. Parson[3,4], M. Donnelley[3,4]
[1]Medical device research institute, College of Science and Engineering, Flinders University, Australia; [2]School of Physics and Astronomy, Monash University, Australia; [3]Robinson Research Institute, University of Adelaide, Australia; [4]Adelaide Medical School, University of Adelaide, Australia

ESB2021_1650-REDUCED TRABECULAR BONE GROWTH IN AN ADOLESCENT FEMALE CYSTIC FIBROSIS RAT MODEL-1650.pdf

Stress Analysis of a Vertebra Using Artificial Neural Networks and Mesh Morphing

C. A. James[1,2], M. Masmoudi[1,3], K. Bashtova[1], L. Guo[2]
[1]ADAGOS, France; [2]The University of Sheffield, UK; [3]Toulouse Institute of Mathematics, France

ESB2021_1684-Stress Analysis of a Vertebra Using Artificial Neural Networks and Mesh Morphing-1684.pdf

9:30am - 10:45am

Reproduct.2: Reproductive biomechanics

Session Chair: **Emanuele Luigi Carniel**

https://teams.microsoft.com/l/channel/19%3a049b3eb26b1b4e6da3d33f29cb657d38%40thread.tacv2/TR30_Reproductive%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Biomechanics of Early Human Life

D. Elad
Tel Aviv University, Israel

ESB2021_192-PT Biomechanics of Early Human Life-192.pdf

Insights into pelvic floor muscle biomechanics using a novel intra-vaginal pressure sensor device (femfit®)

L. Pedofsky[1], D. Budgett[1], P. M. F. Nielsen[1,2], H. Orr[1], J. Kruger[1]
[1]Auckland Bioengineering Institute, University of Auckland, New Zealand; [2]Department of Engineering Science, University of Auckland, New Zealand

ESB2021_1870-Insights into pelvic floor muscle biomechanics using a novel intra-vaginal pressure sensor.pdf

Fibre Reorientation and Stiffness Influence of a Maylard Uterine Scar during a Vaginal Birth After Caesarean

D. Fidalgo[1,2], M. Vila Pouca[1,2], D. Oliveira[1,2], R. Natal[1,2], M. Parente[1,2], K. Myers[3], E. Malanowska[4]
[1]INEGI - Instituto de Ciência e Inovação em Engenharia Mecânica e Engenharia Industrial, Portugal; [2]DEMec, Faculty of Engineering of University of Porto, Porto, Portugal;; [3]Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, USA; [4]Department of Gynaecology, Endocrinology and Gynaecologic Oncology, Pomeranian Medical University, Szczecin, Poland

ESB2021_1323-Fibre Reorientation and Stiffness Influence of a Maylard Uterine Scar during a Vaginal Birth.pdf

Mechanotransduction in Early Embryonic Biochemical / Biomechanical Patterning and Ancient Metazoan Endomesoderm Evolutionary Emergence

E. Farge
CNRS, UMR168, Institut Curie, France
ESB2021_1871-Mechanotransduction in Early Embryonic Biochemical Biomechanical Patterning and Ancient.pdf

CAN CYCLIC LOADING WEAKEN THE ORIGIN OF THE OVINE PUBOVISCERAL MUSCLE?

M. C. Vila Pouca[1,2], M. P. Parente[1,2], R. M. Natal Jorge[1,2], J. A. Ashton-Miller[3]
[1]Faculty of Engineering of University of Porto, Portugal; [2]Institute of Science and Innovation, Portugal; [3]Department of Mechanical Engineering, University of Michigan, USA
ESB2021_1202-CAN CYCLIC LOADING WEAKEN THE ORIGIN OF THE OVINE PUBOVISCERAL MUSCLE-1202.pdf

ASSESSMENT OF SPROUTING ANGIOGENESIS IN SILICO

A. Guerra[1], J. Belinha[2], N. Mangir[3,4], S. MacNeil[3], R. Natal Jorge[1,5]
[1]INEGI, Portugal; [2]ISEP, Portugal; [3]Kroto Research Institute, UK; [4]Hacettepe University School of Medicine, Turkey; [5]FEUP, Portugal
ESB2021_1309-ASSESSMENT OF SPROUTING ANGIOGENESIS IN SILICO-1309.pdf

9:30am - 10:45am **TM-Meth.2: Computational methods in tissue mechanics**
Session Chair: **Giuseppe Vairo**
https://teams.microsoft.com/l/channel/19%3a8f97a330e4e34ccebb7a9fe5ff82ea30%40thread.tacv2/TR16_CompMethods%2520in%2520Tissue%2520mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

ANGIOGENESIS SIGNIFICANCE DURING OSTEOPHYTES EVOLUTION

E. I. Bednarczyk, T. Lekszycki
Warsaw University of Technology, Faculty of Production Engineering, Institute of Mechanics and Printing, Poland
ESB2021_1179-ANGIOGENESIS SIGNIFICANCE DURING OSTEOPHYTES EVOLUTION-1179.pdf

In-silico modelling of the combined effect of anti-angiogenic treatment and metronomic chemotherapy

M. Hadjicharalambous[1], E. Ioannou[1], V. Vavourakis[1,2]
[1]University of Cyprus, Cyprus; [2]University College London, United Kingdom
ESB2021_1264-In-silico modelling of the combined effect of anti-angiogenic treatment and metronomic.pdf

MATHEMATICAL MODELING OF CORTICAL TO CANCELLUS BONE TRANSFORMATION BY REMODELING

Y. Kameo, N. Sakano, T. Adachi
Kyoto University, Japan
ESB2021_1389-MATHEMATICAL MODELING OF CORTICAL TO CANCELLUS BONE TRANSFORMATION-1389.pdf

Computational study of surface-based cellular structures for bone tissue engineering

R. Asbai-Ghoudan[1], S. Ruiz de Galarreta[1], M. Á. Pérez[3], P. S. P. Poh[4], N. Rodriguez-Florez[1,2]
[1]University of Navarra, Spain; [2]IKERBASQUE, Spain; [3]University of Zaragoza, Spain; [4]Charité - Universitätsmedizin Berlin, Germany
ESB2021_1508-Computational study of surface-based cellular structures-1508.pdf

COMMBINI: COmputational Mechanobiological Model of Bone INjury Immunoresponse

E. Borgiani[1,2], L. Lafuente Gracia[1], L. Geris[1,2]
[1]Biomechanics section, Department of Mechanical Engineering, KU Leuven, Belgium; [2]GIGA in silico medicine, Biomechanics Research Unit, University of Liège, Belgium
ESB2021_1800-COMMBINI-1800.pdf

Computational analysis of quasi-brittle failure of femurs via a non-local damage formulation

P. Gaziano[1], C. Falcinelli[2], E. Monaldo[3], G. Vairo[1]
[1]University of Rome "Tor Vergata", 00133 Rome, Italy; [2]Campus Bio-Medico University of Rome, 00128 Rome, Italy; [3]Roma Tre University, 00146 Rome, Italy
ESB2021_1204-Computational analysis of quasi-brittle failure of femurs via a non-local damage formulation-1204.pdf

10:45am - 11:00am **break-d3-1: Break**

11:00am - 12:15pm **Biomat.3: Biomaterials**
Session Chair: **Silvia Farè**
https://teams.microsoft.com/l/channel/19%3aabf41579f20e4eaeb1dd086f63dac6e9%40thread.tacv2/TR27_Biomaterials?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Design of a novel bioink suitable for the 3D printing of lymphoid cells

D. Ribezzi[1], F. Barbaglio[1], R. Pinos[1], L. Bonetti[2], S. Farè[2], C. Scielzo[1]
[1]Unit of Malignant B Cell Biology and 3D Modeling, Division of Experimental Oncology, IRCCS Ospedale San Raffaele, Milano, Italy; [2]Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Milano, Italy
ESB2021_1716-Design of a novel bioink suitable for the 3D printing of lymphoid cells-1716.pdf

Reaction-diffusion models to predict hydrogel viscoelastic properties

N. Guazzelli, L. Cacopardo, G. Iommi, A. Ahluwalia
University of Pisa, Italy
ESB2021_1429-Reaction-diffusion models to predict hydrogel viscoelastic properties-1429.pdf

MECHANICAL PROPERTIES AND MICROSTRUCTURAL EVOLUTION OF BIODEGRADABLE POLYMERS

A. R. Abaei, T. J. Vaughan, W. Ronan
Biomechanics Research Centre & Biomedical Engineering, National University of Ireland Galway, Ireland
ESB2021_1479-MECHANICAL PROPERTIES AND MICROSTRUCTURAL EVOLUTION-1479.pdf

Modelling Finite Chain Extensibility in a Degrading Polymer

A. Hill[1], M. Destrade[2], W. Ronan[1]
[1]Biomechanics Research Centre, Biomedical Engineering, NUI Galway, Ireland; [2]School of Mathematics, Statistics and Applied Mathematics, NUI Galway, Ireland
ESB2021_1473-Modelling Finite Chain Extensibility in a Degrading Polymer-1473.pdf

The osmotic swelling potential in HydroSpacers can be used to create load-bearing cartilage implants

G. H. Schuiringa, K. Ito, C. C. van Donkelaar
Orthopaedic Biomechanics, Dept. Biomedical Engineering, Eindhoven University of Technology, The Netherlands
ESB2021_1270-The osmotic swelling potential in HydroSpacers can be used-1270.pdf

OPTIMIZING THE STRUCTURE OF NYLON 6,6 ELECTROSPUN BUNDLES TO MIMIC THE MECHANICS OF TENDON FASCICLES

A. Sensini[1], M. H. Santare[2,3], E. Eichenlaub[3], E. Bloom[3], C. Gotti[4], A. Zucchelli[1,4], F. Zoli[4], M. V. Ricioppo[4], L. Cristofolini[4,5]
[1]CIRI-MAM, University of Bologna, Italy; [2]Department of Mechanical Engineering, University of Delaware, USA; [3]Department of Biomedical Engineering, University of Delaware, USA; [4]Department of Industrial Engineering, University of Bologna, Italy; [5]CIRI-HST, University of Bologna, Italy

ESB2021_1289-OPTIMIZING THE STRUCTURE OF NYLON 6,6 ELECTROSPUN BUNDLES-1289.pdf

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11:00am - 12:15pm

CV-Imag.2: Imaging for cardiovascular applications

Session Chair: **Frank Gijsen**

https://teams.microsoft.com/l/channel/19%3ae2e5fe20a93440b288ba1568882a6375%40thread.tacv2/TR03_Imaging%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Non-invasive quantitative virtual 3D histology of the heart

C. Pestiaux[1,2], G. Kerckhofs[1,2,3,4]
[1]Institute of Mechanics, Materials, and Civil Engineering, UCLouvain, Belgium; [2]Institute of Experimental and Clinical Research, UCLouvain, Belgium; [3]Dept. Materials Science and Engineering, KU Leuven, Belgium; [4]Prometheus, Division of Skeletal Tissue Engineering, KU Leuven, Belgium

ESB2021_1829-Non-invasive quantitative virtual 3D histology of the heart-1829.pdf

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Cardiac cine-MRI processing: from 3D shape and motion reconstruction to computational hemodynamics

M. Fedele[1], I. Fumagalli[1], G. Pase[2], C. Vergara[1], L. Dede'[1], S. Ippolito[3], R. Scrofani[3], A. Quarteroni[1,4]
[1]Politecnico di Milano, Italy; [2]University of Groningen, Netherlands; [3]Ospedale Sacco, Italy; [4]École polytechnique fédérale de Lausanne, Switzerland

ESB2021_1516-Cardiac cine-MRI processing-1516.pdf

3D directional filters to improve collagen second harmonic generated images

Z. Nejim, L. Navarro, P. Badel, C. Morin
Ecole des Mines de Saint Etienne, France

ESB2021_1363-3D directional filters to improve collagen second harmonic generated images-1363.pdf

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Towards including the intraluminal thrombus in patient-specific models of AAAs based on 4-D ultrasound

A. Nievergeld, E. Maas, J. de Ruijter, F. van de Vosse, M. van Sambeek, R. Lopata
University of Technology Eindhoven, Netherlands, The

ESB2021_1536-Towards including the intraluminal thrombus in patient-specific models-1536.pdf

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AUTOMATED GEOMETRIC ANALYSIS OF PULMONARY ARTERIES FROM COMPUTED TOMOGRAPHY PULMONARY ANGIOGRAPHY

J. Clark[1], J. Rossdale[2], P. Charters[2], R. Mackenzie Ross[2], J. Suntharalingam[1,2], J. Rodrigues[2], A. Cookson[1]
[1]University of Bath, United Kingdom; [2]Royal United Hospitals Bath, United Kingdom

ESB2021_1823-AUTOMATED GEOMETRIC ANALYSIS OF PULMONARY ARTERIES-1823.pdf

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3D VARIATIONAL DATA ASSIMILATION OF 4D FLOW MRI IN COMPUTATIONAL HEMODYNAMICS OF INTRACRANIAL ANEURYSM

R. Munafò[1], S. Saitta[1], A. Caimi[1], A. Sanches[2], T. Liebig[2], A. Redaelli[1]
[1]Politecnico di Milano, Italy; [2]University Hospital LMU Munich, Germany

ESB2021_1252-3D VARIATIONAL DATA ASSIMILATION OF 4D FLOW MRI IN COMPUTATIONAL HEMODYNAMICS OF INTRACRANIAL.pdf

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A NOVEL TOOL FOR THE ASSESSMENT OF ENDOCARDIAL DEFORMATION STARTING FROM 3D ECHOCARDIOGRAPHY

M. Frigelli[1,2], F. Sturla[1,2], M. Citarella[1], L. Menicanti[1], S. Castelvecchio[1], E. Votta[2,1]
[1]IRCCS Policlinico San Donato, San Donato Milanese, Italy; [2]Politecnico di Milano, Milan, Italy

ESB2021_1384-A NOVEL TOOL FOR THE ASSESSMENT OF ENDOCARDIAL DEFORMATION STARTING-1384.pdf

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11:00am - 12:15pm

CV-Impl.5: Implants and devices for cardiovascular applications

Session Chair: **Liguo Zhao**

https://teams.microsoft.com/l/channel/19%3ad29cbbb044b543f58199d8f1a24724a4%40thread.tacv2/TR02_Implants%2520and%2520Devices%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

THE USE OF ETCHING TO OVERCOME DESIGN RESTRICTIONS OF THE SLM TECHNIQUE WHEN 3D PRINTING TITANIUM STENTS

O. McGee[1,2], S. Geraghty[1,2,5], P. Jamshidi[3], D. Kenny[4], M. Attallah[3], C. Lally[1,2,5]
[1]Trinity Centre for Biomedical Engineering, Trinity Biomedical Sciences Institute, Trinity College Dublin, Dublin, Ireland; [2]Department of Mechanical, Manufacturing & Biomedical Engineering, School of Engineering, Trinity College Dublin, Dublin, Ireland; [3]School of Metallurgy & Materials, University of Birmingham, Birmingham, B15 2TT, United Kingdom; [4]Children's Health Ireland at Crumlin, Dublin, Ireland.; [5]Advanced Materials and Bioengineering Research Centre (AMBER), Royal College of Surgeons in Ireland and Trinity College Dublin, Dublin, Ireland

ESB2021_1665-THE USE OF ETCHING TO OVERCOME DESIGN RESTRICTIONS OF THE SLM TECHNIQUE WHEN 3D PRINTING.pdf

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PHENOMENOLOGICAL APPROACH TO MODELLING THERMOPLASTIC POLYMERS FOR STENT APPLICATION

K. Schümann[1], W. Schmidt[1], C. Brandt-Wunderlich[2], D. Arbeiter[1], K.-P. Schmitz[1,2], N. Grabow[1]
[1]Institute for Biomedical Engineering, Rostock University Medical Center, Rostock, Germany; [2]Institute for ImplantTechnology and Biomaterials, Rostock, Germany

ESB2021_1413-PHENOMENOLOGICAL APPROACH TO MODELLING THERMOPLASTIC POLYMERS-1413.pdf

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COMPUTATIONAL FRAMEWORK INVESTIGATING THE MECHANICS OF BARE-METAL AND POLYMER-COVERED WIRE BRAIDED STENTS

C. McKenna, T. Vaughan
Biomedical Engineering, School of Engineering, National University of Ireland Galway

ESB2021_1444-COMPUTATIONAL FRAMEWORK INVESTIGATING THE MECHANICS-1444.pdf

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A COMPARATIVE STUDY OF THE MECHANICAL PERFORMANCE OF NITI AND BIORESORBABLE PLLA BRAIDED STENTS

A. Lucchetti[1], T. J. Vaughan[2], T. Gries[1]
[1]Institut für Textiltechnik, RWTH Aachen University, Aachen, Germany; [2]Biomechanics Research Centre (BMEC), School of Engineering, National University of Ireland Galway, Ireland

ESB2021_1503-A COMPARATIVE STUDY OF THE MECHANICAL PERFORMANCE OF NITI AND BIORESORBABLE PLLA BRAIDED.pdf

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MANUFACTURING, CHARACTERIZATION AND TESTING OF ADDITIVELY MANUFACTURED 316L STAINLESS STEEL STENTS

E. Langi[1], P. Jamshidi[2], M. Atttallah[2], V. Silberschmidt[1], H. Wilcock[3], F. Vogt[4], L. Zhao[1]
[1]Wolfson School, Loughborough University, United Kingdom; [2]University of Birmingham; [3]Department of Materials, Loughborough University; [4]Medical Clinic I, RWTH University Hospital Aachen

ESB2021_1416-MANUFACTURING, CHARACTERIZATION AND TESTING OF ADDITIVELY MANUFACTURED 316L STAINLESS STEEL.pdf

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Laser Surface Texturing of 316 Stainless Steel for Stent Applications

J. Dong, P. Ghosh, M. Pacella, L. Zhao
Loughborough University, United Kingdom

ESB2021_1441-Laser Surface Texturing of 316 Stainless Steel for Stent Applications-1441.pdf

A Lumped Parameter Design Tool for Fontan Turbine-Pump Couple: iATVA

C. Yildirim[1], I. B. Aka[1], R. Turkoz[2], H. Erturk[3], K. Pekkan[4]
[1]Istanbul Bilgi University, Turkey; [2]Acibadem University, Turkey; [3]Bogazici University, Turkey; [4]Koc University, Turkey

ESB2021_1540-A Lumped Parameter Design Tool for Fontan Turbine-Pump Couple-1540.pdf

11:00am - 12:15pm

CV-Meth.5: Computational methods for cardiovascular applications

Session Chair: **Simona Celi**

https://teams.microsoft.com/l/channel/19%3af7d78c3c31894881a6fd6019be2f1ce2%40thread.tacv2/TR04_CompMethods%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Deep learning to estimate the arterial straightening induced by stiff guidewires during EVAR

A. Fantazzini[1,2,3], M. Conti[2], C. Basso[3], G. Spinella[4]
[1]University Of Genoa, Italy; [2]University of Pavia, Italy; [3]Camelot Biomedical Systems S.r.l, Italy; [4]Vascular and Endovascular Surgery Unit, University of Genoa, Italy

ESB2021_1356-Deep learning to estimate the arterial straightening induced-1356.pdf

FINITE ELEMENT ANALYSIS OF A NOVEL PROCEDURE FOR THE MITRAL VALVE REPLACEMENT IN PEDIATRIC PATEINTS

A. Caimi[1], M. Arcangeli[1], M. Frigelli[2], F. Pluchinotta[2,1], F. Sturla[2,1], S. Castelvecchio[2], P. Hammer[3], A. Redaelli[1], P. Del Nido[3], E. Votta[1,2]
[1]Politecnico di Milano, Italy; [2]IRCCS Policlinico San Donato, San Donato Milanese, Italy; [3]Children's Hospital Boston, Boston, United States

ESB2021_1372-FINITE ELEMENT ANALYSIS OF A NOVEL PROCEDURE FOR THE MITRAL VALVE REPLACEMENT-1372.pdf

Blood flow simulations of moving single right ventricles in pediatric patients

A. Grünwald[1], J. Korte[1], N. Wilmanns[1], C. Winkler[2], K. Linden[2], U. Herberg[2], S. Groß-Hardt[1], U. Steinseifer[1], M. Neidlin[1]
[1]Department of Cardiovascular Engineering, Institute of Applied Medical Engineering, Helmholtz Institute, RWTH Aachen University, University Hospital Aachen, Germany; [2]Department of Pediatric Cardiology, University Hospital of Bonn, Germany

ESB2021_1423-Blood flow simulations of moving single right ventricles-1423.pdf

NUMERICAL MODELLING OF SELECTIVE INTERNAL RADIATION THERAPY FOR THE TREATMENT OF HEPATOCELLULAR CARCINOMA

E. Cutri[1], M. Mercuri[2], S. Touré[1], V. Morgenthaler[3], P.-A. Eliat[4], F. Lalys[2], A. Petit[2], A. Landreau[2], H. Saint-Jalmes[5], M. Rochette[3], Y. Rolland[5], J. Bezy Wendling[1]
[1]Université de Rennes 1, CHU Rennes, INSERM, LTSI - UMR 1099, F-35000 Rennes, France; [2]Therenva, France; [3]ANSYS France, France; [4]Biosit, CNRS, UMS 3480, Rennes, France; [5]Université de Rennes, CLCC Eugène Marquis, Inserm, LTSI - UMR 1099, F-35000 Rennes, France

ESB2021_1789-NUMERICAL MODELLING OF SELECTIVE INTERNAL RADIATION THERAPY-1789.pdf

In silico testing: the path from model development to validation for a complex innovative system

A. Zaccaria[1,2], D. Contassot[3], F. Heim[4,5], N. Chakfe[5,6], G. Pennati[1], F. Migliavacca[1], L. Petrini[7]
[1]LaBS, Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy; [2]Intellimech, Italy; [3]ID NEST MEDICAL SAS, France; [4]LPMT, Université de Haute-Alsace, France; [5]GEPROVAS, France; [6]University Hospital of Strasbourg, France; [7]Department of Civil and Environmental Engineering, Politecnico di Milano, Italy

ESB2021_1773-In silico testing-1773.pdf

A simulation framework to assess post-stenting carotid hemodynamics through immersed approach

G. M. Formato, M. Conti
University of Pavia, Italy

ESB2021_1651-A simulation framework to assess post-stenting carotid hemodynamics through immersed.pdf

An image-based computational fluid dynamics analysis of hypertrophic cardiomi

I. Fumagalli[1], M. Fedele[1], P. Vitullo[1], G. Pase[2], C. Vergara[3], L. Dede'[1], S. Ippolito[4], R. Scrofani[5], A. Quarteroni[1,6]
[1]MOX - Dipartimento di Matematica, Politecnico di Milano, Italy; [2]Bernoulli Instituut, Rijksuniversiteit Groningen, Netherlands; [3]LaBS - Dipartimento di Chimica, Materiali e Ingegneria Chimica "Giulio Natta", Politecnico di Milano, Italy; [4]Radiology Unit, L. Sacco Hospital, Milan, Italy; [5]Cardiac Surgery Unit, L. Sacco Hospital, Milan, Italy; [6]Institute of Mathematics, École Polytechnique Fédérale de Lausanne, Switzerland (Professor Emeritus)

ESB2021_1712-An image-based computational fluid dynamics analysis-1712.pdf

11:00am - 12:15pm

Hard-Tissue.6: Hard tissue biomechanics

Session Chair: **Philippe Zysset**

https://teams.microsoft.com/l/channel/19%3a51d82a4df16b420a9568e8c8b035296e%40thread.tacv2/TR14_Hard%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

COMPUTING THE ELASTIC PROPERTIES OF SINGLE HUMAN BONE LAMELLA BY HIERARCHICAL MULTISCALE APPROACH

H. Alijani, T. Vaughan
National University of Ireland Galway, Ireland

ESB2021_1867-COMPUTING THE ELASTIC PROPERTIES OF SINGLE HUMAN BONE LAMELLA-1867.pdf

INVESTIGATION OF MICROSCALE BONE ANISOTROPY BY POLARIZED RAMAN SPECTROSCOPY AND MICROPILLAR COMPRESSION

T. Kochetkova[1], C. Peruzzi[1], O. Braun[1], J. Overbeck[1,2], A. K. Maurya[1], A. Neels[1], M. Calame[1,2], J. Michler[1], P. Zysset[3], J. Schwiedrzik[1]
[1]Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; [2]Department of Physics & Swiss Nanoscience Institute, University of Basel, Switzerland; [3]ARTORG Center for Biomedical Engineering Research, University of Bern, Switzerland

ESB2021_1601-INVESTIGATION OF MICROSCALE BONE ANISOTROPY BY POLARIZED RAMAN SPECTROSCOPY AND MICROPILLAR_a.pdf

Multiscale homogenization and micromechanics of osteonal structures

G. Vairo[1], P. Gaziano[1], E. Monaldo[2], C. Falcinelli[3]
[1]University of Rome "Tor Vergata", 00133 Rome, Italy; [2]Roma Tre University, 00146 Rome, Italy; [3]Campus Bio-Medico University of Rome, 00128 Rome, Italy

ESB2021_1205-Multiscale homogenization and micromechanics of osteonal structures-1205.pdf

Heat impact during laser ablation extraction of mineralised tissue micropillars

S. McPhee[1], A. Groetsch[1], J. D. Shephard[2], U. Wolfram[1]
[1]Institute of Mechanical, Process and Energy Engineering, School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK; [2]Institute of Photonics and Quantum Sciences, School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK

ESB2021_1480-Heat impact during laser ablation extraction of mineralised tissue micropillars-1480.pdf

MICRO-SCALE CONSTITUTIVE MODEL OF HUMAN TRABECULAR BONE – PART 1: FORMULATION AND PARAMETER IDENTIFICATION

M. Pawlikowski, K. Jankowski

Warsaw University of Technology, Poland

ESB2021_1314-MICRO-SCALE CONSTITUTIVE MODEL OF HUMAN TRABECULAR BONE – PART 1-1314.pdf

MICRO-SCALE CONSTITUTIVE MODEL OF HUMAN TRABECULAR BONE – PART 2: MODEL IN SILICO VALIDATION

K. Jankowski, **M. Pawlikowski**
Warsaw University of Technology, Poland

ESB2021_1315-MICRO-SCALE CONSTITUTIVE MODEL OF HUMAN TRABECULAR BONE – PART 2-1315.pdf

MICROSCALE COMPRESSIVE BEHAVIOR OF HYDRATED LAMELLAR BONE AT HIGH STRAIN RATES

C. R. P. Peruzzi[1], **R. Ramachandramoorthy**[1], **A. Groetsch**[1], **D. Casari**[1], **P. Grönquist**[2,3], **M. Rüggeberg**[2,3], **J. Michler**[1], **J. Schwiedrzik**[1]
[1]Empa, Laboratory for Mechanics of Materials and Nanostructures, Thun, Switzerland; [2]Empa, Laboratory for Cellulose and Wood Materials, Duebendorf, Switzerland; [3]Institute for Building Materials, ETH Zurich, Switzerland

ESB2021_1403-MICROSCALE COMPRESSIVE BEHAVIOR OF HYDRATED LAMELLAR BONE-1403.pdf

11:00am - 12:15pm

IST.3: In silico trials and clinical biomechanics

Session Chair: **Jerome Noailly**

https://teams.microsoft.com/l/channel/19%3a4ac5d81a695a4a4789f6d5248c68bd87%40thread.tacv2/TR21_In%2520Silico%2520trials%2520and%2520Clinical%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

A FINITE ELEMENT MODELLING FRAMEWORK TO PREDICT SPRING ASSISTED POSTERIOR VAULT EXPANSION OUTCOMES

L. Delièg[1,2], **S. Bozkurt**[1,2], **K. Ramdat Misier**[1,2], **W. Breakey**[2], **G. James**[2], **J. Ong**[2], **D. Dunaway**[2], **N U O. Jeelani**[2], **S. Schievano**[1,2], **A. Borghi**[1,2]
[1]University College of London, United Kingdom; [2]Great Ormond Street Hospital, London, United Kingdom

ESB2021_1561-A FINITE ELEMENT MODELLING FRAMEWORK TO PREDICT SPRING ASSISTED POSTERIOR VAULT EXPANSION_a.pdf

PAIN CATASTROPHISM AND GAIT COORDINATION IN TOTAL KNEE REPLACEMENT DECISION MAKING

S. Tassani[1], **L. Tio**[2], **F. Castro-Dominguez**[2,3], **J. Monfort**[2,3], **J. C. Monllau**[2,4], **M. A. GONZALEZ BALLESTER**[1,5], **J. Noailly**[1]
[1]Bcn Medtech - Upf, Spain; [2]IMIM, Barcelona, Spain; [3]Rheumatology Department, Hospital del Mar, Barcelona, Spain; [4]Orthopedic Surgery and Traumatology Department, Hospital del Mar, Barcelona, Spain; [5]ICREA, Barcelona, Spain

ESB2021_1604-PAIN CATASTROPHISM AND GAIT COORDINATION IN TOTAL KNEE REPLACEMENT DECISION MAKING-1604.pdf

Could patient-specific locking plates improve primary stability of proximal humerus fracture fixation?

J. F. Schader[1,2], **D. Mischler**[1], **J. Dauwe**[1,3], **B. Gueorguiev**[1], **P. Varga**[1]
[1]AO Research Institute Davos, Switzerland; [2]Cantonal Hospital Graubuenden, Switzerland; [3]University Hospital Leuven, Belgium

ESB2021_1393-Could patient-specific locking plates improve primary stability-1393.pdf

3D MEASUREMENT OF TROCHANTERIC SOFT-TISSUES THICKNESS IMPROVES HIP FRACTURE RISK CLASSIFICATION ACCURACY

A. Aldieri[1], **M. Terzini**[1], **A. Audenino**[1], **M. Paggiosi**[2], **R. Eastell**[2], **P. Bhattacharya**[2]
[1]Politecnico di Torino, Italy; [2]University of Sheffield

ESB2021_1588-3D MEASUREMENT OF TROCHANTERIC SOFT-TISSUES THICKNESS IMPROVES HIP FRACTURE RISK CLASSIFICATION.pdf

Maintaining bone health in the lumbar spine: routine activities alone are not enough.

C. D. Favier[1], **A. H. McGregor**[2], **A. T. M. Phillips**[1]
[1]Department of Civil and Environmental Engineering, Imperial College London, United Kingdom; [2]Department of Surgery and Cancer, Imperial College London, United Kingdom

ESB2021_1488-Maintaining bone health in the lumbar spine-1488.pdf

A RADIATION FREE NUMERICAL MODELLING FRAMEWORK TO PREDICT SPRING ASSISTED CRANIOPLASTY OUTCOME

B. Garate Andikoetxea[1], **S. Ajami**[1,2], **E. O'Sullivan**[1,2], **N. Rodriguez Florez**[3,4], **N U O. Jeelani**[2], **D. Dunaway**[2], **S. Schievano**[1,2], **A. Borghi**[1,2]
[1]University College London, United Kingdom; [2]Great Ormond Street Hospital, London, United Kingdom; [3]Ikerbasque, Spain; [4]Universidad de Navarra, Spain

ESB2021_1565-A RADIATION FREE NUMERICAL MODELLING FRAMEWORK TO PREDICT SPRING ASSISTED CRANIOPLASTY.pdf

FLEX-ESTENSION ANGLE CHANGES DURING GAIT MIGHT INCREASE KNEE WEAR IN PATIENTS WITH OSTEOARTHRITIS

C. Ruiz Wills[1], **S. Tassani**[1], **L. Tío**[2], **J. Monfort**[2,3], **J. C. Monllau**[2,4], **M. Á. González Ballester**[1,5], **J. Noailly**[1]
[1]BCN MedTech, Universitat Pompeu Fabra, Spain; [2]IMIM; [3]Rheumatology service, Hospital del Mar, Spain; [4]Orthopaedic Surgery and Traumatology Service, Hospital del Mar, Spain; [5]Catalan Institution for Research and Advanced Studies, Spain

ESB2021_1439-FLEX-ESTENSION ANGLE CHANGES DURING GAIT MIGHT INCREASE KNEE WEAR-1439.pdf

A BIOMECHANICAL APPROACH FOR FRACTURE RISK ASSESSMENT FOLLOWING TUMOR CURETTAGE

A. Ghouchani[1], **G. Rouhi**[2], **M. H Ebrahimzadeh**[3]
[1]Department of Biomedical Engineering, Mashhad Branch, Islamic Azad University, Iran, Islamic Republic of; [2]Faculty of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran, Islamic Republic of; [3]Orthopedic Research Center, Mashhad University of Medical Sciences, Iran, Islamic Republic of

ESB2021_1232-A BIOMECHANICAL APPROACH FOR FRACTURE RISK ASSESSMENT FOLLOWING TUMOR CURETTAGE-1232.pdf

11:00am - 12:15pm

Mechano.5: Mechanobiology

Session Chair: **Liesbet Geris**

https://teams.microsoft.com/l/channel/19%3af07b298ef3034459a8476de6ec152fe6%40thread.tacv2/TR06_Mechanobiology?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: MULTI-SCALE, MULTIDISCIPLINARY RESEARCH INTO BONE MECHANOBIOLOGY DURING OSTEOPOROSIS

L. McNamara
National University of Ireland Galway, Ireland

ESB2021_122-PT MULTI-SCALE, MULTIDISCIPLINARY RESEARCH INTO BONE MECHANOBIOLOGY DURING OSTEOPOROSIS-122.pdf

A NOVEL IN SILICO FRAMEWORK CAN PREDICT THE CARTILAGE MECHANICAL DEGRADATION IN EXPLANTS WITH FOCAL DEFECTS

S. A. Elahi[1], **P. Tanska**[2], **N. Famaey**[1], **R. Korhonen**[2], **R. Lories**[1], **I. Jonkers**[1]
[1]KU Leuven, Belgium; [2]University of Eastern Finland, Finland

ESB2021_1374-A NOVEL IN SILICO FRAMEWORK CAN PREDICT THE CARTILAGE MECHANICAL DEGRADATION IN EXPLANTS WITH.pdf

BIOMECHANICAL STIMULATION AND CHARACTERIZATION OF CARTILAGE MICROPELLETS WITH A DEDICATED FLUIDIC DEVICE

N. Petitjean[1,2], **P. Cañadas**[1], **C. Jorgensen**[2,3], **P. Royer**[1], **D. Noël**[2,3], **S. Le Floc'h**[1]
[1]LMGC, Univ. Montpellier, CNRS, Montpellier, France; [2]IRMB, Univ. Montpellier, INSERM, CHU Montpellier, Montpellier, France; [3]Hopital Lapeyronie, Clinical Immunology and Osteoarticular Diseases Therapeutic Unit, Montpellier, France

ESB2021_1426-BIOMECHANICAL STIMULATION AND CHARACTERIZATION OF CARTILAGE MICROPELLETS WITH A DEDICATED.pdf

INVESTIGATING CELL 'VISCO-TRANSDUCTION' IN ENGINEERED VISCOELASTIC HYDROGELS

L. Cacopardo, **N. Guazzelli**, **S. Piaggi**, **A. Corti**, **A. Ahluwalia**
University of Pisa, Italy

ESB2021_1431-INVESTIGATING CELL 'VISCO-TRANSDUCTION' IN ENGINEERED VISCOELASTIC HYDROGELS-1431.pdf

MECHANOBIOLOGY OF EXTRACELLULAR MATRIX ON THE TUMOR GROWTH

I. G Goncalves, **D. Camacho**, **P. E Guerrero**, **M. J. Gomez-Benito**, **J. M. García-Aznar**
University of Zaragoza, Spain

ESB2021_1581-MECHANOBIOLOGY OF EXTRACELLULAR MATRIX ON THE TUMOR GROWTH-1581.pdf

Measuring Viscoelasticity in Tensile Loaded Collagen Fibrils Through a Nonlinear Rheological Model

M. Handelshauser[1,2], **O. G. Andriotis**[1], **M. Marchetti-Deschmann**[2], **P. J. Thurner**[1]
[1]Institute of Lightweight Design and Structural Biomechanics, TU Wien, Austria; [2]Institute of Chemical Technologies and Analytics, TU Wien, Austria

ESB2021_1668-Measuring Viscoelasticity in Tensile Loaded Collagen Fibrils Through a Nonlinear Rheological_a.pdf

11:00am - 12:15pm

Msk.4: Musculoskeletal biomechanics

Session Chair: **Ilse Jonkers**

https://teams.microsoft.com/l/channel/19%3ad142c4ba1ecf4a929219f6efcae89fa6%40thread.tacv2/TR08_Musculoskeletal%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

DOES VARUS KNEE DEFORMITY ONLY EFFECT FRONTAL PLANE BIOMECHANICS?

J. Bowd[1,2], **D. Williams**[1,2], **M. De Vecchis**[1,2], **C. Wilson**[2,3], **D. Elson**[2,4], **G. Whatling**[1,2], **C. Holt**[1,2]
[1]Cardiff School of Engineering, College of Physical Sciences, Cardiff University, Cardiff, UK; [2]Biomechanics and Bioengineering Centre Versus Arthritis, Cardiff University, Cardiff, UK; [3]Cardiff and Vale University Health Board, Cardiff, UK; [4]Queen Elizabeth Hospital, Gateshead, UK

ESB2021_1713-DOES VARUS KNEE DEFORMITY ONLY EFFECT FRONTAL PLANE BIOMECHANICS-1713_a.pdf

Evaluation of muscle recruitment and muscle models in musculoskeletal simulation of dynamic motion

S. Auer[1,2], **L. Reinker**[1,2], **S. Dendorfer**[1,2]
[1]Laboratory for Biomechanics, Ostbayerische Technische Hochschule (OTH) Regensburg, Germany; [2]Regensburg Center of Biomedical Engineering, OTH and University Regensburg, Germany

ESB2021_1719-Evaluation of muscle recruitment and muscle models-1719.pdf

The Role of Limb Alignment on Tibio-Femoral Kinematics: A Dynamic Videofluoroscopy Study

B. Postolka[1], **W. R. Taylor**[1], **R. List**[1,2], **P. Schütz**[1]
[1]Laboratory for Movement Biomechanics, Institute for Biomechanics, ETH Zürich, Switzerland; [2]Human Performance Lab, Schulthess Clinic, Switzerland

ESB2021_1724-The Role of Limb Alignment on Tibio-Femoral Kinematics-1724.pdf

COMPARING DIFFERENT COMPLEX TEST DEVICES FOR FRICTIONAL MOMENT MEASUREMENT OF TOTAL HIP IMPLANTS

P. Henke, **R. Bader**
Rostock University Medical Center, Germany

ESB2021_1771-COMPARING DIFFERENT COMPLEX TEST DEVICES FOR FRICTIONAL MOMENT MEASUREMENT-1771.pdf

HOW THE INTRODUCTION OF SUBJECT-SPECIFIC MUSCULOSKELETAL MODELS AFFECTS THE ESTIMATION OF JOINT REACTION FORCES WITHIN THE HUMAN KNEE: A PRELIMINARY ANALYSIS

G. Cassiolas[1], **G. Valente**[2], **G. Marchiori**[2], **N. F. Lopomo**[1], **F. Taddei**[2]
[1]University of Brescia, Brescia, Italy; [2]Rizzoli Orthopaedic Institute, Bologna, Italy

ESB2021_1817-HOW THE INTRODUCTION OF SUBJECT-SPECIFIC MUSCULOSKELETAL MODELS AFFECTS THE ESTIMATION OF JOINT.pdf

CALCULATION OF TIBIOFEMORAL FORCE DURING KNEE EXTENSION BASED ON MRI SCANS AND ISOKINETIC TEST

M. Białecka[1,2], **J. Buśkiewicz**[1], **T. Walczak**[1], **J. K. Grabski**[1], **T. Piontek**[3,2], **M. Grygorowicz**[4,2]
[1]Poznan University of Technology, Institute of Applied Mechanics, Poland; [2]Rehasport Clinic LTD, Poland; [3]Poznan University of Medical Sciences, Department of Spine Disorders and Pediatric Orthopedics, Poland; [4]Poznan University of Medical Sciences, Department of Physiotherapy, Poland

ESB2021_1819-CALCULATION OF TIBIOFEMORAL FORCE DURING KNEE EXTENSION BASED-1819.pdf

PREDICTION OF INDIVIDUAL CARPAL KINEMATICS DURING HAMMER MOTION: AN IN-VIVO VALIDATION

M. Conconi[1], **N. Sancisi**[1], **G. M Best**[2], **M. J Rainbow**[2]
[1]Dept. of Industrial Engineering - DIN, University of Bologna, Italy; [2]Human Mobility Research Centre, Queen's University, Kingston, Ontario, Canada

ESB2021_1171-PREDICTION OF INDIVIDUAL CARPAL KINEMATICS DURING HAMMER MOTION-1171.pdf

11:00am - 12:15pm

Orth-meth.4: Computational methods for orthopaedic applications

Session Chair: **Helene Follet**

https://teams.microsoft.com/l/channel/19%3a0ab6907d523640f29f1b501dd6cbece7%40thread.tacv2/TR13_CompMethods%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

NUMERICAL OPTIMIZATION OF SCREW POSITIONING OF LOCKING PLATE IMPLANTS ON PROXIMAL HUMERUS FRACTURES

C. Yavuz, **E. Sünbüloğlu**, **V. İgde**
Istanbul Technical University, Turkey

ESB2021_1186-NUMERICAL OPTIMIZATION OF SCREW POSITIONING OF LOCKING PLATE IMPLANTS-1186.pdf

Do pinhole locations in medial UKA impact the risk of tibial periprosthetic fractures?

C. Mueri[1], **A. H Sanford**[2], **P. Favre**[1], **A. Marret**[1], **J. K. Mueller**[2]
[1]Zimmer Biomet, Switzerland; [2]Zimmer Biomet, USA

ESB2021_1304-Do pinhole locations in medial UKA impact the risk-1304.pdf

EFFECT OF BONY GEOMETRY ON IMPINGEMENT IN TOTAL HIP REPLACEMENTS DURING DISLOCATION-PRONE ACTIVITIES

S. Williams[1], **A. Jones**[1], **G. Isaac**[1], **R. Wilcox**[1], **A. Traynor**[2], **T. Board**[3], **S. Williams**[1]
[1]Institute of Medical & Biological Engineering, School of Mechanical Engineering, University of Leeds, Leeds, UK; [2]DePuy Synthes Joint Reconstruction, Leeds, UK; [3]Wrightington Wigan and Leigh NHS Trust, UK.

ESB2021_1457-EFFECT OF BONY GEOMETRY ON IMPINGEMENT IN TOTAL HIP REPLACEMENTS DURING DISLOCATION-PRONE_a.pdf

ASSESSMENT OF STEM DESIGN ON EARLY POSTOPERATIVE PERIPROSTHETIC FEMUR FRACTURES

Ö. Cebeci[1,2], **D. Cronin**[3], **S. Checa**[2]
[1]IAT Ingenieurgesellschaft für Automobiltechnik mbH; [2]Julius Wolff Institute, Berlin Institute of Health, Charité – Universitätsmedizin; [3]Department of Mechanical and Mechatronics Engineering, University of Waterloo,

ESB2021_1537-ASSESSMENT OF STEM DESIGN ON EARLY POSTOPERATIVE PERIPROSTHETIC FEMUR FRACTURES-1537.pdf

A COMBINED MOTION ANALYSIS AND FEM APPROACH FOR PLANTAR FOOT ORTHOSIS OPTIMIZATION FOR DIABETIC FOOT PREVENTION

A. Ciniglio[1], M. Palladino[1], A. Guiotto[1], F. Spolaor[1], A. Ianniello[2], E. Meggiato[3], Z. Sawacha[1,4]
[1]Dept. of Information Engineering, University of Padova, Italy; [2]Orthomedica S.r.l., Italy; [3]Podartis S.r.l., Italy; [4]Dept. of Medicine, University of Padova, Italy

ESB2021_1643-A COMBINED MOTION ANALYSIS AND FEM APPROACH FOR PLANTAR FOOT ORTHOSIS OPTIMIZATION FOR DIABETIC.pdf

DIFFERENCES BETWEEN KYPHOPLASTY AND STENTOPLASTY IN A TRAUMATIC VERTEBRA: IN-SILICO BIOMECHANICAL INVESTIGATION

R. Azadkiya, G. Rouhi
Amirkabir University of Technology, Iran, Islamic Republic of

ESB2021_1710-DIFFERENCES BETWEEN KYPHOPLASTY AND STENTOPLASTY IN A TRAUMATIC VERTEBRA-1710.pdf

Finite element model to predict the electric stimuli delivered by planar capacitive systems to stimulate bone-implant interfaces

D. Videira, M. P. Soares dos Santos, A. Ramos
Centre for Mechanical Technology & Automation (TEMA), Department of Mechanical Engineering, University of Aveiro, Portugal

ESB2021_1616-Finite element model to predict the electric stimuli delivered-1616.pdf

11:00am - 12:15pm

Spine.5: Spine

Session Chair: **Timothy Patrick Holsgrove**

https://teams.microsoft.com/l/channel/19%3a6c533dfc4fe141b79f06b34b62f96265%40thread.tacv2/TR09_Spine?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

HOW DO INSTRUMENTATION PARAMETERS IMPACT THE 3D CORRECTION OF THORACIC ADOLESCENT IDIOPATHIC SCOLIOSIS?

L. La Barbera[1,2,3], A. N. Larson[4], C.-E. Aubin[1,2]
[1]Dept. of Mechanical Engineering, Polytechnique Montréal, Canada; [2]Research Center, CHU Sainte- Justine, Canada; [3]Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy; [4]Dept. of Orthopedic Surgery, Mayo Clinic, Rochester, MN, USA

ESB2021_1866-HOW DO INSTRUMENTATION PARAMETERS IMPACT THE 3D CORRECTION-1866.pdf

Potentials to study load sharing mechanisms adjacent to interbody fusions with active hybrid lumbosacral models

A. Hoffmann, R. Remus, B. Bender
Chair for Product Development, Department of Mechanical Engineering, Ruhr-University Bochum, Germany

ESB2021_1388-Potentials to study load sharing mechanisms adjacent to interbody fusions with active hybrid.pdf

ON THE SIMULATION OF LUMBAR SPINE LIGAMENTS DEGENERATION

M. I. Godinho, V. Carvalho, P. R. Fernandes, A. P. G. Castro
IDMEC - Instituto Superior Técnico - Universidade de Lisboa, Portugal

ESB2021_1518-ON THE SIMULATION OF LUMBAR SPINE LIGAMENTS DEGENERATION-1518.pdf

Instantaneous axis of rotation as indicator for lumbar intervertebral disc degeneration – A simulation study

R. Remus, A. Hoffmann, B. Bender
Chair of Product Development, Department of Mechanical Engineering, Ruhr-University Bochum, Germany

ESB2021_1758-Instantaneous axis of rotation as indicator for lumbar intervertebral disc degeneration – A s.pdf

MOTION CAPTURE-DRIVEN MUSCULOSKELETAL SPINE MODELING: AN OPENSIM-BASED INVERSE KINEMATICS APPROACH

S. Schmid[1], L. Connolly[2,3], G. Moschini[3,4], M. L. Meier[2], M. Senteler[3,4]
[1]Spinal Movement Biomechanics Group, Department of Health Professions, Bern University of Applied Sciences, Switzerland; [2]Integrative Spinal Research, Department of Chiropractic Medicine, Balgrist University Hospital, University of Zürich, Switzerland; [3]Department of Health Science and Technology, ETH Zurich, Switzerland; [4]Department of Orthopedics, Balgrist University Hospital, University of Zürich, Switzerland

ESB2021_1445-MOTION CAPTURE-DRIVEN MUSCULOSKELETAL SPINE MODELING-1445.pdf

ACCOUNTING FOR BIOMECHANICAL MEASURES DOES NOT ENHANCE THE PREDICTION OF CURVE PROGRESSION IN ADOLESCENT SCOLIOSIS

T. Bassani[1], D. Ignasiak[2], A. Cina[1], F. Galbusera[1]
[1]IRCCS Istituto Ortopedico Galeazzi, Milan, Italy; [2]Institute for Biomechanics, ETH Zurich, Zurich, Switzerland

ESB2021_1305-ACCOUNTING FOR BIOMECHANICAL MEASURES DOES NOT ENHANCE THE PREDICTION-1305.pdf

INFLUENCE OF DOUBLE RODS AND INTERBODY CAGES ON ROM AND ROD STRESS AFTER LUMBOPELVIC INSTRUMENTATION

A. Leszczynski[1], F. Meyer[1], Y.-P. Charles[2], C. Deck[1], R. Willinger[1]
[1]Université de Strasbourg, France; [2]Service de Chirurgie du Rachis des Hôpitaux Universitaires de Strasbourg, France

ESB2021_1837-INFLUENCE OF DOUBLE RODS AND INTERBODY CAGES ON ROM AND ROD STRESS AFTER LUMBOPELVIC.pdf

12:15pm - 12:30pm

break-d3-2: Break

12:30pm - 1:15pm

EXEMPLAR - DASSAULT SYSTEMES.3: Workshop: "INSILICO TRIALS - A new in silico tool for TAVI standard tests available on InSilicoTrials.com, the first cloud-based platform"

https://teams.microsoft.com/l/channel/19%3aa1e9bbbcb7d64f1685e4afd272b26670%40thread.tacv2/SW_EXEMPLAR%2520-%2520DASSAULT?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm - 1:15pm

MATERIALISE: Workshop: "Automating musculoskeletal modeling workflows: challenges and solutions"

https://teams.microsoft.com/l/channel/19%3a68b275df753542e78e4d80f491970a40%40thread.tacv2/SW_MATERIALISE?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

12:30pm - 1:15pm

PARAMETRIC DESIGN - ANSYS.3: Workshop: "ANSYS overview and PARAMETRIC DESIGN researches in the respiratory field"

https://teams.microsoft.com/l/channel/19%3a5952b4a0cf9e460fb078b20a2f5079d3%40thread.tacv2/SW_PARAMETRIC%2520DESIGN%2520-%2520ANSYS?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

1:15pm - 1:30pm

break-d3-3: Break

1:30pm - 2:45pm

AM-Bioprint.3: Additive manufacturing for biomedical applications and bioprinting

Session Chair: **Claudio Capelli**

https://teams.microsoft.com/l/channel/19%3ae25b1ebf1cb940c0abbfed7221fe62e0%40thread.tacv2/TR24_Additive%2520manufact%2520and%2520Bioprinting?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

NI-TI STENTS PRODUCED BY SLM: DESIGN, MANUFACTURING AND FUNCTIONAL PROPERTIES

V. Finazzi[1], F. Berti[2], A. G. Demir[1], L. Petrini[3], B. Previtali[1]
[1]Department of Mechanical Engineering, Politecnico di Milano, Milan, Italy; [2]Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Milan, Italy; [3]Department of Civil and Environmental Engineering, Politecnico di Milano, Milan, Italy

ESB2021_1676-NI-TI STENTS PRODUCED BY SLM-1676.pdf

AN MRI-BASED PATIENT-SPECIFIC RCR ESTIMATION OF PULMONARY BIFURCATION USING IN-VITRO AND IN-SILICO APPROACHES

B. M. Fanni[1,2], E. Gasparotti[1,2], E. Vignali[1], C. Capelli[3], V. Positano[1], S. Celi[1]
[1]BioCardioLab. Fondazione Toscana Gabriele Monasterio, Italy; [2]Department of Information Engineering, University of Pisa, Italy; [3]Institute of Cardiovascular Science, University College of London, United Kingdom

ESB2021_1656-AN MRI-BASED PATIENT-SPECIFIC RCR ESTIMATION OF PULMONARY BIFURCATION USING IN-VITRO AND.pdf

TWO-PHOTON POLYMERIZATION OF SYNTHETIC SCAFFOLDS ON DEFORMABLE SUBSTRATES FOR MICROGRAVITY APPLICATIONS

A. Nardini[1], C. Conci[1], E. Jacchetti[1], G. Cerullo[2], R. Martínez Vázquez[2], R. Osellame[2], G. Ciofani[3], M. T. Raimondi[1]
[1]Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milano, Italy; [2]Istituto di Fotonica e Nanotecnologie (IFN)-CNR and Department of Physics, Politecnico di Milano, Milano, Italy; [3]Istituto Italiano di Tecnologia (IIT), Smart Bio-Interfaces, Pontedera (PI), Italy

ESB2021_1559-TWO-PHOTON POLYMERIZATION OF SYNTHETIC SCAFFOLDS ON DEFORMABLE SUBSTRATES-1559.pdf

3D PRINTING AGAROSE: PARAMETERS EVALUATION

A. M. Teixeira[1,2], A. D. André[1,2], P. Martins[1]
[1]INEGI, Portugal; [2]FEUP, Portugal

ESB2021_1596-3D PRINTING AGAROSE-1596.pdf

NOVEL METHOD OF PREPARATION OF GELMA/XANTHAN GUM-BASED BIOMATERIAL WITH IMPROVED PRINTABILITY

A. Mantelli, F. Iervolino, B. Belgio, F. Boschetti, S. Mantero, M. Levi
Politecnico di Milano, Italy

ESB2021_1725-NOVEL METHOD OF PREPARATION OF GELMAXANTHAN GUM-BASED BIOMATERIAL WITH IMPROVED PRINTABILITY-172.pdf

3D-PRINTED SAW-GUIDE FOR COLLE'S FRACTURE MODELING AND ADJUSTEMNT OF DIAPHYSEAL FRACTURE GAP DISTANCE

M. Frank[1], E. Unger[2], F. Moscato[2], E. Benca[1]
[1]Dept. of Orthopedics and Trauma Surgery, Medical University of Vienna, Austria; [2]Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria

ESB2021_1686-3D-PRINTED SAW-GUIDE FOR COLLE'S FRACTURE MODELING AND ADJUSTEMNT-1686.pdf

1:30pm - 2:45pm

CV-Mech.6: Cardiovascular mechanics

Session Chair: **Nicholas A Hill**

Flow through a malapposed flexible stent within an arteriovenous fistula

S. D. Gunasekera[1], O. Ng[1], S. Thomas[2], R. Varcoe[2], C. de Silva[1], T. Barber[1]
[1]The University of New South Wales, N. S. W. 2052, Australia; [2]Prince of Wales Hospital, N.S.W. 2031 Australia

ESB2021_1290-Flow through a malapposed flexible stent within an arteriovenous fistula-1290_a.pdf

Hemodynamic impact of stent design and overlapping in superficial femoral arteries

M. Colombo[1], A. Corti[1], A. Colombo[1], G. Antognoli[1], L. Antonini[1], M. Bernini[2], C. McKenna[2], S. Berceli[3,4], T. Vaughan[2], F. Migliavacca[1], C. Chiastra[1,5]
[1]LaBS, Dept. Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Italy; [2]Biomechanics Research Centre (BioMEC), National University of Ireland Galway, Ireland; [3]Dept. Surgery, University of Florida, Gainesville, FL, USA; [4]Malcom Randall VAMC, Gainesville, FL, USA; [5]PoliToBIOMed Lab, Dept. Mechanical and Aerospace Engineering, Politecnico di Torino, Italy

ESB2021_1404-Hemodynamic impact of stent design and overlapping-1404.pdf

ANALISYS OF A TRANSCATHETER AORTIC VALVE TURBULENT WAKE WITH TOMOGRAPHIC PARTICLE IMAGE VELOCIMETRY

L. Pietrasanta, D. Obrist
University of Bern, Switzerland

ESB2021_1424-ANALISYS OF A TRANSCATHETER AORTIC VALVE TURBULENT WAKE WITH TOMOGRAPHIC PARTICLE IMAGE.pdf

A COMPACT IN VITRO TEST BENCH FOR CARDIOVASCULAR FLOW ANALYSIS FOR SPACE APPLICATION: FEASIBILITY STUDY

E. Torta[1], G. C. Alp Caridi[1], S. Gabetti[1], C. Chiastra[1], D. Gallo[1], M. Compin[2], U. Morbiducci[1]
[1]Politecnico di Torino, Italy; [2]ISAE-SUPAERO, Toulouse, France

ESB2021_1520-A COMPACT IN VITRO TEST BENCH FOR CARDIOVASCULAR FLOW ANALYSIS FOR SPACE APPLICATION-1520_a.pdf

PRELIMINARY DESIGN, THEORETICAL ANALYSIS AND EXPERIMENTAL EVALUATION OF A RIGHT VENTRICULAR ASSIST DEVICE

F. De Gaetano[1], K. Osouli[1], A. Giussani[1], I. Guidetti[1], S. Vandenberghe[2], S. Demertzis[2], M. L. Costantino[1]
[1]Politecnico di Milano, Italy; [2]Cardiocentro Ticino – Cardiac Surgery, Switzerland

ESB2021_1842-PRELIMINARY DESIGN, THEORETICAL ANALYSIS AND EXPERIMENTAL EVALUATION-1842.pdf

A HARDWARE-IN-THE-LOOP STRATEGY FOR FLUID DYNAMIC CHARACTERIZATION OF CARDIOVASCULAR SYSTEMS

F. Bardi[1,2], E. Gasparotti[1,3], E. Vignali[1], M. Aguirre[2], S. Avril[2], S. Celi[1]
[1]BioCardioLab, Fondazione Toscana Gabriele Monasterio, Italy; [2]Mines Saint-Etienne, Université de Lyon, France; [3]Dept. of Information Engineering University of Pisa, Italy

ESB2021_1859-A HARDWARE-IN-THE-LOOP STRATEGY FOR FLUID DYNAMIC CHARACTERIZATION-1859_a.pdf

BIOMECHANICAL PROPERTIES OF HUMAN DILATED ASCENDING AORTA DEPENDING ON AORTIC VALVE TYPE

I. Brecs[1,3], P. Stradins[1,3], M. Kalejs[1,2], U. Strazdins[1], E. Strike[1,3], I. Ozolanta[2], V. Kasyanov[2]
[1]Department of Cardiac Surgery, Pauls Stradins Clinical University Hospital Latvia; [2]Laboratory of Biomechanics, Riga Stradins University, Latvia; [3]Riga Stradins University, Latvia

ESB2021_1794-BIOMECHANICAL PROPERTIES OF HUMAN DILATED ASCENDING AORTA DEPENDING-1794.pdf

1:30pm - 2:45pm

Impact.2: Impact/injury biomechanics

Session Chair: **Peter Zioupos**

https://teams.microsoft.com/l/channel/19%3a7e45ff3da1dd44bd80ec8585cd0af23d%40thread.tacv2/TR12%2520Impact%2520and%2520Injury%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: PREDICTING TRAUMATIC BRAIN INJURY AT THE CUTTING-EDGE INTERSECTION BETWEEN ENGINEERING AND MEDICINE

M. Ghajari

Imperial College London, United Kingdom

ESB2021_879-PT PREDICTING TRAUMATIC BRAIN INJURY AT THE CUTTING-EDGE INTERSECTION BETWEEN ENGINEERING AND.pdf

Evaluation of local forces in equestrian helmets when exposed to lateral deformation

J. Stoff[1], R. Adams[1], H. Riley[2], B. Hanna[2], T. Palkowski[2], P. Theobald[1]
[1]Cardiff University, United Kingdom; [2]Champion Manufacturing, United Kingdom

ESB2021_1433-Evaluation of local forces in equestrian helmets when exposed-1433.pdf

A HIGH-FIDELITY FINITE ELEMENT MODEL OF THE CEREBROVASCULATURE FOR BRAIN INJURY SIMULATION

H. Duckworth[1,2], A. Azor[1,2], D. J Sharp[2,3], M. Ghajari[1]
[1]Imperial College London, United Kingdom; [2]The Computational, Cognitive and Clinical Neuroimaging Laboratory, Imperial College London; [3]Care Research and Technology Centre, Dementia Research Institute

ESB2021_1466-A HIGH-FIDELITY FINITE ELEMENT MODEL OF THE CEREBROVASCULATURE-1466.pdf

The brain injury mitigation effects of new helmet technologies in oblique impacts

F. Abayazid[1], K. Ding[1], K. Zimmerman[1], H. Stigson[2], M. Ghajari[1]
[1]Imperial College London, United Kingdom; [2]Folksam Insurance Group, Stockholm, Sweden

ESB2021_1812-The brain injury mitigation effects of new helmet technologies-1812.pdf

1:30pm - 2:45pm

Mechano.6: Mechanobiology

Session Chair: **José Manuel García-Aznar**

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PT: FORCE DETECTION AND FIBROSIS OF THE CARDIOVASCULAR SYSTEM. TOWARD A MECHANICAL FRAMEWORK OF AGING PROCESS

M. Pesce
Centro cardiologico Monzino, IRCCS, Italy

ESB2021_505-PT FORCE DETECTION AND FIBROSIS OF THE CARDIOVASCULAR SYSTEM TOWARD A MECHANICAL FRAMEWORK OF.pdf

SOFT WALLS PROMOTE VESICLE MIGRATION

A. Cerrato[1], H. Casquero[2], C. Joan J.[1], C. Bona-Casas[1]
[1]Universitat de les Illes Balears, Spain; [2]University of Michigan - Dearborn

ESB2021_1332-SOFT WALLS PROMOTE VESICLE MIGRATION-1332.pdf

THE 3D NICHOID SCAFFOLD AS A MODEL TO DRIVE IN-VITRO STEM CELL FATE

V. Parodi[1], E. Jacchetti[1], A. Bresci[1,2], B. Talone[2], G. Cerullo[2,3], R. Osellame[2,3], D. Polli[2,3], M. T. Raimondi[1]
[1]Department of Chemistry, Materials and Chemical Engineering, “G. Natta”, Politecnico di Milano 20133, Italy;; [2]Department of Physics, Politecnico di Milano, 20133 Milano, Italy; [3]Istituto di Fotonica e Nanotecnologie (IFN)-CNR, 20133 Milano, Italy

ESB2021_1493-THE 3D NICHOID SCAFFOLD AS A MODEL TO DRIVE IN-VITRO STEM CELL FATE-1493.pdf

NICHOID SUBSTRATE REGULATES MECHANOTRANSDUCTION GENES IN NEURAL STEM CELLS: WHOLE TRANSCRIPTOMIC APPROACH WITH BIOINFORMATIC ANALYSIS

L. Messa[1,3], B. Barzaghini[1], F. Rey[2], C. Pandini[3], G. V. Zuccotti[2], C. Cereda[3], S. Carelli[2], M. T. Raimondi[1]
[1]Politecnico di Milano, Italy; [2]Centro di Ricerca Pediatrica "Romeo ed Erica Invernizzi", Università di Milano, Italy; [3]IRCCS Mondino, Pavia

ESB2021_1509-NICHOID SUBSTRATE REGULATES MECHANOTRANSDUCTION GENES-1509.pdf

MATERIAL STRAIN ENERGY SENSING AS CELL MECHANISM TO RECOGNIZE IN-BORN STRESSES OF ECM

S. Fusco[1], V. Panzetta[2], P. Netti[2]
[1]Università degli Studi del Molise, Italy; [2]Università degli Studi di Napoli “Federico II”, Italy

ESB2021_1682-MATERIAL STRAIN ENERGY SENSING AS CELL MECHANISM TO RECOGNIZE IN-BORN STRESSES-1682.pdf

1:30pm - 2:45pm

Msk-imag.3: Imaging for muscoloskeletal applications

Session Chair: **Zimi Sawacha**

https://teams.microsoft.com/l/channel/19%3a05d8d6c5ddf64163aaa13c35bee5f9dc%40thread.tacv2/TR10_Imaging%2520for%2520Musculoskeletal?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Intracellular label-free detection of mesenchymal stem cell metabolism within a perivascular niche-on-a-chip

S. Perrottoni[1], N. Neto[2,3], C. di Nitto[1], R. Dmitriev[4], M. T Raimondi[1], M. G Monaghan[2,3,5,6]
[1]Department of Chemistry, Materials and Chemical Engineering “Giulio Natta”, Politecnico di Milano, piazza Leonardo da Vinci, 32 – 20133 Milan, Italy; [2]Department of Mechanical, Manufacturing and Biomedical Engineering, Trinity College Dublin, Dublin 2, Ireland; [3]Trinity Centre for Biomedical Engineering, Trinity Biomedical Sciences Institute, Trinity College Dublin, 152-160 Pearse Street, Dublin 2, Ireland; [4]Tissue Engineering and Biomaterials Group, Department of Human Structure and Repair, Faculty of Medicine and Health Sciences, Ghent University, Ghent 9000, Belgium.; [5]Advanced Materials and Bioengineering Research Centre (AMBER), Royal College of Surgeons in Ireland and Trinity College Dublin, Dublin, Ireland; [6]CÚRAM, Centre for Research in Medical Devices, National University of Ireland, Galway, Newcastle Road, H91 W2TY Galway, Ireland

ESB2021_1755-Intracellular label-free detection of mesenchymal stem cell metabolism-1755_a.pdf

CEL-UNET: A NEW CNN ARCHITECTURE FOR AUTOMATIC SEGMENTATION OF KNEE BONES IN CT SCANS

A. Faglia, D. Marzorati, L. Mainardi, P. Cerveri
Politecnico di Milano, Italy

ESB2021_1881-CEL-UNET-1881.pdf

FEASIBILITY OF RIB KINEMATICS AND INTERCOSTAL SPACE MECHANICAL CHARACTERIZATION BY ULTRASOUND

A. Hisaund[1], R. Pietton[2], R. Vialle[2], W. Skalli[1], C. Vergari[1]
[1]Institut de Biomécanique Humaine Georges Charpak, Arts et Métiers ParisTech, France; [2]Department of Pediatric Orthopaedics, Armand Trousseau Hospital, Sorbonne University, France

ESB2021_1173-FEASIBILITY OF RIB KINEMATICS AND INTERCOSTAL SPACE MECHANICAL CHARACTERIZATION-1173.pdf

WEIGHT-BEARING CT IN BIOMECHANICAL ANALYSES OF THE LOWER LIMBS: BIOMECHANICAL AND CLINICAL MEASURES

C. Belvedere[1], P. Caravaggi[1], S. Durante[2], A. Leardini[1]
[1]Movement Analysis Laboratory, IRCCS Istituto Ortopedico Rizzoli, Italy; [2]Nursing, Technical and Rehabilitation Assistance Service, IRCCS Istituto Ortopedico Rizzoli, Italy

ESB2021_1197-WEIGHT-BEARING CT IN BIOMECHANICAL ANALYSES OF THE LOWER LIMBS-1197.pdf

Trabecular microstructure can be quantified with XtremeCT more accurately using adaptive thresholding

K. Mys[1,2], F. Stockmans[3], B. Gueorguiev[1], V. Neumann[1], C. E. Wyers[4,5], J. P. van den Bergh[4,5,6], G. H. van Lenthe[2], P. Varga[1]

[1]AO Research Institute Davos, Switzerland; [2]KU Leuven, Belgium; [3]KU Leuven campus Kortrijk, Belgium; [4]VieCuri Medical Center, the Netherlands; [5]Maastricht University, the Netherlands; [6]Maastricht University Medical Centre, the Netherlands

ESB2021_1579-Trabecular microstructure can be quantified with XtremeCT more accurately using adaptive.pdf

1:30pm - 2:45pm

Ocular.2: Ocular biomechanics

Session Chair: **Philippe Büchler**

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BIOMECHANICAL CHARACTERISTICS OF PORCINE RETINA

B. Belgio[1], S. Ragazzini[1], P. Arpa[2], S. Mantero[1], F. Boschetti[1]
[1]Politecnico di Milano, Italy; [2]Ospedale San Gerardo Monza, Italy

ESB2021_1553-BIOMECHANICAL CHARACTERISTICS OF PORCINE RETINA-1553.pdf

BROADBAND EXCITATION STIMULI FOR SPECTRAL CHARATERIZATION OF CORNEAL TISSUE

S. Kling
ETH Zurich, Switzerland

ESB2021_1761-BROADBAND EXCITATION STIMULI FOR SPECTRAL CHARATERIZATION-1761.pdf

Ocular accommodation: exploring presbyopia causes with a validated numerical model

I. Cabeza-Gil, J. Grasa, B. Calvo
University of Zaragoza, Spain

ESB2021_1641-Ocular accommodation-1641_a.pdf

STUDY OF A MAGNESIUM-BASED DEVICE FOR OCULAR APPLICATION

M. Ferroni[1], F. De Gaetano[1], N. Bono[1], M. Zonfrillo[3], G. Sferrazza[3], G. Candiani[1], M. Cereda[2], F. Boschetti[1]
[1]Politecnico di Milano, Italy; [2]University of Milan, Italy; [3]National Council of Research

ESB2021_1855-STUDY OF A MAGNESIUM-BASED DEVICE FOR OCULAR APPLICATION-1855.pdf

INTRAOCULAR LENS INSERTION DURING CATARACT SURGERY

I. Cabeza, I. Rios, J. Flechilla, B. Calvo
University of Zaragoza, Spain

ESB2021_1246-INTRAOCULAR LENS INSERTION DURING CATARACT SURGERY-1246.pdf

1:30pm - 2:45pm

OP.2: Orthotics & prosthetics

Session Chair: **Alex Dickinson**

https://teams.microsoft.com/l/channel/19%3a710ec0f721f74c71a708936e08df6104%40thread.tacv2/TR18_Orthotics%2520and%2520Prosthetics?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Sensory feedback interface for body-powered and motorized 3D printed prosthetic hands

Y. Herbst[1], D. Sivakumaran[2], S. Polinsky[1], Y. Medan[1,3], A. Wolf[1]
[1]Technion-Israel Institute of Technology, Israel; [2]Swiss Federal Institute of Technology (ETH Zurich), Switzerland; [3]Haifa3D organization, Israel

ESB2021_1327-Sensory feedback interface for body-powered and motorized 3D printed prosthetic hands-1327.pdf

Symmetry function in patients after unilateral TFA using a mechanical or microprocessor prosthetic knee

S. Winiarski[1], M. Kowal[2]
[1]University School of Physical Education in Wroclaw, Poland; [2]Department of Physiotherapy, Wroclaw Medical University, Wroclaw, Poland

ESB2021_1827-Symmetry function in patients after unilateral TFA using a mechanical or microprocessor.pdf

Analysis of the scoliosis brace design process using 3D imaging and point cloud processing software

I. Sanz-Pena[1], S. Arachchi[2], D. Dhammika[3], S. Mallikarachchi[4], J. Sasika[3], A. H McGregor[5], P. Silva[4], N. Newell[1]
[1]Department of Mechanical Engineering, Imperial College London, United Kingdom; [2]Department of Applied Computing, University of Kelaniya, Sri Lanka; [3]Rheumatology and Rehabilitation Hospital Ragama, Sri Lanka; [4]Center for Biomedical Innovation, University of Moratuya, Sri Lanka; [5]Department of Surgery and Cancer, Imperial College London, United Kingdom

ESB2021_1762-Analysis of the scoliosis brace design process using 3D imaging and point cloud processing.pdf

Thermal effects during bone preparation for- and during insertion of osseointegrated transfemoral implants

E. Benca[1], B. Ferrante[1,2], M. Zalaudek[3], L. Hirtler[4], A. Synek[5], F. Kainberger[3], R. Windhager[1], R. Brånemark[6,7], G. Hobusch[1], E. Unger[8]
[1]Department of Orthopedics and Trauma Surgery, Medical University of Vienna, Austria; [2]Politecnico di Milano, Italy; [3]Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Austria; [4]Centre for Anatomy and Cell Biology, Medical University of Vienna, Austria; [5]Institute of Lightweight Design and Structural Biomechanics, TU Wien, Austria; [6]Department of Orthopaedics, Gothenburg University, Sweden; [7]Biomechatronics Group, Massachusetts Institute of Technology, USA; [8]Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria

ESB2021_1287-Thermal effects during bone preparation for- and during insertion-1287.pdf

WALKING WITH ANKLE FOOT ORTHOSIS IN CHILDREN WITH HEMIPLEGIA

F. Camuncoli[1], A. Barbonetti[1], L. Piccinini[2], E. Di Stanislao[3], M. Galli[1]
[1]Department of Electronics, Information and Bioengineering, Politecnico di Milano, Milan, Italy; [2]IRCCS Eugenio Medea, Bosisio Parini, Lecco, Italy; [3]ITOP SpA Officine Ortopediche, Palestrina, Rome, Italy

ESB2021_1421-WALKING WITH ANKLE FOOT ORTHOSIS IN CHILDREN WITH HEMIPLEGIA-1421.pdf

1:30pm - 2:45pm

Orth-meth.5: Computational methods for orthopaedic applications

Session Chair: **Marlene Mengoni**

https://teams.microsoft.com/l/channel/19%3a0ab6907d523640f29f1b501dd6cbece7%40thread.tacv2/TR13_CompMethods%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

DEVELOPMENT OF A NEW CONCEPT FOR 3D-PRINTED ACETABULAR CUPS SUPPORTED BY FINITE ELEMENT ANALYSIS

S. Pianigiani, F. Alemani, A. Toni
Adler Ortho, Italy

ESB2021_1207-DEVELOPMENT OF A NEW CONCEPT FOR 3D-PRINTED ACETABULAR CUPS SUPPORTED-1207.pdf

Can femoroplasty reduce fracture risk in cancer patients with femoral bone metastases?

A. Sas[1], H. Wafa[2,3], E. Tanck[4], A. Sermon[2,5], G. H. van Lenthe[1]
[1]Biomechanics Section, KU Leuven, Belgium; [2]Department of Development and Regeneration, KU Leuven, Belgium; [3]Division of Orthopaedics, UZ Leuven, Belgium; [4]Orthopaedic Research Laboratory, Radboudumc, Nijmegen, The Netherlands; [5]Department of Traumatology, UZ Leuven, Belgium

ESB2021_1260-Can femoroplasty reduce fracture risk in cancer patients with femoral bone metastases-1260.pdf

THE IMPORTANCE OF CEREBROSPINAL FLUID AND EPIDURAL FAT IN NUMERICAL MODELS OF BURST FRACTURE SPINAL CORD TRAUMA

K. Arhiptsov, G. Marom
School of Mechanical Engineering, Tel Aviv University, Israel

ESB2021_1317-THE IMPORTANCE OF CEREBROSPINAL FLUID AND EPIDURAL FAT-1317.pdf

Finite element modeling of plantar tissue stresses induced by the clinical practice of off-loading of the diabetic heel

H. Shaulian[1], A. Gefen[2], A. Wolf[1]
[1]Technion- Israel Institute of Technology, Israel; [2]Tel Aviv University, Israel

ESB2021_1324-Finite element modeling of plantar tissue stresses induced-1324.pdf

Cemented short-stem total hip arthroplasty appears promising in patients with poor bone quality

F. Azari[1], A. Sas[1], K. P. Kutzner[2], A. Klockow[3], T. Scheerlinck[4], G. H. van Lenthe[1]
[1]Ku Leuven, Leuven, Belgium; [2]St. Josefs Hospital, Wiesbaden, Germany; [3]Mathys Medical, Bettlach, Switzerland; [4]University Hospital Brussels, Brussels, Belgium

ESB2021_1436-Cemented short-stem total hip arthroplasty appears promising-1436.pdf

DEVELOPING A VALIDATED OSTEOCHRONDRAL GRAFT REPAIR FINITE ELEMENT MODEL IN A TIBIO-FEMORAL JOINT

G. A. Day, A. C. Jones, M. Mengoni, R. K. Wilcox
Insitute of Medical and Biological Engineering, University of Leeds, United Kingdom

ESB2021_1458-DEVELOPING A VALIDATED OSTEOCHRONDRAL GRAFT REPAIR FINITE ELEMENT MODEL-1458.pdf

The Influence of Trabecular Bone Density in the Cemented Arthroplasty - An Experimental Study

A. I. Cabrinha[1], A. M. Ramos[2]
[1]Universidade Aveiro, Portugal; [2]Universidade Aveiro, Portugal

ESB2021_1592-The Influence of Trabecular Bone Density in the Cemented Arthroplasty-1592.pdf

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1:30pm - 2:45pm

Soft-Tissue.4: Soft tissue mechanics

Session Chair: **Estefania Peña**
https://teams.microsoft.com/l/channel/19%3a1c67951192494ef19dedc6f6b20b4592%40thread.tacv2/TR15_Soft%2520tissue%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: COLLECTIVE CELL MIGRATION AND RESIDUAL STRESS ACCUMULATIONS

I. D. Pajic-Lijakovic
University of Belgrade, Faculty of Technology and Metallurgy, Serbia

ESB2021_105-PT COLLECTIVE CELL MIGRATION AND RESIDUAL STRESS ACCUMULATIONS-105.pdf

IN VIVO MECHANICAL CHARACTERIZATION AND TISSUE-SCALE MODELLING OF KELOID AND SURROUNDING HEALTHY SKIN

A. Elouneg[1], A. Bertin[1], N. Marie[2], Q. Lucot[1], D. Sutula[1], F. Chouly[2], A. Lejeune[1], T. Lihoreau[3], B. Chatelain[4], G. Rolin[5], S. Bordas[6], E. Jacquet[1], J. Chambert[1]
[1]Univ. Bourgogne Franche-Comté, FEMTO-ST Institute, Department of Applied Mechanics, CNRS/UFC/ENSMM/UTBM, Besançon, France; [2]Univ. Bourgogne Franche-Comté, Institut de Mathématiques de Bourgogne, Dijon, France; [3]INSERM CIC 1431, CHU Besançon, F-25000 Besançon, France; [4]Service de Chirurgie Maxillo-faciale, Stomatologie et Odontologie Hospitalière, CHU Besançon, F-25000 Besançon, France; [5]Service de Chirurgie Maxillo-faciale, Stomatologie et Odontologie Hospitalière, CHU Besançon, F-25000 Besançon, France; [6]University of Luxembourg, Institute of Computational Engineering, Luxembourg

ESB2021_1756-IN VIVO MECHANICAL CHARACTERIZATION AND TISSUE-SCALE MODELLING-1756.pdf

Articulating Surface Properties of the Bovine Acetabular Labrum

M. X. T. Santschi[1], S. Huber[1], S. Künzli[1], C. Schwank[1], M. Leunig[1,2], S. J. Ferguson[1]
[1]ETH Zurich, Institute for Biomechanics, Zurich, Switzerland; [2]Schulthess Clinic, Department of Orthopedic Surgery, Zurich, Switzerland

ESB2021_1691-Articulating Surface Properties of the Bovine Acetabular Labrum-1691.pdf

REDUCED PARAMETER ADAPTIVE QUASI-LINEAR VISCOELASTIC (AQLV) MODEL OF SOFT BIOLOGICAL TISSUE

O. J. Aryeetey[1], M. Frank[1,2], D. H. Pahr[1,2]
[1]Karl Landsteiner University of Health Science, Austria; [2]Technische Universität (TU) Wien

ESB2021_1293-REDUCED PARAMETER ADAPTIVE QUASI-LINEAR VISCOELASTIC-1293.pdf

DEGENERATION DECREASES ELASTIC PROPERTIES OF MENISCAL TISSUE

D. Warnecke[1], M. Kugel[1], J. Schwer[1], M. Faschingbauer[2], L. Dürselen[1], A. Ignatius[1], A. Seitz[1]
[1]Ulm University Medical Centre, Germany, Germany; [2]University and Rehabilitation Hospital Ulm, Ulm University Medical Centre, Germany

ESB2021_1259-DEGENERATION DECREASES ELASTIC PROPERTIES OF MENISCAL TISSUE-1259.pdf

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1:30pm - 2:45pm

Spine.6: Spine

Session Chair: **Andre P. G. Castro**
https://teams.microsoft.com/l/channel/19%3a6c533dfc4fe141b79f06b34b62f96265%40thread.tacv2/TR09_Spine?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

The strain distribution in osteophytes on the vertebral body under different loading conditions.

D. Marras[1], M. Palanca[2], L. Cristofolini[1]
[1]Alma Mater Studiorum Università di Bologna, Italy; [2]University Of Sheffield, UK

ESB2021_1649-The strain distribution in osteophytes on the vertebral body under different loading.pdf

DESIGN AND OPTIMIZATIONS OF AN INTERVERTEBRAL IMPLANT MATERIALS

A. Ramos[2], M. Mesnard[1], Y. Ledoux[3]
[1]Institut de Mécanique et d'Ingénierie, Université de Bordeaux, France; [2]University of Aveiro, Portugal; [3]Institut de Mécanique et d'Ingénierie, Université de Bordeaux, France

ESB2021_1733-DESIGN AND OPTIMIZATIONS OF AN INTERVERTEBRAL IMPLANT MATERIALS-1733.pdf

Effect of endplate-to-endplate filling in vertebroplasty

I. Santos, N. Hagenmeyer, Y. Chevalier, C. Birkenmaier
University Hospital LMU Munich, Germany

ESB2021_1764-Effect of endplate-to-endplate filling in vertebroplasty-1764.pdf

Type, size and position of the metastasis as indicators for better predicting the behaviour of metastatic vertebrae

M. Palanca[1,2,4], G. Barbanti-Bròdano[3], D. Marras[4], A. Gasbarrini[3], E. Dall'Ara[1,2], L. Cristofolini[4]
[1]Dept of Oncology and Metabolism, University of Sheffield, United Kingdom; [2]INSIGNEO Institute for in silico medicine, University of Sheffield, United Kindgom; [3]Dept of Oncology and Spine Surgery, Rizzoli Orthopaedic Institute, Italy; [4]Dept of Industrial Engineering, Alma Mater Studiorum – University of Bologna, IT

ESB2021_1443-Type, size and position of the metastasis as indicators-1443.pdf

A COMBINED IN VITRO – IN SILICO APPROACH FOR LUMBAR SPINE KINETIC AND KINEMATIC CHARACTERIZATION

S. Borrelli[1], M. Terzini[1], G. Putame[1], A. Ferro[2], S. Marone[2], C. Bignardi[1], A. L. Audenino[1]
[1]PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Oncologic Orthopaedic Surgery Division, CTO Hospital - Città della Salute e della Scienza di Torino, Italy

ESB2021_1783-A COMBINED IN VITRO – IN SILICO APPROACH FOR LUMBAR SPINE KINETIC AND KINEMATIC CHARACTERIZATION-_a.pdf

1:30pm - 2:45pm

TM-Meth.3: Computational methods in tissue mechanics

Session Chair: **M. Ángeles Anson**

https://teams.microsoft.com/l/channel/19%3a8f97a330e4e34ccebb7a9fe5ff82ea30%40thread.tacv2/TR16_CompMethods%2520in%2520Tissue%2520mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Predicting two corrective outcomes for sagittal craniosynostosis

C. Cross[1], R. H Khonsari[2], G. Patermoster[4], D. Johnson[3], Y. Ventikos[1], L. Kölby[5], M. Moazen[1]
[1]Department of Mechanical Engineering, University College London, London, UK; [2]Service de Chirurgie Maxillo-Faciale et plastique, Necker – Enfants Malades University Hospital, Université de Paris Paris, France; [3]Oxford Craniofacial Unit, Oxford University Hospital, NHS foundation trust, Oxford, UK; [4]Department of Neurosurgery, Necker – Enfants Malades University Hospital, Université de Paris Paris, France; [5]Department of Plastic Surgery, Sahlgrenska University Hospital, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

ESB2021_1528-Predicting two corrective outcomes for sagittal craniosynostosis-1528.pdf

LINKING LOCAL MECHANICAL STIMULI AND MINERAL FORMATION - A SURFACE STRAIN DILATION APPROACH FOR TISSUE BIOMECHANICS

J. K. Griesbach, G. N. Schädli, N. Ohs, G. R. Paul, C. J. Collins, R. Müller, M. Rubert
ETH Zürich, Switzerland

ESB2021_1530-LINKING LOCAL MECHANICAL STIMULI AND MINERAL FORMATION-1530.pdf

COMPARISON OF SINGLE VERTEBRA MODELS INCLUDING ENDPLATES FOR FAILURE LOAD ESTIMATION

V. Allard[1,2], J.-P. Roux[2], C. Confavreux[2,3], F. Bermond[1], D. Mitton[1], H. Follet[2]
[1]Univ Lyon, Université Claude Bernard Lyon 1, Univ Gustave Eiffel, LBMC UMR_T9406, 69622 Lyon, France; [2]Univ Lyon, Université Claude Bernard Lyon 1, INSERM, LYOS UMR 1033, 69008 Lyon, France; [3]Centre Expert des Métastases et d'Oncologie Osseuses (CEMOS), Service de Rhumatologie Sud, Hospices Civils de Lyon, Lyon, France

ESB2021_1564-COMPARISON OF SINGLE VERTEBRA MODELS INCLUDING ENDPLATES-1564.pdf

POLYESTER SCAFFOLD DEGRADATION MODEL: FROM IN-VITRO TO IN-SILICO PREDICTIONS

S. Russo, P. Alamán-Diéz, F. Serrano-Alcalde, J. M. García-Aznar, M. A. Perez
University of Zaragoza, Spain

ESB2021_1648-POLYESTER SCAFFOLD DEGRADATION MODEL-1648.pdf

Estimation of Ultrasound Intensity for In-Vitro Stimulation of Cells

M. Majnooni[1,2], P. Lasaygues[3], V. Long[3], J.-C. Scimeca[4], D. Momier[4], C. Guivier-Curien[2], C. Baron[1]
[1]Aix-Marseille Université, CNRS, ISM UMR7287, France; [2]Aix-Marseille Université, CNRS, Centrale Marseille, IRPHE UMR7342, France; [3]Aix-Marseille Université, CNRS, Centrale Marseille, LMA, UMR7031, France; [4]Université Cote d'Azur, CNRS, iBV UMR7277, INSERM iBV U1091, France

ESB2021_1715-Estimation of Ultrasound Intensity for In-Vitro Stimulation of Cells-1715.pdf

2:45pm - 3:00pm

break-d3-4: Break

3:00pm - 3:45pm

Key-3: Keynote Lecture David Steinman

Session Chair: **Jerome Noailly**
Session Chair: **Alberto Redaelli**

https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

"TURBULENCE" IN BLOOD: EVERYTHING OLD IS NEW AGAIN

D. Steinman
University of Toronto, Canada

ESB2021_1885-"TURBULENCE" IN BLOOD-1885.pdf

3:45pm - 4:00pm

break-d3-5: Break

4:00pm - 5:00pm

Biof&Resp.2: Biofluid and respiratory mechanics

Session Chair: **Choon Hwai Yap**

https://teams.microsoft.com/l/channel/19%3a2081d60fb92d46459ea5b53887f869be%40thread.tacv2/TR26_Biofluid%2520and%2520Respiratory%2520mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

In-vitro platform for wave propagation investigations in the lower urinary tract

L. Bereuter[1], L. Ferrari[1,2], M. L. Costantino[2], Y. Civet[3], Y. Perriard[3], B. Kiss[4], D. Obrist[1], F. Burkhard[4], F. Clavica[1]
[1]ARTORG Center for Biomedical Engineering Research, University of Bern, Switzerland; [2]Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy; [3]Integrated Actuators Laboratory, École polytechnique fédérale de Lausanne, Switzerland; [4]Department of Urology, Inselspital, Bern University Hospital, Switzerland

ESB2021_1727-In-vitro platform for wave propagation investigations-1727.pdf

THE INTERPLAY BETWEEN FLUID MECHANICS AND ENCRUSTATIONS ON INDWELLING URETERAL STENTS

S. Zheng[1], D. Obrist[1], D. Carugo[2], S. Waters[3], F. Burkhard[4], F. Clavica[1]
[1]ARTORG Center, University of Bern, CH; [2]Department of Pharmaceutics, University College London, UK; [3]Mathematical Institute, University of Oxford, UK; [4]Department of Urology, Bern University Hospital, CH

ESB2021_1584-THE INTERPLAY BETWEEN FLUID MECHANICS AND ENCRUSTATIONS-1584.pdf

PATIENT BREATHING SIMULATOR FACILITATES THE DEVELOPMENT OF SPONTANEOUS MODE IN NOVEL VENTILATOR DESIGN

J. Frattolin[1], D. J. Watson[1], M. Madekurozwa[1], W. Bonneuil[1], A. C. Moore[1], J. E. Moore Jr[1], J. Mathiszig-Lee[2,3], J. van Batenburg-Sherwood[1]
[1]Department of Bioengineering, Imperial College London, United Kingdom; [2]Department of Surgery and Cancer, Imperial College London, United Kingdom; [3]Department of Anaesthesiology and Perioperative Medicine, Royal Marsden Hospital, United Kingdom

ESB2021_1624-PATIENT BREATHING SIMULATOR FACILITATES THE DEVELOPMENT-1624.pdf

Influence of Patient Breathing and Coordination on Inhaled Drug Deposition in Image-Based Models

J. Williams[1], **S. Cunningham**[2], **A. Ozel**[1], **U. Wolfram**[1]
[1]School of Engineering and Physical Sciences, Heriot-Watt University, United Kingdom; [2]Centre for Inflammation Research, University of Edinburgh, United Kingdom

ESB2021_1330-Influence of Patient Breathing and Coordination on Inhaled Drug Deposition-1330.pdf

MODELLING LYMPH PROPULSION IN A 3D RECONSTRUCTED MURINE COLLECTING VESSEL WITH 3 LYMPHANGIONS IN SERIES

G. Adeli Koudehi[1], **C. A. Silvera Delgado**[1], **M. Van Impe**[1], **P. Cornillie**[2], **C. Casteleyn**[2], **C. Vanhove**[3], **C. Debbaut**[1], **P. Segers**[1]
[1]Ghent University, IBiTech-bioMMeda, Belgium; [2]Ghent University, Department of Morphology (Veterinary Medicine), Belgium; [3]Ghent University, IBiTech-MEDISIP-INFINITY, Belgium

ESB2021_1583-MODELLING LYMPH PROPULSION IN A 3D RECONSTRUCTED MURINE COLLECTING VESSEL WITH 3 LYMPHANGIONS IN.pdf

Implementing physiological processes in computational fluid dynamics models of the cerebrospinal fluid

S. Vandenbulcke[1], **T. De Pauw**[2], **F. Dewaele**[2], **P. Segers**[1]
[1]Ghent University, IBiTech-bioMMeda, Department of Electronics and Information Systems, Belgium; [2]Ghent University Hospital, Department of Neurosurgery, Belgium

ESB2021_1376-Implementing physiological processes in computational fluid dynamics models-1376.pdf

4:00pm - 5:00pm

Cell.4: Cellular and molecular biomechanics

Session Chair: **Jess Snedeker**

https://teams.microsoft.com/l/channel/19%3a14ea6f3449684f5698dff33ab5c47781%40thread.tacv2/TR05_Cellular%2520and%2520Molecular%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

OSTEOGENESIS IMPERFECTA: BRITTLE BONES FROM STRONGER COLLAGEN FIBRILS

M. Nalbach[1], **N. Motoi**[2], **F. Gantner**[1], **O. G Andriotis**[1], **L. Battle**[3], **A. Docaj**[3], **A. Ovsianikov**[1], **G. Schitter**[1], **A. Carriero**[3], **P. J Thurner**[1]
[1]TU Wien, Austria; [2]Kobe University, Japan; [3]The City College of New York, USA

ESB2021_1697-OSTEOGENESIS IMPERFECTA-1697_a.pdf

MICROFABRICATION OF A 3D NICHOID WITH SPECIFIC GEOMETRY FOR THE EXPANSION OF HUMAN MESENCHYMAL STEM CELLS

B. Barzaghini[1], **L. Messa**[1], **F. Rey**[2], **F. Fanizza**[1], **G. Cerullo**[3], **R. Osellame**[3], **G. V. Zuccotti**[2], **S. Carelli**[2], **M. T. Raimondi**[1]
[1]Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milano, Italy; [2]Pediatric Clinical Research Center Fondazione Romeo ed Enrica Invernizzi, Department of Biomedical and Clinical Science L. Sacco, Università di Milano, Milan, Italy; [3]Istituto di Fotonica e Nanotecnologie (IFN)-CNR and Department of Physics, Politecnico di Milano, Milano, Italy

ESB2021_1513-MICROFABRICATION OF A 3D NICHOID WITH SPECIFIC GEOMETRY-1513.pdf

ENGINEERING BREAST CANCER MICROENVIRONMENT: A MECHANICAL STUDY FOR STEM CELL THERAPY

D. N. Metsiou, **F. Kozaniti**, **D. Deligianni**
Laboratory of Biomechanics and Biomedical Engineering, Department of Mechanical Engineering and Aeronautics, University of Patras, Rion, Patra, 26504.

ESB2021_1535-ENGINEERING BREAST CANCER MICROENVIRONMENT-1535.pdf

CARDIAC HYBRID CELLULAR AUTOMATA SIMULATION FOR 2D CARDIAC DYNAMICS

L. M. Treml[1], **A. Gizzi**[2], **E. Bartocci**[1]
[1]Vienna University of Technology, Austria; [2]University of Rome Campus Bio-Medico, Italy

ESB2021_1595-CARDIAC HYBRID CELLULAR AUTOMATA SIMULATION FOR 2D CARDIAC DYNAMICS-1595.pdf

ORBITAL SHAKING FOR ENHANCING CHONDROGENESIS FOR FACIAL CARTILAGE TISSUE ENGINEERING

T. H. Jovic[1,2], **F. Zhao**[3], **I. S. Whitaker**[1,2]
[1]Reconstructive Surgery and Regenerative Medicine Research Group, Swansea University Medical School, Swansea, UK; [2]Welsh Centre for Burns & Plastic Surgery, Morriston Hospital, Swansea, UK; [3]Zienkiewicz Centre for Computational Engineering, College of Engineering, Swansea University, UK

ESB2021_1527-ORBITAL SHAKING FOR ENHANCING CHONDROGENESIS FOR FACIAL CARTILAGE TISSUE ENGINEERING-1527.pdf

POWER LAW RHEOLOGY TO DESCRIBE CELL MECHANICS

A. Weber[1], **Z. Barbara**[1], **J. Iturri**[1], **R. Benitez**[2], **M. dM Vivanco**[3], **J. L. Toca-Herrera**[1]
[1]Institute for Biophysics, University of Natural Resources and Life Sciences, Vienna, Austria; [2]Departamento de Matemáticas para la Economía y la Empresa, Facultad de Economía, Universidad de Valencia, Spain; [3]Cancer Heterogeneity Lab, CIC bioGUNE, Bizkaia Science and Technology Park, Derio, Spain

ESB2021_1795-POWER LAW RHEOLOGY TO DESCRIBE CELL MECHANICS-1795.pdf

4:00pm - 5:00pm

CV-Mech.7: Cardiovascular mechanics

Session Chair: **Ali Cagdas AKYILDIZ**

https://teams.microsoft.com/l/channel/19%3adfc7d4fe37914150a419a66ecd7331f5%40thread.tacv2/TR01_Cardiovascular%2520Mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Ex-Vivo Tensile Testing, Nano-Indentation and Digital Image Correlation Based Plaque Rupture Analysis

S. Guvenir[1], **P. de Miguel**[1,2], **A. C. Akyildiz**[1,2]
[1]Erasmus Medical Center, The Netherlands; [2]Delft University of Technology, The Netherlands

ESB2021_1341-Ex-Vivo Tensile Testing, Nano-Indentation and Digital Image Correlation Based Plaque Rupture.pdf

Investigating the potential of in-vivo MRI strain measurements to identify carotid plaques at risk of rupture

R. Johnston[1,2], **R. Gaul**[1,2], **M. Ghasemi**[1,2], **B. Tornifoglio**[1,2], **C. Lally**[1,2,3]
[1]Trinity Centre for Biomedical Engineering, Trinity College Dublin, Dublin 2, Ireland; [2]Department of Mechanical, Manufacturing & Biomedical Engineering, School of Engineering, Trinity College Dublin, Dublin 2, Ireland; [3]Advanced Materials and Bioengineering Research Centre (AMBER), Trinity College Dublin, Dublin, Ireland

ESB2021_1419-Investigating the potential of in-vivo MRI strain measurements-1419_a.pdf

HEMODYNAMIC AND MOLECULAR PROFILES OF STABLE AND UNSTABLE HUMAN CORONARY PLAQUES

M. Lodi Rizzini[1], **G. Russo**[2], **D. Pedicino**[2], **R. Vinci**[2], **D. Gallo**[1], **L. Genuardi**[2], **F. Migliavacca**[3], **F. Burzotta**[2], **U. Morbiducci**[1], **F. Crea**[2], **G. Liuzzo**[2], **C. Chiastra**[1]
[1]Dept. of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy; [2]Catholic University of the Sacred Heart, Rome; [3]Dept. of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy

ESB2021_1463-HEMODYNAMIC AND MOLECULAR PROFILES OF STABLE AND UNSTABLE HUMAN CORONARY PLAQUES-1463_a.pdf

Analysis of the influence of different mechanical stimuli in atheroma plaques in patient-specific carotids

P. Hernández[1], **M. Cilla**[1,2,3], **M. Á. Martínez**[1,3], **E. Peña**[1,3]
[1]Aragón Institute of Engineering Research (I3A). University of Zaragoza, Zaragoza, Spain; [2]Centro Universitario de la Defensa. Academia General Militar, Zaragoza, Spain; [3]Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Spain

ESB2021_1533-Analysis of the influence of different mechanical stimuli-1533_a.pdf

Heterogenous Material Characterization Of Atherosclerotic Human Carotid Arteries

S. Guvenir[1], H. M. Torun[2], H. H. Hansen[3], A. C. Akyildiz[1,4]
[1]Erasmus Medical Center, The Netherlands; [2]Georgia Institute of Technology; [3]Radboud Medical Center; [4]Delft University of Technology

ESB2021_1621-Heterogenous Material Characterization Of Atherosclerotic Human Carotid Arteries-1621.pdf

ATHEROMA CAP RUPTURE DUE TO MICRO-CALCIFICATIONS

A. Corti[1], A. De Paolis[1], E. Aikawa[2], S. Weinbaum[1], L. Cardoso[1]
[1]The City College of New York, United States of America; [2]Brigham and Women's Hospital, Harvard Medical School, United States of America

ESB2021_1747-ATHEROMA CAP RUPTURE DUE TO MICRO-CALCIFICATIONS-1747.pdf

4:00pm - 5:00pm

CV-Meth.6: Computational methods for cardiovascular applications

Session Chair: **Claudio Chiastra**

https://teams.microsoft.com/l/channel/19%3af7d78c3c31894881a6fd6019be2f1ce2%40thread.tacv2/TR04_CompMethods%2520for%2520Cardio?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

NUMERICAL BIOMECHANICS MODELING OF TREATMENTS FOR MITRAL REGURGITATION

A. White Zeira[1], L. Galili[1], E. Raanani[2], G. Marom[1]
[1]School of Mechanical Engineering, Tel Aviv University, Israel; [2]Leviev Cardiothoracic and Vascular Center, Chaim Sheba Medical Center, Tel Hashomer, Israel

ESB2021_1244-NUMERICAL BIOMECHANICS MODELING OF TREATMENTS FOR MITRAL REGURGITATION-1244.pdf

Lumped models and computational fluid dynamics to study hemodynamics within the left atrial appendage

J. Dueñas-Pamplona[1], J. García[1], J. Sierra-Pallares[2], C. Méndez[2], J. Muñoz-Paniagua[1], J. Goicolea[3], F. Castro[2]
[1]Universidad Politécnica de Madrid, Spain; [2]Universidad de Valladolid, Spain; [3]Hospital Universitario Puerta de Hierro Majadahonda, Spain

ESB2021_1320-Lumped models and computational fluid dynamics to study hemodynamics-1320.pdf

INVESTIGATING THE SWELLING MECHANISM OF SELF-ADHERENT MICRONEEDLES FOR DRUG DELIVERY TO CARDIAC TISSUE

R. Tarpey[1], S. Islam[2], B. Bernardo[2], E. T Roche[1,2], W. Ronan[1]
[1]Biomedical Engineering, School of Engineering, NUI Galway, Ireland; [2]Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA

ESB2021_1687-INVESTIGATING THE SWELLING MECHANISM OF SELF-ADHERENT MICRONEEDLES-1687.pdf

Stabilization for segregated algorithms in cardiac active mechanics

F. Regazzoni[1], A. Quarteroni[1,2]
[1]Politecnico di Milano, Italy; [2]École Polytechnique Fédérale de Lausanne (Professor Emeritus)

ESB2021_1694-Stabilization for segregated algorithms in cardiac active mechanics-1694.pdf

A MULTI-PHYSICS MODEL FOR MYOCARDIAL PERFUSION IN THE HUMAN HEART

S. Di Gregorio[1], C. Vergara[2], G. Montino Pelagi[1], P. Zunino[1], A. Baggiano[3], L. Fusini[3], G. Pontone[3], A. Quarteroni[1]
[1]MOX, Dipartimento di Matematica, Politecnico di Milano, Milano, Italy; [2]LaBS, Dipartimento di Chimica, Materiali e Ingegneria Chimica “Giulio Natta”, Politecnico di Milano, Milano, Italy; [3]Centro Cardiologico Monzino IRCSS, Milano, Italy

ESB2021_1868-A MULTI-PHYSICS MODEL FOR MYOCARDIAL PERFUSION IN THE HUMAN HEART-1868.pdf

AN INITIAL EXPERIENCE OF CONSTRAINED MIXTURE BASED CARDIAC GROWTH AND REMODELLING

D. Guan, H. Gao, X. Luo
School of Mathematics & Statistics, University of Glasgow, UK

ESB2021_1446-AN INITIAL EXPERIENCE OF CONSTRAINED MIXTURE BASED CARDIAC GROWTH AND REMODELLING-1446.pdf

4:00pm - 5:00pm

Ergo-Rehab.2: Ergonomics/Occupational biomechanics/Rehabilitation

Session Chair: **Benedikt Helgason**

https://teams.microsoft.com/l/channel/19%3a70721cfbfa724fa7b16a39df6d5b8329%40thread.tacv2/TR20_Ergonomics-Occupational-Rehabilitation?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

DEVELOPMENT OF A SMART MATERIAL ABLE TO USE AS SOFT ACTUATOR OR SENSOR IN HEALTHCARE

A. D. André[1], A. M. Teixeira[1], P. Martins[2]
[1]INEGI, Portugal; [2]INEGI, LAETA, Portugal

ESB2021_1233-DEVELOPMENT OF A SMART MATERIAL ABLE TO USE AS SOFT ACTUATOR OR SENSOR-1233.pdf

Accuracy of inertial sensor in the analysis of center of mass displacement

F. Temporiti[1,2,4], A. Vagnini[3], R. Furone[3], G. Zanotti[1], M. Galli[4], R. Gatti[1,2]
[1]Humanitas Clinical Institute, Italy; [2]Humanitas University, Italy; [3]BTS SpA, Italy; [4]Politecnico di Milano, Italy

ESB2021_1298-Accuracy of inertial sensor in the analysis of center of mass displacement-1298.pdf

L5-S1 joint moment does not predict internal back loading and consequent risk on low back injury

A. van der Have[1], W. Wang[1,2], S. Van Rossom[1], I. Jonkers[1]
[1]KULeuven, Belgium; [2]Chinese academy of sciences, China

ESB2021_1448-L5-S1 joint moment does not predict internal back loading and consequent risk-1448.pdf

ANALYSIS OF LOWER LIMB ACTIVATION MODALITIES OF PARKINSON’S DISEASE PATIENTS DURING GAIT

M. Romanato[1], W. Piatkowska[1], F. Spolaor[1], D. Volpe[2], Z. Sawacha[1]
[1]Department of Information Engineering, University of Padova, Italy; [2]Fresco Parkinson Center, Villa Margherita, S. Stefano, Vicenza, Italy

ESB2021_1589-ANALYSIS OF LOWER LIMB ACTIVATION MODALITIES OF PARKINSON’S DISEASE PATIENTS DURING GAIT-1589.pdf

CATEGORIZATION OF REHABILITATION EXERCISES FROM MOVEMENT SIGNALS USING NEURAL NETWORKS

A. Modrego[1,2], A. Llobet Martínez-Pons[2], A. Masi[2], K. D. Rosales Santana[2], R. Jauregui[1]
[1]DyCare, Spain; [2]FIB-UPC, Spain

ESB2021_1292-CATEGORIZATION OF REHABILITATION EXERCISES FROM MOVEMENT SIGNALS USING NEURAL NETWORKS-1292.pdf

4:00pm - 5:00pm

Ocular.3: Ocular biomechanics

Session Chair: **Thao (Vicky) Nguyen**

https://teams.microsoft.com/l/channel/19%3a19c93deeec6a4524ae33286769cb704d%40thread.tacv2/TR29_Ocular%2520Biomech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

PT: Ocular Biomechanics and Mechanobiology

R. Ethier
Georgia Tech, United States of America

ESB2021_124-PT Ocular Biomechanics and Mechanobiology-124.pdf

Multi-scale patient-specific modeling of the human cornea

C. Giraudet[1,2], P. Le Tallec[1,2], J.-M. Allain[1,2]
[1]LMS, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris, Palaiseau, France; [2]Inria, Palaiseau, France

ESB2021_1180-Multi-scale patient-specific modeling of the human cornea-1180_a.pdf

PATIENT-SPECIFIC BIOMECHANICAL MODELING OF HUMAN CORNEA: MICROSTRUCTURAL COLLAGEN DEGENERATION

A. Gizzi[1], M. L. De Bellis[2], M. Vasta[2], A. Pandolfi[3]
[1]University of Rome Campus Bio-Medico, Italy; [2]University of Chieti-Pescara, Italy; [3]Politecnico di Milano, Italy

ESB2021_1288-PATIENT-SPECIFIC BIOMECHANICAL MODELING OF HUMAN CORNEA-1288.pdf

COMPUTATIONAL MODELS AND EXPERIMENTAL METHODS FOR THE HUMAN CORNEA

A. Pandolfi[1], F. Boschetti[1], A. Cornaggia[2]
[1]Politecnico di Milano, Italy; [2]Universita' di Bergamo, Italy

ESB2021_1326-COMPUTATIONAL MODELS AND EXPERIMENTAL METHODS FOR THE HUMAN CORNEA-1326.pdf

4:00pm - 5:00pm

Orth-dev.4: Implants and devices for orthopaedic applications

Session Chair: **Tomaso Villa**

https://teams.microsoft.com/l/channel/19%3a57027081610449b28ac6f3f78c40f85f%40thread.tacv2/TR11_Implant%2520and%2520Devices%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

USING A CORONAL FRACTURE MODEL TO COMPARE DOUBLE PLATING METHODS FOR BI-CONDYLAR TIBIAL PLATEAU FRACTURES

S. Samsammi[1,2], R. Pätzold[3,4], T. Neuy[5], M. Greinwald[3], P. E. Müller[2], Y. Chevalier[2], K. Püschel[6], P. Augat[3,7]
[1]Department of Mechanical Engineering, Imperial College London, South Kensington Campus, London, UK; [2]Department of Orthopaedics, Physical Medicine and Rehabilitation, University Hospital, LMU Munich, Munich, Germany; [3]Institute for Biomechanics, Berufsgenossenschaftliche Unfallklinik, Murnau, Germany; [4]Department of Trauma Surgery, Berufsgenossenschaftliche Unfallklinik, Murnau, Germany; [5]Paracelsus Medical University, Salzburg, Austria; [6]Department of Forensic Medicine, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; [7]Institute for Biomechanics, Paracelsus Medical University, Salzburg, Austria

ESB2021_1190-USING A CORONAL FRACTURE MODEL TO COMPARE DOUBLE PLATING METHODS-1190_a.pdf

Biomechanical evaluation of the in-situ stability of a novel artificial medial meniscus implant

M. Sukopp[1], M. Shemesh[2], E. Pruech[2], E. Linder-Ganz[2], S. Hacker[3], V. Condello[4], J. Schwer[1], A. Ignatius[1], L. Dürselen[1], A. M. Seitz[1]
[1]Institute of Orthopaedic Research and Biomechanics, Centre of Trauma Research, Medical Centre, Ulm University, Ulm, Germany, Germany; [2]Active Implants LLC, Memphis, USA; [3]Grossmont Orthopedic Medical Group, La Mesa, USA; [4]Humanitas Castelli Clinic, Bergamo, Italy

ESB2021_1242-Biomechanical evaluation of the in-situ stability of a novel artificial medial meniscus.pdf

ASSESSMENT OF LINER MOVEMENT ON DUAL MOBILITY CUP: PRELIMINARY EX VIVO STUDY

L. Riglet[1], A. Naaim[1], A. Viste[1,2], H. Liebgott[3], R. Dumas[1], M. H. Fessy[1,2], L.-L. Gras[1]
[1]Univ Lyon, Université Claude Bernard Lyon 1, Univ Gustave Eiffel, IFSTTAR, UMRT_9406, Laboratoire de Biomécanique et Mécanique des Chocs, 69622 Lyon, France; [2]Hospices Civils de Lyon, Hôpital Lyon Sud, Service de Chirurgie Orthopédique, 165 Chemin du Grand Revoyet,69495 Pierre Benite Cedex, France; [3]CREATIS, Univ Lyon, INSA Lyon, UCBL, UJM Saint-Étienne, CNRS UMR 5220, Inserm U1294, Lyon, France

ESB2021_1316-ASSESSMENT OF LINER MOVEMENT ON DUAL MOBILITY CUP-1316.pdf

IMPROVED STABILITY OF DISTAL TIBIA FRACTURES AFTER ANGULAR STABLE INTRAMEDULLARY NAILING – A BIOMECHANICAL STUDY

I. Zderic[1], J. Caspar[1], M. Blauth[2], A. Weber[2], R. Koch[2], K. Stoffel[3], C. Finkemeier[4], M. Hessmann[5], B. Gueorguiev[1]
[1]AO Research Institute Davos, Switzerland; [2]DePuy Synthes, Switzerland; [3]University Hospital Basel, Switzerland; [4]Orthopaedic Trauma Surgeons of Northern California, United States; [5]Academic Teaching Hospital Fulda, Germany

ESB2021_1322-IMPROVED STABILITY OF DISTAL TIBIA FRACTURES AFTER ANGULAR STABLE INTRAMEDULLARY NAILING – A B.pdf

COMPARISON OF CEMENTED VS UNCEMENTED TOTAL HIP ARTHROPLASTY AND PERIPROSTHETIC FRACTURE FIXATION

K. Wang[1], E. Kenanidis[2], Z. Gamie[3], K. Suleman[1], M. Miodownik[1], M. Avadi[4], D. Horne[4], J. Thompson[4], E. Tsiridis[2], M. Moazen[1]
[1]University College London, United Kingdom; [2]Aristotle University Medical School, Greece; [3]Newcastle University, UK; [4]DePuy Synthes, UK

ESB2021_1502-COMPARISON OF CEMENTED VS UNCEMENTED TOTAL HIP ARTHROPLASTY AND PERIPROSTHETIC FRACTURE_a.pdf

IN VIVO BIOMECHANICS ASSESSMENT OF A CR TOTAL KNEE PROSTHESIS DURING SIT TO STAND: COUPLING DYNAMIC RSA AND FE ANALYSIS

A. I. Mirulla[1], L. Bragonzoni[2], R. Zinno[2], S. Zaffagnini[1,3], B. Innocenti[4]
[1]Department of Biomedical and Neuromotor Sciences, University of Bologna, Italy; [2]Department for Life Quality Studies, University of Bologna, Italy; [3]2nd Orthopaedic and Traumatologic Clinic, IRCCS Istituto Ortopedico Rizzoli, Italy; [4]BEAMS Department (Bio Electro and Mechanical Systems), Université Libre de Bruxelles, Belgium

ESB2021_1704-IN VIVO BIOMECHANICS ASSESSMENT OF A CR TOTAL KNEE PROSTHESIS DURING SIT-1704.pdf

4:00pm - 5:00pm

Orth-meth.6: Computational methods for orthopaedic applications

Session Chair: **Stephen Ferguson**

https://teams.microsoft.com/l/channel/19%3a0ab6907d523640f29f1b501dd6cbece7%40thread.tacv2/TR13_CompMethods%2520for%2520Ortho?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

Biomechanics of Structural Allograft Impaction in High Tibial Osteotomy: A Finite Element Study

A. Meynen[1,2], F. Vanquickenborne[1], S. Bartholomeeusen[3], G. H. van Lenthe[4], L. Scheys[1,2]
[1]Institute for Orthopaedic Research and Training, KU Leuven, Belgium; [2]Division of Orthopaedics, University Hospitals Leuven, Belgium; [3]Department of Orthopaedic Surgery, AZ Herentals, Belgium; [4]Biomechanics Section, KU Leuven, Belgium

ESB2021_1250-Biomechanics of Structural Allograft Impaction in High Tibial Osteotomy-1250.pdf

COMPUTATIONALLY EFFICIENT MODEL OF THE IMPLANTED KNEE FOR TIME-SENSITIVE APPLICATIONS

E. Bori[1], A. Navacchia[2], L. Wang[2], L. Duxbury[2], S. P. McGuan[2], B. Innocenti[1]
[1]BEAMS Department, Université Libre de Bruxelles, Belgium; [2]Smith & Nephew, Inc., San Clemente, California

ESB2021_1310-COMPUTATIONALLY EFFICIENT MODEL OF THE IMPLANTED KNEE-1310.pdf

CHANGING THE STRENGTH OF MUSCLES CROSSING SINGLE LOWER LIMB JOINTS ONLY AFFECTS KNEE JOINT REACTION FORCES

M. Bicer, A. T. Phillips, L. Modenese
Imperial College London, United Kingdom

ESB2021_1791-CHANGING THE STRENGTH OF MUSCLES CROSSING SINGLE LOWER LIMB JOINTS ONLY AFFECTS KNEE JOINT.pdf

Biomechanical analysis of intra-articular stresses caused by the reconstruction of the ACL using a section of the patellar tendon

M. R. Gantiva Díaz, L. M. Dussan Delvasto, C. J. Cifuentes de La Portilla
Universidad de Los Andes, Colombia
ESB2021_1811-Biomechanical analysis of intra-articular stresses caused-1811.pdf

SUBJECT-SPECIFING MODELING AND SIMULATION OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION SURGERY

K. Risvas[1], D. Stanev[2], K. Moustakas[1]
[1]Visualization and Virtual Reality Group, Department of Electrical and Computer Engineering, University of Patras, Greece; [2]École Polytechnique Fédérale de Lausanne - EPFL, Switzerland
ESB2021_1815-SUBJECT-SPECIFING MODELING AND SIMULATION OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION.pdf

FINITE ELEMENT AND ANALYICAL MODELS FOR WEAR PREDICTION IN HIP PROSTHESES

L. Mattei[1], C. Curreli[2], F. Di Puccio[1]
[1]University of Pisa, Italy; [2]University of Bologna
ESB2021_1857-FINITE ELEMENT AND ANALYICAL MODELS FOR WEAR PREDICTION-1857.pdf

4:00pm - 5:00pm

TM-Meth.4: Computational methods in tissue mechanics

Session Chair: **Jorge Grasa**

https://teams.microsoft.com/l/channel/19%3a8f97a330e4e34ccebb7a9fe5ff82ea30%40thread.tacv2/TR16_CompMethods%2520in%2520Tissue%2520mech?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb

MECHANOSTAT ESTIMATION FROM TIME-LAPSED IN VIVO MICRO-CT MOUSE DATA

F. C. Marques, A. C. Scheuren, E. Wehrle, R. Müller
ETH Zurich, Switzerland
ESB2021_1469-MECHANOSTAT ESTIMATION FROM TIME-LAPSED IN VIVO MICRO-CT MOUSE DATA-1469.pdf

"COUNT ON ME": AN AUTOMATED, NEURAL NETWORK-BASED SYSTEM FOR DETECTION OF APOPTOTIC NUCLEI

G. Iannuzzi[1], F. Bussa[1], S. Casarin[2], P. Cerveri[1], E. Dondossola[3]
[1]Politecnico di Milano, Milan, Italy; [2]Houston Methodist Hospital, Houston, TX, USA; [3]MD Anderson Cancer Centre, Houston, TX, USA
ESB2021_1491-"COUNT ON ME"-1491.pdf

AUTOMATIC NEURAL NETWORK-BASED BONE METASTASIS TUMOR VESSEL ANALYSIS ON MICROSCOPY IMAGES

G. Alessandrelli[1], S. Casarin[2], P. Cerveri[1], E. Dondossola[3]
[1]Politecnico di Milan, Milan, Italy; [2]Houston Methodist Hospital, Houston, TX, USA; [3]MD Anderson Cancer Center, Houston, TX, USA
ESB2021_1492-AUTOMATIC NEURAL NETWORK-BASED BONE METASTASIS TUMOR VESSEL ANALYSIS-1492.pdf

APPLYING LARGE SCALE TOPOLOGY OPTIMIZATION IN COMPUTATIONAL DESIGN OF BIOMECHANICAL STRUCTURES

T. Smit[1], N. Aage[2], S. J. Ferguson[1], B. Helgason[1]
[1]ETH Zurich, Switzerland; [2]Technical University of Denmark, Denmark
ESB2021_1742-APPLYING LARGE SCALE TOPOLOGY OPTIMIZATION IN COMPUTATIONAL DESIGN-1742.pdf

Investigation of Stress Distribution in Growth Plates of Adolescents with Normal and Idiopathic Scoliosis Spine

Z. Kamal, G. Rouhi
University of Twente, The Netherlands
ESB2021_1634-Investigation of Stress Distribution in Growth Plates of Adolescents with Normal and Idiopathic.pdf

5:00pm - 5:15pm

break-d3-6: Break

5:15pm - 5:45pm

Closing: Closing Ceremony

https://teams.microsoft.com/l/channel/19%3a10b0b3b4f23648fa94df3a1183cc0a8f%40thread.tacv2/PLENARY?groupId=ab621003-bcef-42a7-9749-03244ed16b45&tenantId=0a17712b-6df3-425d-808e-309df28a5eeb