

Munich, Germany, July 29th – August 4th 2006



5th World Congress of Biomechanics

incorporating the
15th Congress of the European Society of Biomechanics
31st Congress of the Société de Biomécanique
4th ESEM International Symposium on Microdamage

Poster Program

Date: 12/07/06

1. Bone Mechanics – Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Rik Huiskes, Reiner Gradinger

1.1. Advanced Detection of Bone Quality Posters

Session Organizers: Peter Niederer, Audrey Berthier

1. Sensitivity of ultrasonic properties to bone microarchitectural and material properties: a simulation study #5693

G. Haïat^a, F. Padilla^b and P. Laugier^b; ^a Faculté des Sciences et Technologie, Université Paris 12, CNRS UMR 7052, Créteil, France ; ^b Laboratoire d'Imagerie Paramétrique, CNRS UMR 7623, Université Pierre et Marie Curie - Paris 6, Paris, France

2. Impact of cortical porosity on 1 MHz ultrasound bulk waves #6802

C. Baron, M. Talmant, P. Laugier ; Laboratoire d'Imagerie Paramétrique, CNRS UMR 7623, Université Paris 6, France

3. Anisotropy in relaxation modulus of cortical bone analyzed by newly proposed empirical equation #6777

Naoki Sasaki, Toshiya Iyo and Akimasa Fukui; Division of Biological Sciences, Graduate School of Science, Hokkaido Univ., Sapporo, Japan

4. Numerical simulation of the axial transmission technique for bone evaluation: a probabilistic approach #5898

C. Desceliers^a, Q. Grimal^b, G. Haiat^c, S. Naili^c, C. Soize^a; ^aUniversité de Marne la Vallée, Laboratoire de Mécanique, Marne la Vallée, France; ^b Université Paris 6, Laboratoire d'Imagerie Paramétrique, UMR CNRS 7623, Paris, France ; ^c Université Paris 12, Laboratoire de Mécanique Physique, UMR CNRS 7052 B2OA, Créteil, France

5. Development of a wave front removal algorithm for an ultrasonic axial transmission device used for the *in vivo* mechanical characterization of cortical bone #5702

Magali Sasso^a, Maryline Talmant^b, Guillaume Haïat^a, Pascal Laugier^b, Salah Naili^a; ^a Université Paris 12, Laboratoire de Mécanique Physique, UMR CNRS 7052 B2OA, Créteil, France ; ^b Laboratoire d'Imagerie Paramétrique, CNRS UMR 7623, Université Pierre et Marie Curie - Paris 6, Paris, France

6. Patients Satisfaction with the Knee and Ankle Function after Limb Lengthening - Long-Term Follow-Up #7533

Märtson A, Kirjanen, A. Toom, T. Haviko; Tartu Univ., Clinic of Traumatology and Orthopaedics, Tartu, Estonia

7. Numerical simulation of the influence of the poroelastic nature of human trabecular bone on ultrasonic wave propagation #5687

G. Haïat^a, F. Padilla^b and P. Laugier^b; ^a Université Paris 12, Laboratoire de Mécanique Physique, UMR CNRS 7052 B2OA, Créteil, France; ^b Laboratoire d'Imagerie Paramétrique, CNRS UMR 7623, Université Pierre et Marie Curie - Paris 6, Paris, France

8. In vitro studies of cancellous bones. Comparison of the prediction of Biot's model, experiments and computer simulations #5226

Michal Pakula^{a,b,c}, Frederic Padilla^{a,b,c}, Emmanuel Bossy^{a,b,c}, Pascal Laugier^b; ^a Laboratoire d'Optique Physique, ESCPI, CNRS UPR 5, Paris, France; ^b Laboratoire d'Imagerie Paramétrique, CNRS UMR 7623, Université Paris 6, Paris, France; ^c Institute of Environmental Mechanics & Applied Computer Science Bydgoszcz Univ., Bydgoszcz, Poland

9. Ultrasonically determined thickness of long cortical bones: simulation study #5115

Petro Moilanen, Maryline Talmant, Pascal Laugier; Laboratoire d'Imagerie Paramétrique, UMR CNRS 7623, Université Paris 6, Paris, France

10. Estimation of mechanical properties of trabecular bone using rapid prototyping technology #4226

Takatoshi UMENO^a, Kazuki TAKAHASHI^b, Toshiaki HARA^b, Kunihiro TOKUNAGA^c and Naoto ENDO^c
^a Venture Business Laboratory, Niigata Univ., Niigata, Japan; ^b Dept. of Mechanical Engineering, Niigata Univ., Niigata, Japan; ^c Orthopaedic Hospital, Niigata Univ., Niigata, Japan

11. Quantitative ultrasound to predict the mechanical properties of bone #4295

Manijhe Mokhtari-Dizaji^a, Maryam rahele Dadras^b, Bager Larijani^c, Gity Torkaman^d; ^a Medical Physics Dept., Tarbiat Modarres Univ., Tehran, Iran; ^b Medical Physics Dept., Tarbiat Modarres Univ., Tehran, Iran; ^c Metabolism and Endocrine Research Center, Tehran Medical Sciences Univ., Iran; ^d Physiotherapy Dept., Tarbiat Modarres Univ., Tehran, Iran

12. Visualization and analysis of the distribution of X-ray radiation intensity during the propagation through biological structures #7456

Zdzisław Król^a, Marcin Binkowski^b, Zygmunt Wróbel^b, Hans-Florian Zeilhofer^a; ^a HFZ-Center of multidisciplinary research in cranio-maxillo-facial surgery, Univ. of Basel, Basel, Switzerland; ^b Institute of Computer Science, Dept. of Biomedical Computer Systems, Univ. of Silesia, Sosnowiec, Poland

13. A new methodology of elastic properties evaluation of cortical bone by ultrasonic wave inversion #4612

Tomáš Goldmann^a, Hanuš Seiner^{a,b}, Michal Landa^b; ^a Czech Technical Univ. in Prague, Prague, Czech Republic; ^b The Academy of Sciences, Prague, Czech Republic;

14. Compression and ultrasound testing of canine trabecular bone properties #4715

Bernd-Arno Behrens^a, Anas Bouguecha^a, Thomas Pressel^b, Carl Joachim Wirth^b, Andrea Meyer-Lindenberg^c, Ingo Nolte^c; ^aInstitute of Metal Forming, Univ. of Hannover, Germany; ^bDept. of Orthopaedic Surgery, Medical Univ. of Hannover, Germany; ^cSmall Animal Clinic, Univ. of Veterinary Medicine Foundation Hannover, Germany

15. Recent advances of the simulation of X-ray radiation propagation through bone tissue #7454

Marcin Binkowski^a, Zdzisław Król^b, Zygmunt Wróbel^a, Hans-Florian Zeilhofer^b; ^aInstitute of Computer Science, Dept. of Biomedical Computer Systems, Univ. of Silesia, Sosnowiec, Poland; ^bHFZ-Center of multidisciplinary research in cranio-maxillo-facial surgery, Univ. of Basel, Basel, Switzerland

1.2. Bone Healing and Osteointegration Posters

Session Organizers: Lutz Claes, Georges van der Perre, Keita Ito

16. Torsional testing on a non-union model of fractured tibia of rabbit #4322

Kwong KSC^a, Hui CC^a, Guo X^a, Cheng JCY^b; ^aDept. of Rehabilitation Sciences, Hong Kong Polytechnic Univ., HKSAR, China; ^bDept. of Orthopaedics & Traumatology, Chinese Univ. of Hong Kong, HKSAR, China

17. Effect of reindeer BMP on the healing of a critical size long bone defect #6571

Tarmo Pekkarinen^a, Timo Jämsä^b, Mikko Määttä^b, Oili Hietala^a, Pekka Jalovaara^a; ^aDept. of Surgery, Univ. of Oulu, Oulu, Finland; ^bDept. of Medical Technology, Univ. of Oulu, Oulu, Finland

18. Osseointegration of titanium implant for the transfemoral prosthesis- animal study #7200

Xiang Dong^a, Yubo Fan^{b,c}, Gang Zhong^c, Jie Long^c, Kaihua Xiu^c, Bo Wang^c, Ming Zhang^a
^aDept. of Health Technology and Informatics, The Hong Kong Polytechnic Univ., Hong Kong, China; ^bDept. of Bioengineering, Beijing Univ. of Aeronautics & Astronautics, Beijing, China; ^cBiomechanical Engineering Laboratory, Sichuan Univ., Chengdu, China

19. The Contribution to the Exact Determination of Biomechanochemical Processes at Indirect Healing in Callus after the Distraction Femoral Osteotomy #7214

^aMiroslav Petřtyl, ^aJana Danesova, ^bIvo Marik, ^aJaroslav Lisal; ^aCzech Technical Univ., FCEng., Laboratory of Biomechanics and Biomaterial Engineering, Prague, Czech Republic; ^bAmbulant Centre for Defects of Locomotor Apparatus, Prague, Czech Republic

20. Flexible fixation-induced delayed fracture healing in a murine fracture model #5885

Petra Heil^a, Ina Gröngröft^a, Romano Matthys-Mark^c, Patrick Lezuo^a, Stephan Perren^a, Keita Ito^{a,b}
^aAO Research Institute, Davos, Switzerland; ^bDept. Biomed. Eng., Eindhoven Univ. of Tech., Eindhoven, Netherlands; ^cAO Development Institute, Davos, Switzerland;

21. Full-Field Strain Acquisition on Ovine Fracture Callus with Electronic Speckle Pattern Interferometry #7468

Marcus Mohr^a, Ulrich Simon^b, Lutz Claes^b, Michael Bottlang^a; ^aBiomechanics Laboratory, Legacy Research & Technology Center, Portland, Oregon, USA; ^bInstitute of Orthopaedic Research and Biomechanics, Univ. of Ulm, Ulm, Germany

22. Finite-element analysis of osteointegrated microporous titanium interface #5840

Monica Soncini^a, Donatella Scafetta^a, Franco M. Montevecchi^b, Alberto Redaelli^a; ^aDept. of Bioengineering, Politecnico di Milano, Milano, Italy; ^bDept. of Mechanical Engineering, Politecnico di Torino, Torino, Italy

23 Effect of bone fragment displacements on bone regenerate formation during distraction osteogenesis #7617

Jaroslav Filipiak^a, Piotr Kuroпка^b, Leszek Morasiewicz^c, Artur Krawczyk^c, Romuald Bedzinski^a, Jan Kuryszek^b, Andrzej Wall^c; ^aWroclaw Univ. of Technology, Wroclaw, Poland; ^bAgricultural Univ. of Wroclaw, Wroclaw, Poland; ^cWroclaw Medical Univ., Wroclaw, Poland

1.3 Bone as an Organ Posters

Session Organizer: Marie Christine Hobatho

24. A new optimization approach to predict bone's morphology #5383

Farzam Farahmand, Hamed Pishdast, Ali Marzban, Bahman Nasserroleslami; School of Mechanical Engineering, Sharif Univ. of Technology, Tehran, Iran

25. Apparent Elastic Moduli of Trabecular Bone #7261

Iwona Jasiuk^a and Congyu Wang^b; ^aDept. of Mechanical and Industrial Engineering, Univ. of Illinois at Urbana-Champaign, Urbana, IL, USA; ^bDept. of Mechanical and Industrial Engineering, Concordia Univ., Montreal, Quebec, Canada

26. Boundary integral method in the theory of bone poroelasticity 6218

Merab Svanadze. I. Vekua Institute of Applied Mathematics, Tbilisi State Univ., Tbilisi, Georgia

27. Intraoperative measurements of load acting across the median sternotomy closure in sheep # 6964

Massimiliano Baleani^a, Cristiano Peroni^a, Michael Silbermann^b, Shtiwi Sawaed^c, Marco Viceconti^a
^aLaboratorio di Tecnologia Medica, Istituti Ortopedici Rizzoli, Bologna, Italy; ^bDept. of Anatomy & Cell Biology, Faculty of Medicine, Technion, Haifa, Israel; ^cDept. of Cardiothoracic Surgery, The Carmel Medical Center, Haifa, Israel

1.4.1 Bone Remodelling Posters

Session Organizer: Harri Weinans

28. Bone marrow cell differentiation regulated by gel-embedded osteocyte under multi-dimensional gravity #5697

Junpei MATSUDA^a, Kosaku KURATA^b, Takanobu FUKUNAGA^a, Hidehiko HIGAKI^b; Graduate School of Engineering, Kyushu SangyoUniv., Fukuoka, Japan; ^bFaculty of Engineering, Kyushu SangyoUniv., Fukuoka, Japan

29. The poroparameters for evaluation of structural-osteoinductive and mechanical properties of bone-implant porous coating interface. Part 2. Experimental investigations of the poroaccessibility parameters influence on shear strength of bone-porous implant interface #6286

Mariusz Winięcki^{a,b}, Andrzej Auguściński^a, Piotr Rogala^c, Janusz Mielniczuk^a, Ryszard Uklejewski^{b,d}
^aChair of Machine Design Fundamentals, Poznan Univ. of Technology, Poznan, Poland; ^b Dept. of Fundamentals of Medical Bioengineering, Kazimierz WielkiUniv. of Bydgoszcz, Poland; ^c Spine Surgery, Orthopaedics and Traumatology Dept., PoznanUniv. of Medical Sciences, Poznan, Poland; ^d Dept. of Pediatric Endocrinology, PoznanUniv. of Medical Sciences, Poznan, Poland

30. Simulation of trabecular bone structure formation and remodelling in tibia bone #7402

Krzysztof Ścigała, Jakub Słowiński; Division of Biomedical Engineering and Experimental Mechanics, WrocławUniv. of Technology, Wrocław, Poland

31. How the Stress Changes Regulate the Rate of Bone Thinning/Thickening in the Bone with High/Low Density #7424

Miroslav Petrtyl, Jana Danesova; Czech TechnicalUniv., Laboratory of Biomechanics and Biomaterial Engineering, Prague, Czech Republic

32. Intermittent treatment yields a slightly higher bone mass than continuous treatment, according to a simulation of bone remodeling during antiresorptive treatment #7234

J.C. van der Linden, J.A.N. Verhaar, H. Weinans; Dept. of orthopaedics, Erasmus Medical Center, Rotterdam, The Netherlands

33. Micromechanics Modeling of Trabecular Bone #7259

Iwona Jasiuk; Dept. of Mechanical and Industrial Engineering, Univ. of Illinois at Urbana-Champaign, Urbana, IL, USA

34. The development of a simple biomechanical model for the rotator cuff #5229

Manuj Wadha^a, Carlos Wigderowitz^a, Rami Abboud^b; ^aOrthopaedic & Trauma Surgery, Univ. of Dundee, Scotland, UK.; ^bInstitute of Motion Analysis and Research (IMAR), Univ. of Dundee, Scotland, UK.

35. Simulation of 3D architectural and mechanical changes in human trabecular bone during menopause #6628

X Sherry Liu, Angela H Huang, Paul Sajda, and X Edward Guo; Bone Bioengineering Laboratory, Dept. Of Biomedical Engineering, ColumbiaUniv., New York, Ny, Usa

36. High-Frequency Oscillatory Motions Applied to the Tibia during Disuse Normalize Trabecular Stress Distributions # 7032

Engin Ozcivici, Russell Garman, Henry Chung, Shiyun Xu, Stefan Judex; Biomedical Engineering, SUNY Stony Brook, NY, USA

37. A viscoelastic bone remodelling model #6308

Sébastien Baïotto^a, Béatrice Labat^b, Bernadette Miara^c, Didier Geiger^a, Mustapha Zidi^b; ^aUniversité Paris 12 Val de Marne, Faculté de Sciences et Technologie, B2OA CNRS, Créteil, France; ^bUniversité Paris 12 Val de Marne, Faculté de Médecine, INSERM UMR 651, Créteil, France; ^cGroupe ESIEE, Laboratoire MOSIM, Cité Descartes, Noisy le Grand, France

1.5. Bone Tissue Posters

Session Organizer: Ralph Mueller

38. Effect of collagen matrix on mechanical properties of bone #7440

Masahiro Todoh, Shigeru Tadano, Yusuke Imari

Division of Human Mechanical Systems and Design, Graduate School of Engineering, HokkaidoUniv., Sapporo, Japan

39. A Detailed Composite Model for Micromechanics of Cortical Bone #4643

Ali Reza Heidari^a, Mohammad Reza Eslami^b, Ahmad Reza Arshi^c

^aFracture Lab, Biomedical Engineering Faculty, Amir KabirUniv., Tehran, Iran; ^b ASME Mem., Mechanical Engineering Faculty, Amir KabirUniv., Tehran, Iran; ^cBiomedical Engineering Faculty, Amir KabirUniv., Tehran, Iran

40. Effect of Microstructural Components On The Mechanical Behavior Of Human Bones; Femur, Tibia and Fibula #6787

Ibrahim Ucok^a, Guven Bulut^b, Cuma Bindal^c, Metin Usta^d, Muzaffer Yildiz^b, Rahul Ribeiro^c, Bo Ning^e, Hong Liang^e, Ahmet Hikmet Ucisik^f; ^a Istanbul TechnicalUniv., Maslak-Istanbul, Turkey; ^bKartal State Hospital, Kartal-Istanbul,

Turkey; ^cSakaryaUniv., Adapazarı-Sakarya, Turkey; ^dGebze Institute of Technology, Gebze-Kocaeli, Turkey; ^eTexas A&MUniv., College Station, Texas, USA; ^fBogaziciUniv., Bebek-Istanbul, Turkey

41. Bone quality after osteonecrosis of the rat femoral head #4407

Go I Yamako ^a, Reiko Takano ^b, Kunihiro Tokunaga ^b, Naoto Endo ^b, Toshiaki Hara^c; ^a Graduate School of Science and Technology, NiigataUniv., Niigata, Japan; ^b Division of Orthopaedic Surgery, NiigataUniv., Niigata, Japan; ^c Faculty of Engineering, NiigataUniv., Niigata, Japan

42. Effect of Chemical Sterilization on Mechanical Properties of Human Cortical Bone and Patellar Tendon Allografts #4132

Mark E. Zobitz^a, Paul M. Huddleston^a, David B. Jones^a; ^A Orthopedic Biomechanics Laboratory, Mayo Clinic, Rochester, Mn, Usa

43 Behavior of Cortical Bone under Loading in Micro Level; an Experimental and FEM Study #4641

Ali Reza Heidari^a, Mohammad Reza Eslami^b, Ahmad Reza Arshi^c; ^aFracture Lab, Biomedical Engineering Faculty, Amir KabirUniv., Tehran, Iran; ^b ASME Mem., Mechanical Engineering Faculty, Amir KabirUniv., Tehran, Iran; ^c Biomedical Engineering Faculty, Amir KabirUniv., Tehran, Iran

44 High Hydrostatic Pressure as an Alternative Sterilization Method to Irradiation Or Autoclaving Of Tumor-Afflicted Bone? #5547

Diehl P.^a, Steinhauser E.^a, Schauwecker J.^a, Schmitt M.^b, Magdolen U.^a, Gradinger R.^a, Mittelmeier W.^c
^a Orthopedic Surgery, TechnicalUniv. of Munich, Munich, Germany; ^b Obstetrics and Gynecology, TechnicalUniv. of Munich, Munich, Germany; ^c Orthopedic Surgery, Univ. of Rostock, Rostock, Germany

45 Macroscopic and microscopic mechanical properties of Wistar cortical bone #6265

Maximilien Vanleene, Marie Christine Ho Ba Tho ; Laboratoire de Biomécanique et génie Biomédical, UTC-CNRS UMR 6600, Université de Technologie de Compiègne, France

46 Determination of 'age at death' by laboratory based analytical methods for forensic purposes using human bone #6411

P. Zioupos; Dept. of Materials & Medical Sciences, CranfieldUniv., Shrivenham, UK

47 Improvement of experimental-numerical cross-validation in studies of the proximal femur #6036

M. Juszczak^{a,b}, F. Pallini^a, E. Schileo^{a,c}, F. Taddei^a, L. Cristofolini^{a,b}; ^aMedical Technology Lab, Rizzoli Orthopedic Institutes, Bologna, Italy; ^bEngineering Faculty, Univ. of Bologna, Italy; ^cEngineering Faculty, Univ. of Padua, Italy

48 The deformation behaviour of morsellised cortico-cancellous bone in compression may be described by a material model typically used for foams # 6149

Knut B. Lunde^{a,b}, Bjørn Skallerud^a; ^a Dept. of Structural Engineering, Faculty of Engineering Science and Technology, NorwegianUniv. of Science and Technology, Trondheim, Norway; ^b Norwegian Orthopaedic Implant Research Unit, St.Olavs Hospital, Trondheim, Norway

1.6 Osteoporosis Posters

Session Organizer: Bert van Rietbergen

49 Experimental and mechanical analysis of deterioration and failure osteoporotic bone #4775

Mohamed Tellache^{ab}, Martine Pithioux^a, Patrick Chabrand^a, Christian Hochard^b; ^aLaboratory of Aerodynamics and Biomechanics of Motion, Marseilles, France; ^bLaboratory of Mechanics and Acoustic, Marseilles, France

50 Fractal dimension as a parameter of bone architecture #7519

Anna Nikodem^a, Bartczak Kamil^a, Marek Rybaczuk^b and Szymon Dragan^c; ^a Biomedical Engineering and Experimental Mechanics Division WroclawUniv. of Technology, Poland; ^b Continual Media Mechanics Division WroclawUniv. of Technology, Poland; ^c Dept. of Trauma Treatment and Orthopedics Wroclaw Academy of Medicine, Poland

51 Development of osteoporotic effects in bone – mathematical and computational modeling #7423

Tomasz Lekszycki; Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland

52. Bone Fracture Analysis of Osteoporosis Vertebra to Evaluate Therapeutic Effect

By Patient-Specific Finite-Element Method #5346

Daisuke Tawara, Jiro Sakamoto Hideki Murakami, Norio Kawahara, Juhachi Oda and Katsuro Tomita KanazawaUniv., Kanazawa, Japan

52. Can creep cause vertebral deformity? A study on whole cadaveric vertebrae #7432

P Pollintine, B Offa-Jones, P Dolan, MA Adams; Dept. of Anatomy, Univ. of Bristol, Bristol, UK

53. Bone Quality In Osteoporotic Compact Bone #5820

Oran D. Kennedy^{a,b}, Orlaith Brennan^{a,b}, Fergal J. O'Brien^{a,b}, Susan M. Rackard^c, David Taylor^a, T. Clive Lee^{a,b}; ^aTrinity Centre for Bioengineering, Trinity College Dublin, Ireland; ^bDept. of Anatomy, Royal College of Surgeons in Ireland, Dublin, Ireland; ^cSchool of Agriculture, Food Science and Veterinary Medicine, UCD, Dublin, Ireland

53. A standardized bending and breaking test for the normal and osteoporotic metaphyseal tibia of the rat - Effect of estradiol, testosterone and raloxifene #6331

Stürmer EK, Seidlová-Wuttke D^a, Sehmisch S, Rack T, Wille J, Frosch KH, Wuttke W^a, Stürmer KM

Dept. of Trauma and Reconstructive Surgery, Georg-August-University of Goettingen, Germany

^aDept. of Clinical and Experimental Endocrinology, Georg-August-University of Goettingen, Germany

2.10 Musculoskeletal Mechanics- Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Walter Herzog, Kozaburo Hayashi

2.1.1 Cartilage Biomechanics Posters

Session Organizers: Van C. Mow, Robert Sah

1. Strain patterns within rat cartilaginous growth plate under uniaxial compression differ among histomorphological zones #4240

Isabelle Villemure^a, Luc Cloutier^a, John R. Matyas^b, Neil A. Duncan^b; ^aMechanical Engineering Department, Ecole Polytechnique of Montreal, Canada; ^bMcCaig Centre for Joint Injury and Arthritis Research, The University of Calgary, Canada

2. An experimental investigation of boundary lubrication mechanism with protein and lipid in synovial joint using total internal reflection fluorescence microscopy #5657

Yoshinori Sawae, Teruo Murakami; Faculty of Engineering, Kyushu University, Fukuoka, Japan

3. Dynamic Viscoelastic Response of Articular Cartilage Under Shear and Compressive Loading Following Enzymatic Treatment #4661

Shogo Miyata^a, Tetsuya Tateishi^b, Katsuko Furukawa^c, Takashi Ushida^d; ^aGraduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Fukuoka, Japan; ^bNational Institute for Material Science, Tsukuba, Japan; ^cGraduate School of Engineering, University of Tokyo, Tokyo, Japan; ^dGraduate School of Medicine, University of Tokyo, Tokyo, Japan

4. Mechanical effect of pericellular matrix formation by chondrocyte cultured in agarose-gel on the viscoelastic properties of agarose-gel matrix #6774

Naoki Sasaki, Takahiro Imai and Akimasa Fukui; Division of Biological Sciences, Graduate School of Science, Hokkaido University, Sapporo, Japan

5. Effects on Mechanical Loading on Solute Transport in the Intact, Perfused Equine Metacarpophalangeal Joint #4580

K. P. Arkill, C. P. Winlove; School of Physics, University of Exeter, Exeter, UK

6. Application of Acrylic Split-Hopkinson-Bar Method for Determining Mechanical Properties of Articular Cartilage at High Strain Rate #6779

Koichi Kobayashi^a, Makoto Sakamoto^a, Yuji Tanabe^b, Tatsuya Kikuchi^c, Go Omori^d, Yoshio Koga^e
^aDept. of Health Sciences, Niigata University School of Medicine, Niigata, Japan; ^bDept of Mechanical Engineering, Niigata University, Niigata, Japan; ^cDepartment of Orthopaedic Surgery, Niigata University School of Medicine, Niigata, Japan; ^dCenter for Transdisciplinary Research, Niigata University, Niigata, Japan; ^eDepartment of Orthopaedic Surgery, Niigata Kobari Hospital, Niigata, Japan

7. Composition based finite element analysis of micropipette aspiration reveals changes in the pericellular matrix during cartilage degeneration #7636

Petro Julkunen^a, Wouter Wilson^b, Jukka Jurvelin^a, Rami Korhonen^c; ^aDepartment of Applied Physics, University of Kuopio, Finland; ^bDepartment of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; ^cHuman Performance Laboratory, Faculty of Kinesiology, University of Calgary, Alberta, Canada

8. One-step-insertion technique for osteochondral transplantation: An alternative over tapping? #7254

Vivek K. Shekhawat, Toni Kressner, Matias Salineros, Markus A. Wimmer; Rush University Medical Center, Chicago, USA

9. Deformation analysis of articular cartilage during impaction loading #6268

Sascha Mueller^a, Uwe-Jens Goerke^a, Hubert Guenther^b, Markus A. Wimmer^c; ^aInstitute of Mechanics, Chemnitz University of Technology, Chemnitz, Germany; ^bTBZ-Pariv, Chemnitz, Germany and AO Research Institute, Davos, Switzerland; ^cDepartment of Orthopedic Surgery, Rush University Medical Center, Chicago, USA

10. Cartilage Failure Under Cyclic Loads #6166

Narendra K. Simha^a, Ravi Namani^b, Jack L. Lewis^a, Perry H. Leo^c; ^aBiomechanics Lab, Department of Orthopaedic Surgery, University of Minnesota, Minneapolis, MN, USA; ^bDepartment of Mechanical Engineering, University of Miami, Coral Gables, FL, USA; ^cDepartment of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, MN, USA

11. Importance of the composition of pericellular matrix for the deformation behaviour of chondrocytes in articular cartilage

Petro Julkunen^a, Wouter Wilson^b, Jukka Jurvelin^a, Rami Korhonen^c; ^aDepartment of Applied Physics, University of Kuopio, Finland; ^bDepartment of Biomedical Engineering, Eindhoven University of Technology, Netherlands; ^cHuman Performance Laboratory, Faculty of Kinesiology, University of Calgary, Canada

12. Loading rate sensitivity of articular cartilage #5516

Matt Szarko, John E.A. Bertram; University of Calgary, Calgary, Canada

13. Theoretical analysis of response of hydrogel layer bound with a rigid substrate to penetrating a rigid punch having a circular pit. Application to the novel bearing system of artificial human knee or hip replacements #7349

Bohdan Monastyrskyy; Pidstryhach Institute for Applied Problems of Mechanics and Mathematics, Lviv, Ukraine

14. The Shear Stresses Regulate the Reconstruction Processes in Bone #7624

^aJana Danesova, ^aMiroslav Petrtyl, ^bMilan Adam, ^bHana Hulejova; ^aCzech Technical University, F.C.Eng., Laboratory of Biomechanics and Biomaterial Engineering, Prague, Czech Republic; ^bInstitute of Rheumatology, Prague, Czech Republic

15. Application of reproducible impulse loading to study osteochondral grafting procedures #7529

^aToni Kressner, ^aThorsten Schwenke, ^bUwe-Jens Goerke, ^aMarkus A. Wimmer; ^aRush University Medical Center, Chicago, USA; ^bTechnical University of Chemnitz, Germany

16. Biomechanical characteristics of different articular cartilage fixation methods – bonded; glued; sutured #5039

Johann Fierlbeck^a, Carsten Englert^b, Bob Reuben^c, Rainer Müller^d, Joachim Hammer^a and Michael Nerlich^b
^a Biomechanic Research Regensburg, University of Applied Sciences, Regensburg, Germany; ^b Department of Trauma Surgery, University Hospital Regensburg, Regensburg, Germany; ^c Department of Mechanical Engineering Heriot-Watt University, Edinburgh, UK; ^d Institute of Physical and Theoretical Chemistry, University of Regensburg, Regensburg, Germany

17. Preliminary mechanical equilibrium testing of *Limulus polyphemus* gill cartilage #5746

James P. Mac Dougall^a, M. Edwin DeMont^b, Glenda M. Wright^c; ^aSchool of Biomedical Engineering, Dalhousie University, Halifax, Nova Scotia, Canada; ^b Department of Biology, St Francis Xavier University, Antigonish, Nova Scotia, Canada; ^cDepartment of Biomedical Sciences, UPEI Atlantic Veterinary College, Charlottetown, Prince Edward Island, Canada

2.2. Disc Mechanics Posters

Session Organizers: Lori Setton, Keita Ito

18. Alternative method for obtained in vitro intradiscal pressure #7341

Felipe F. Lemos^{a,b}, José E. Tomazini^a, Mauro H. Mathias^a; ^aDepartment of Mechanics, São Paulo State University, Guaratinguetá – São Paulo, Brazil; ^b Department of Physical Therapy, Faculty of Pindamonhangaba, Pindamonhangaba – São Paulo, Brazil.

19. Can stress be measured inside degenerated intervertebral discs? #7439

Jesse Chu, Daniel Skrzypiec, Phill Pollintine, Mike Adams; Department of Anatomy, University of Bristol, Bristol, U.K.

20. Biomechanical Evaluation Of Conventional Annulus Closure Methods Required For Nucleus Replacement #5726

Frank Heuer, Sina Erlenmaier, Lutz Claes, Hans-Joachim Wilke; Institute Of Orthopaedic Research And Biomechanics, University Of Ulm, Ulm, Germany

21. A composites-based hyperelastic anisotropic constitutive model for soft tissue and its application to the human annulus fibrosus #6509

Z.Y. Guo, X.Q. Peng, And B. Moran; Department Of Mechanical Engineering, Northwestern University, Evanston, IL, Usa

22. Impact of various loading modes on lumbar intradiscal pressure #4686

^aSten Holm, ^aLars Ekström, ^bAage Indahl, ^aAllison Kaigle Holm, ^aClaes Jonasson, ^aTommy Hansson
^aDept. of Orthopaedics, Sahlgrenska University Hospital, Göteborg, Sweden; ^bDept. of Physical Medicine, Hospital for Rehabilitation, Stavern, Norway.

23. The aggregate modulus and hydraulic permeability of compressed bovine nucleus pulposus tissue under single-step and multiple-step loading conditions #6043

Paul Heneghan, Phil E. Riches; Department of Applied Physiology, University of Strathclyde, Glasgow, UK

24. The neutral zone in lumbar joint movements and how it is affected by preload #5503

Hans de Visser, Clayton Adam, Mark Pearcy; Institute for Health and Biomedical Innovation, School of Engineering Systems, Queensland University of Technology, Brisbane, Australia

2.3. Motor Control of Human Movement Posters

Session Organizers: W. I. Schoellhorn, Keith Davids

25. Chaos theory applied to posturographic data in Parkinsonian patients #5774

Luigi Ladislao^a, Marco Guidi^b, Giacomo Ghetti^c, Sandro Fioretti^a; ^a Department of Electromagnetism and Bioengineering, Università Politecnica delle Marche, Ancona, Italy; ^bNeurology Operating Unit, INRCA Hospital, Ancona, Italy; ^cposture And Movement Analysis Laboratory, Inrca Hospital, Ancona, Italy

26. The influence of sport on sensory and motor abilities in children #5852

Beate Prätorius, Thomas L. Milani; Chemnitz University of Technology – Institute of sport science, Chemnitz, Germany

27. Investigation of shock waves at tibia and L3 in walking-running transition #5381

Kin Shung Hwang^a, Carlos Gomes de Oliveira^{a,b,c}, Jurandir Nadal^a; ^a Biomedical Engineering Program, COPPE/UFRJ, Rio de Janeiro, Brazil; ^b Biomechanics Laboratory, EEFD/UFRJ, Rio de Janeiro, Brazil
^c Physical Activity Science Institute of Aeronautics, Rio de Janeiro, Brazil

28. Minimization of Muscle Activity as a Trigger of Walking-Running Transition #5386

Kin Shung Hwang^a, Carlos Gomes de Oliveira^{a,b,c}, Jurandir Nadal^a; ^a Biomedical Engineering Program, COPPE/UFRJ, Rio de Janeiro, Brazil; ^b Biomechanics Laboratory, EEFD/UFRJ, Rio de Janeiro, Brazil
^c Physical Activity Science Institute of Aeronautics, Rio de Janeiro, Brazil

29. Biomechanical study on obstacle characteristics and prehension parameters interaction #5983

Marie GERONIMI & Philippe GORCE; Laboratoire d'Ergonomie Sportive et Performance EA 3162, UFR STAPS Université du Sud Toulon Var – BP 20132, La Garde, France

30. Effects of sensory deficits on limits of stability in patients with diabetic sensory neuropathy #4520

Yi-Ru Chen^{a,b}, Sang-I Lin^a, Chien-Fen Liao^a, Chien-Wen Chou^b; ^a Department of Physical Therapy, National Cheng Kung University, Tainan, Taiwan; ^b Chi-Mei Foundation Hospital, Tainan, Taiwan

31. Joint coordination during platform translation #4721

Chiung-Ling Chen^{a,b}, Fong-Chin Su^a, Hong-Wen Wu^c, Shyi-Kuen Wu^{a,d}, Kwok-Tak Yeung^b
^a Institute of Biomedical Engineering, National Cheng Kung University, Tainan, Taiwan; ^b School of Occupational Therapy, Chung Shan Medical University, Taichung, Taiwan; ^c School of Sports Medicine, China Medical University, Taichung, Taiwan; ^d Department of Physical Therapy, Hung Kuang University, Taichung County, Taiwan

32. Intelligent Wireless Tele-FES Walking Assistant System for Foot Drop Patients #7258

Johnson Tin Chak Pang, Raymond Kai Yu Tong; Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong, PR China

33. Changes in noise structure by learning a balancing tasks #7313

Maren Michelbrink, Wolfgang I. Schöllhorn; University of Muenster, Institute of Sport Science, Muenster, Germany

34. Post-effects of vibration on Achilles tendon in different postures during walking #4438

I-Jung Tsai, Sang-I Lin; Department of Physical Therapy, National Cheng Kung University, Tainan, Taiwan

35. Change in servo-control ability with postural stability on aging #4413

Takatoshi Umeno^a, Hidehiko Higaki^b, Yoshitaka Nakanishi^c, Takeshi Shimoto^b and Toshiaki Hara^d
^a Venture Business Laboratory, Niigata University, Niigata, Japan; ^b Department of Mechanical Engineering, Kyushu Sangyo University, Fukuoka, Japan; ^c Department of Digital Medicine, Kyushu University, Fukuoka, Japan; ^d Department of Mechanical Engineering, Niigata University, Niigata, Japan

36. The reliability of a curve fitting technique for Hoffmann-reflex recruitment curve analysis #7500

E. Paul Zehr, Marc Klimstra; Rehabilitation Neuroscience Laboratory, University of Victoria, Victoria, British Columbia, Canada

37. Effect of different movement patterns on functional reach #4376

Chien-Fen Liao, Sang-I Lin; Department of Physical Therapy, National Cheng Kung University, Tainan, Taiwan

38. Effect of weight bearing on ankle joint position sense #4375

Li-Ju Hsu, Sang-I Lin, Shih-Wei Li, I-Jung Tsai, Chien-Fen Liao; Department of Physical Therapy, National Cheng Kung University, Tainan, Taiwan

39. Effect of deep brain stimulation on a rapid arm movement in Parkinson's disease #4419

Klaus Schneider^a, Kai Bötzel^b, Andreas Born^a, Katja Vetter^a; ^a Institute of Sport Science and Sports, Bundeswehr University Munich, Neubiberg, Germany; ^b Department of Neurology, University of Munich (LMU), Munich, Germany

40. Optimal tendon compliance for maximising efficiency during locomotion #4483

Glen Lichtwark^a, Alan Wilson^{a,b}; ^a Structure and Motion Laboratory, Royal Veterinary College, Hatfield, Hertfordshire, UK; ^b Structure and Motion Laboratory, Institute of Orthopaedics and Musculoskeletal Sciences, University College London, Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex, UK.

2.4 Muscle Energetics Posters

Session Organizer: Alberto E. Minetti

41. Effect of muscle-tendon interaction on torque development of isometric tetanic contraction #6378

Toshiaki Oda^a, Kentaro Chino^a, Toshiyuki Kurihara^a, Toshihiko Nagayoshi^b, Emika Kato^b, Hiroaki Kanehisa^a, Tetsuo Fukunaga^b and Yasuo Kawakami^b; ^a University of Tokyo, Japan; ^b Waseda University, Tokorozawa, Japan

2.5. Muscle Mechanics Posters

Session Organizers: Frank Baaijens, Jack Winter, Dilson Rassier

42. Fitting muscle properties of cat M. soleus #4797

Tobias Siebert^a, Heiko Wagner^a, Walter Herzog^b, Reinhard Blickhan^a; ^aInstitute of Sports Science, Friedrich-Schiller-University, Jena, Germany; ^bFaculty of Kinesiology, University of Calgary, Canada

43. Muscle Fatigue Dynamics in the Human Forearm using Ultrasound Elastography: Implications for Muscle Injury and Recovery #6522

R. S. Witte^a, K. Kim^a, B. J. Martin^b and Matthew O'Donnell^a; ^aBiomedical Ultrasonics Laboratory, Biomedical Engineering Department, and ^bCenter for Ergonomics, Industrial and Operations Engineering Department, University of Michigan, Ann Arbor, MI, USA

44. Central and peripheral fatigue during submaximal repetitive isometric contractions in young and old adults #6570

Lida Mademli, Stefanie Bierbaum, Adamantios Arampatzis; Institute of Biomechanics and Orthopaedics, German Sport University Cologne, Germany

45. A State Variable Model of Muscle #6643

Sam Walcott^a, Andy Ruina^a and Walter Herzog^b; ^aDepartment of Theoretical & Applied Mechanics, Cornell University, Ithaca, NY, USA; ^bFaculty of Kinesiology, University of Calgary, Calgary, AB, Canada

46. New Model for the function and kinematics of joints #6293

H. Martin^a, W. Packl^b; ^aInstitut für innovative Medizin, Munich, Germany; ^bInstitut für Biokinematik, Freiburg, Germany

47. The 3D architecture of muscle fascicles in selected muscles and its relevance to force production #4573

H. Stark, M. S. Fischer, N. Schilling; Friedrich-Schiller-Universität Jena, Institut für Spezielle Zoologie und Evolutionsbiologie mit Phyletischem Museum, Jena, Germany

48. Isometric force depression after active shortening is not affected by previous concentric or eccentric contractions #7235

Marc Van Leemputte, Pieter Van Noten; Department of Biomedical Kinesiology, Faculty of Kinesiology and Rehabilitation Sciences, Katholieke Universiteit Leuven, Belgium

49. Immobilizing/Restraining a Large Animal for Imaging Purposes #7241

Walerian Szyszkowski, Wei Cai; Department of Mechanical Engineering, University of Saskatchewan, Saskatoon, Canada

50. Determining muscle-parameters: Adaption to force variations by recursive non-linear regression #5061

Olaf Till, Christian Rode, Tobias Siebert, Reinhard Blickhan; Department Science of Motion, Friedrich Schiller University Jena, Jena, Germany

51. Withdrawn

52. Effect of fascicle behavior on voluntary and electrically evoked eccentric torques #6952

Kentaro Chino^a, Naotoshi Mitsukawa^b, Kai Kobayashi^b, Yusuke Miyoshi^b, Toshiaki Oda^a, Hiroaki Kanehisa^a, Tetsuo Fukunaga^b, Senshi Fukashiro^a, Yasuo Kawakami^b; ^aThe University of Tokyo, Meguro, Tokyo, Japan; ^bWaseda University, Tokorozawa, Saitama, Japan

53. Measurement protocol of isometric force in MLC/mlgf-1 transgenic mice skeletal muscle, which includes determination of isometric fatigue #4479

Emanuele Rizzuto^a, Zaccaria Del Prete^b, Carmine Nicoletti^a, Antonio Musarò^a; ^aDepartment of Histology and Medical Embryology, University of Rome "La Sapienza", Rome, Italy and Interuniversity Institute of Myology; ^bDepartment of Mechanical Engineering, University of Rome "La Sapienza", Rome, Italy

54. Half-sarcomere dynamics and force kinetics in myofibrils – Theoretical description and simulation #5858

Urs Stöcker, Ivo A. Telle, Edgar Stüssi, Jachen Denoth; Laboratory for Biomechanics, ETH Zurich, Switzerland

55. Fascia is able to contract in a smooth muscle-like manner and thereby influence musculoskeletal mechanics #4406

Robert Schleip, Werner Klingler, Frank Lehmann-Horn; Angewandte Physiologie, Ulm University, Germany

56. Deficiency of myostatin impacts the force deficits of fast-fibered skeletal muscles following contraction-induced injury #7481

Christopher L Mendias^a, James E Marcin^b, John A Faulkner^{a,b}; ^aDepartment of Molecular and Integrative Physiology; ^bDepartment of Biomedical Engineering; University of Michigan, Ann Arbor

57. Withdrawn

58. How does tendon compliance affect power generation in cyclic movements? #4213

Christian Rode, Reinhard Blickhan; Institute of Sports Science, Friedrich-Schiller University, Jena, Germany

59. Myosin regulatory light chain phosphorylation: an *in vivo* study of structural implications and effects on cross-bridge cycling #7700

Jessica A. Zaman, Sengen Xu, Leepo Yu; Laboratory of Muscle Biology, National Institute of Arthritis, Musculoskeletal and Skin Diseases, Bethesda, USA

60. STIMULON – specific training of the musculoskeletal system as nature intended #7866

Georg Korfmacher^a, Dorothee Debuse^b, Marcos Pinotti^c; ^a Mechanical Engineer, International Consulting & Partners S.A.H., Luxembourg; ^b School of Health, Physiotherapy Dept., Northumbria University (UNN), Newcastle upon Tyne, UK; ^c DEMEC at Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil

61. Changes in mechanical properties of Achilles tendon resulting from muscle contraction and stretching #5641
Emika Kato, Tetsuo Fukunaga, Yasuo Kawakami; Graduate School of Sport Sciences, Waseda University, Tokorozawa-City, Japan

2.6. Muscle Adaptation and Remodeling Posters

Session Organizer: Jack Winter

62. Fatigability of back extensor muscles does not change during pregnancy #6467

G. Dumas^a, A. Leger^c, A. Plamondon^b, K. Charpentier^a, M. McGrath^d; ^aDepartment of Mechanical and Materials Engineering, ^cCTL, and ^dDepartment of Obstetrics and Gynecology, Queen's University, Kingston, Canada; ^bIRSST, Montréal, Québec

63. Measurement of skeletal muscle mass in lower limbs with a foot-to-foot impedance meter #4434

Helène Morel, Michel Y. Jaffrin and Marie-Valérie Moréno; Dept of Biol. Engineering, Tech. University of Compiègne, France

64. Sinusoidal perturbations to test mechanical properties of plantarflexors after plyometric training #6907

Daniel Lambertz, Jean-François Grosset, Chantal Pérot; UMR CNRS 6600, UTC, Compiègne, France

65. Structure-functional patterns for skeletal muscles #4360

Valery B. Kokshenev; Departamento de Fisica, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil

66. Mechanical properties in young and adult rat muscles submitted to neonatal undernutrition #7245

Ana Elisa Toscano^{ab}, Karla Monica Barros^{ab}, Francis Goubel^a, Raul Manhaes-de-Castro^b, Francis Canon^a
^a UMR CNRS 6600, Université de Technologie de Compiègne, Compiègne, France; ^b Departamento de Nutrição, Universidade Federal de Pernambuco, Recife, Brasil

2.7. Musculoskeletal Modelling Meets Muscle Physiology Posters

Session Organizers: Ton van den Bogert, Maarten Bobbert

67. Self stable basins of attraction of a human arm model: analysis based on Lyapunov functions constructed through radial basis functions #5847

M.Ernst^a, P.Giesl^b, H.Wagner^a and R.Blickhan^a; ^aScience of Motion, Institute of Sport Science, Friedrich-Schiller-University, Jena, Germany; ^bZentrum Mathematik, TU München, Munich, Germany

68. A simple motor model represents most of the shortening characteristics of skeletal muscle #5474

Masami Saito^a, Youjiro Tamura^b, Akira Ito^a; ^adepartment of Electronics and Information Engineering, Suzuka National College of Technology, Suzuka, Japan; ^bdepartment of Physics, Suzuka National College of Technology, Suzuka, Japan

69. The estimation of theoretical values of tendon slack length for individual muscle in humans #5727

Miloslav Vilimek; Dept. of Mechanics, Fac. of Mech. Engineering, Czech Technical University in Prague, Prague, Czech Republic

70. Inverse finite element characterization of soft tissues using genetic algorithm #6817

Karthikeyan B, Chawla A, Mukherjee S; Department of Mechanical Engineering, Indian Institute of Technology, New Delhi, India

71. A passive computational model of rhythmic arm cycling used for the determination of task dynamics #7498

Marc Klimstra, E. Paul Zehr; Rehabilitation Neuroscience Laboratory, University of Victoria, Victoria, British Columbia, Canada

72. The Medio-lateral Force Distribution in the Sheep Knee during Walking #6603

W. R. Taylor^a, C. König^a, A. D. Speirs^a, R. M. Ehrig^b, G. N. Duda^a, M. O. Heller^a; ^aCMSC, Charité – Universitätsmedizin Berlin, Germany; ^bZuse Institute Berlin, Germany

73. Assessment of Patellofemoral Joint Contact Pressure in an Uninjured Knee #6015

Francisco Araujo; Caroline Bernardes; Gustavo Portella; Luis Felipe Silveira; Jefferson Loss
Exercise Research Laboratory / Federal University of the Rio Grande do Sul, Porto Alegre, Brazil.

74. The influence of the equine proximal interphalangeal joint on flexor tendon strain #5909

Siân E. M Lawson^a, Henry Château^b, Philippe Pourcelot^b, Jean-Marie Denoix^b and Nathalie Crevier-Denoix^b
^aCentre for Rehabilitation and Engineering Studies, University of Newcastle upon Tyne, U.K.; ^bBiomécanique et Pathologie Locomotrice du Cheval, Ecole Nationale Vétérinaire d'Alfort, Maisons-Alfort, France

75. Influence of patellar thickness on patellofemoral contact forces and quadriceps muscle forces #6023

Luis Felipe Silveira; Caroline Bernardes; Gustavo Portella; Francisco Araujo; Jefferson Loss
Exercise Research Laboratory / Federal University of the Rio Grande do Sul, Porto Alegre, Brazil

76. Analysis of patella ligament force using two biomechanics models of knee joint #6066

^{a,b}Gustavo Portella; ^aCaroline Bernardes; ^bDaniela Aldabe; ^aFrancisco Araujo; ^aLuis Felipe Silveira; ^aJefferson Loss ;
^aExercise Research Laboratory, Federal University of the Rio Grande do Sul, Porto Alegre, Brazil; ^bUniversity
Methodist Center IPA, Porto Alegre, Brazil

77. Postural configuration and kinematic degrees of freedom affect single muscle end-point forces #6163

Keith Van Antwerp, Lena H. Ting; W. H. Coulter Department of Biomedical Engineering, Emory University and
Georgia Institute of Technology, Atlanta, GA USA

78. Modelling of the temporomandibular joint and assessment of the temporomandibular joint disc movement #4694

Martina Fričová^a, Zdeněk Horák^a, Radek Jirman^b, Svatava Konvičková^a; ^aLaboratory of Biomechanics, Department of
Mechanics, Faculty of Mechanical Engineering, CTU, Prague, Czech Republic; ^bDepartment of Stomatology, 1st
Medical Faculty, Charles University, Prague, Czech Republic

79. 3D Parametrical mechanical modelling of femur #4955

Florence Labesse-Jied^a, Audrey Pustoc'h^b, Cyril Joandel^a, Laurence Chèze^b; LaMI – UBP&IFMA, University
Clermont 2, Montluçon, France; LBMH, INRETS-UCBL, University Lyon 1, Lyon, France

80. Spinal Force estimation from Non-Normalized EMG #6805

Judith M.A. Visser^{a,b}, Wiebe H.K. de Vries^a, Chris T.M. Baten^a, Jaap H. van Dieën^c
^aRoessingh Research and Development, Enschede, The Netherlands; ^bStructure and Motion Laboratory, Royal
National Orthopaedic Hospital, Stanmore, UK; ^cInstitute for Fundamental and Clinical Human Movement Sciences,
Faculty of Human Movement Sciences, Vrije Universiteit, Amsterdam, The Netherlands

81. Inverse-dynamic model of the hindlimb of the rat #6290

Uwe Wolfram^a, Ulrich Simon^a, Thomas Henzler^a, Peter Maißer^b, Lutz Claes^a; ^aInstitute of Orthopaedic Research and
Biomechanics, University of Ulm, Germany; ^bInstitute of Mechatronics at Chemnitz University of Technology,
Chemnitz, Germany

82. Modeling the Effect of Seat Height and Fore-aft Position on Wheelchair Propulsion #6776

Lan-Yuen Guo^b, Kristin D. Zhao^a, Fong-Chin Su^c, Kai-Nan An^a; ^aOrthopedic Biomechanics Laboratory, Division of
Orthopedic Research, Mayo Clinic Rochester, Rochester, MN, USA; ^bFaculty of Sports Medicine, Kaohsiung Medical
University, Kaohsiung, Taiwan; ^cInstitute of Biomedical Engineering, National Cheng Kung University, Tainan,
Taiwan

83. Simulation of force in human elbow biceps by a motor system model using SEMG signal #5500

Akira Ito^a, Youjiro Tamura^b, Masami Saito^a; ^aDepartment of Electronics and Information Engineering, Suzuka National
College of Technology, Suzuka, Japan; ^bDepartment of Physics, Suzuka National College of Technology, Suzuka,
Japan

84. Three Dimensional Lumbar Spine Movements Measured By MRI Reconstruction #4918

Sara Cargill^{a,b}, Mark Pearcy^{a,b}, Mark Barry^c; ^aSchool of Engineering Systems, ^bInstitute for Health and Biomedical
Innovation, ^cHigh Performance Computing; Queensland University of Technology, Brisbane, Australia

85. Experimentally validated finite element model of a human tibia #4804

Hans Gray^a, Amy Zavatsky^a, Luca Cristofolini^{bc}, Harinderjit Gill^d; ^aDept of Engineering Science and ^dDept of
Orthopaedic Surgery (OOEC), University of Oxford, UK; ^bMedical Technology Lab, Rizzoli Orthopaedic Institutes,
Bologna, Italy; ^cEngineering Faculty, University of Bologna, Italy

86. Simulation of an upper extremity motions based on myosignals #6555

Jana Vejpusťková, Miloslav Vilímek, Miroslav Sochor; Department Of Mechanics, Faculty Of Mechanical
Engineering, Ctu In Prague, Czech Republic

87. A “closed-loop” forward dynamic model to predict lower extremity kinematics #6093

Zingde SM,^a Komistek, RD^{a,b}; ^aUniversity of Tennessee, Knoxville, TN, USA; Oak Ridge National Laboratory, Oak
Ridge, TN, USA

2.8.1 Tendons and Ligaments -Mechanics of Normal Tissue Posters**Session Organizers: Savio L.Y. Woo, Richard E. Debski, Steve Abramowich****88. Noncontact ACL injury through impingement against the intercondylar notch #7544**

Li-Qun Zhang^{a,b,c,d}, David T. Fung^{a,d}, Chulhyun Ahn^a, Hyung-Soon Park^a, Yupeng Ren^a, Jason L. Koh^c, Ronald W.
Hendrix^c, Shu Q. Liu^d; ^aRehabilitation Institute of Chicago, Departments of ^bPhysical Medicine and Rehabilitation,
^cOrthopaedic Surgery, ^dBiomedical Engineering, and ^eRadiology, Northwestern University, Chicago, Illinois, USA

89. In vivo sonometry measurement of strain in the human achilles tendon #4928

Arndt, A.^{a,b}, Tomatis, L.^a, Ryberg, Å.^b, Kleman, D.^a, Peolsson, M.^c and Thorstensson, A.^a

a: University College of Physical Education and Sport, Stockholm, Sweden

b: Karolinska University Hospital, Stockholm, Sweden; c: Linköping University, Linköping, Sweden

90. A comparison between the classical approach and a Volterra-Wiener constitutive model in evaluating the viscoelastic properties of mouse medial collateral ligaments #4183

Emanuele Rizzuto^a, Zaccaria Del Prete^b, Antonio Musarò^a; ^aDepartment of Histology and Medical Embryology, University of Rome “La Sapienza”, Rome, Italy and Interuniversity Institute of Myology; ^bDepartment of Mechanical Engineering, University of Rome ‘La Sapienza’, Rome, Italy

91. The effect of stress deprivation on mechanical properties of regenerated and residual tissues in the central third resected rabbit patellar tendon is age dependent #5304

Eijiro Maeda^a, Hiroyuki Asanuma^b, Hitoshi Noguchi^c, Harukazu Tohyama^d, Kazunori Yasuda^d, Kozaburo Hayashi^c; ^aDepartment of Engineering, Queen Mary University of London, London, UK; ^b Graduate School of Engineering Science, Osaka University, Osaka, Japan; ^c Denso Corporation, Nagoya, Japan; ^dDepartment of Advanced Surgery, Hokkaido University School of Medicine, Sapporo, Japan; ^eResearch Institute of Technology, Okayama University of Science, Okayama, Japan

92. Initial Failure Strength of Arthroscopic Biceps Tenodesis Techniques #7592

Ryan S. Costic, Emilio Lopez-Vidriero, Patrick J. Smolinski, Lars G. Gilbertson, Freddie H. Fu, Mark W. Rodosky; Department of Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, PA, USA

93. The use of rope theory to model ligaments #5683

S Puong^a, AMJ Bull^a, JJ Evans^b; ^aDepartment of Bioengineering, Imperial College London, UK

^bRandall Division of Cell and Molecular Biophysics, Kings College London, UK

94. A resultant force and limiting ligament strains approach to computing glenohumeral joint (GHJ) translations #5694

HO Amadi^{a,b}, AMJ Bull^a, UN Hansen^b; Departments of Bioengineering^a and Mechanical Engineering^b, Imperial College London, United Kingdom

95. Experimental evaluation of biological samples impact response #6483

Ferdinand Varga^a, Milan Držik^b, Milan Handl^c, Juraj Chlpík^b, Eva Filová^{a,d}, Evžen Amler^{a,d}

^a Department of Biophysics, Charles University, 2nd Medical Faculty, Prague, Czech Rep.; ^b International Laser Centre, Bratislava, Slovakia; ^c Orthopaedic Clinic, Charles University, University Hospital Motol, Prague, Czech Rep.; ^d Institute of Experimental Medicine, Czech Academy of Sciences, Prague, Czech Rep.

96. The Kinematics of Knee Joint in Different Injury Degrees of Posterior Cruciate Ligament at Full Extension #4707

Chun-Hao Wu, M.S.^a, Cheng-Kung Cheng, Ph.D.^a, Jiann-Jong Liao, Ph.D.^b; ^a Institute of Biomedical Engineering, National Yang Ming University; Taipei, Taiwan; ^b School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University, Taipei, Taiwan

97. Experimental study of different arthroscopic rotator cuff repair techniques #6241

Caroline Öhman^a, Massimiliano Baleani^a, Alessandro Marinelli^b, Gianluca Giavaresi^c, Aldo Toni^a

^aLaboratorio Tecnologia Medica, Istituti Ortopedici Rizzoli, Bologna, Italy; ^bSezione-B Chirurgia Ortopedico-Traumatologica, Istituti Ortopedici Rizzoli, Bologna, Italy; ^cLaboratorio Chirurgia Sperimentale, Istituti Ortopedici Rizzoli, Bologna, Italy

98. Three-Dimensional *in vivo* Knee Joint Laxity under Torsional Loading #6578

Andrea Hemmerich^a, Willem van der Merwe^b, Christopher L. Vaughan^a; ^a Human Biology, University of Cape Town, South Africa; ^b Sports Science Orthopaedics Clinic, Cape Town, South Africa

99. In vivo analysis of the role of ACL in controlling antero-medial instabilities of the knee #5919

Stefano Zaffagnini, Simone Bignozzi, Sandra Martelli, Nicola Lopomo *Rizzoli* Institutes, Lab. Biomeccanica, Bologna, Italy

100. The biomechanical effects of limb lengthening and botulinum toxin, type A on tendon #7295

Ronke M. Olabisi^a, Ray Vanderby, Jr^b, Thomas M. Best^c, Kenneth J. Noonan^b

^aPhysics Department, University of Wisconsin, Madison, USA; ^bOrthopedics and Rehabilitation Department, University of Wisconsin, Madison, USA; ^cFamily Medicine Department, Ohio State University, Columbus, USA

101. Transverse Compression of Tendon #5075

S.T.S. Salisbury, C.P. Buckley, A.B. Zavatsky; Department of Engineering Science, University of Oxford, Oxford, UK

102. Investigation of the mechanical influence of tendon components via selective digestion of glycosaminoglycans #6231

S Rigozzi, JG Snedeker and R Müller; Institute for Biomedical Engineering, University and ETH Zürich, Switzerland

103. Equine digital collateral ligaments #7244

Siân E. M Lawson^{a,b}, Henry Chateau^b, Jean-Marie Denoix^b and Nathalie Crevier-Denoix^b

^aCentre for Rehabilitation and Engineering Studies, University of Newcastle upon Tyne, UK; ^bEcole Nationale Vétérinaire D'Alfort, Maisons-Alfort, France

104. Which forces must fixations of meniscus implants withstand? #4614

Lutz Dürselen, Benjamin Pap, Tim Wehner, Andreas Seitz, Lutz Claes, Ulrich Simon

Institute of Orthopaedic Research and Biomechanics, University of Ulm, Germany

105. Tensile and relaxation properties of healing patellar tendons from biglycan knockout mice #7611

H. Fujie^a, W. Ando^b, H. Yamamoto^a, H. Yoshikawa^b, and N. Nakamura^b; ^aBiomechanics Laboratory, Kogakuin University, Tokyo, Japan; ^bDepartment of Orthopaedic Surgery, Osaka University Medical School, Osaka, Japan

106. Scapholunate ligament in carpal kinematics: an anatomical study #5232

Armughan Azhar^a, Susan Whiten^b, Lynda Cochrane^c, Rami Abboud^c, Carlos Wigderowitz^a

^aOrthopaedic & Trauma Surgery, University of Dundee, Scotland, UK; ^bDepartment of Anatomy, University of St Andrews, Scotland, UK; ^cInstitute of Motion Analysis and Research (IMAR), University of Dundee, Scotland, UK.

3. Musculoskeletal systems and Performance-Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Mark Grabiner, Günther Rau, Georg Duda

1. Nanomechanical and Tribological Investigation of Human Knee Joints #6788

Bo Ning^a, Rahul Ribeiro^a, Gunin Kim^a, Metin Usta^b, Ahmet Hikmet Ucisik^c, and Hong Liang^a

^aMechanical Engineering Department, MS 3123, Texas A&M University, College Station, TX, USA; ^bGebze Institute of Technology, Department of Materials Science and Engineering, Gebze/Kocaeli, Turkey; ^cBogazici University, Institute of Biomedical Engineering, Department of Prostheses, Materials and Artificial Organs, Bebek-Istanbul, Turkey

2. One-legged stance - a representative body position for the long term effect of the hip contact stress

Matej Daniel^{a,b}, Aleš Iglíč^c, Veronika Kralj-Iglíč^{c,d,e}; ^a Faculty of Mechanical Engineering, Technical University of Košice, Košice, Slovakia; ^b Faculty of Mechanical Engineering, Czech Technical University in Prague, Prague, Czech Republic; ^c Laboratory of Physics, Faculty of Electrical Engineering, University of Ljubljana, Ljubljana, Slovenia; ^d Institute of Biophysics, Faculty of Medicine, University of Ljubljana, Ljubljana, Slovenia

^e Nomadic College, Brussels, Belgium

3. MRI measurements of rotational stability in ACL-deficient knees #6401

Sandra J. Shefelbine^a, Jesus Lozano^b, Julio Carballido-Gamio^b, Sharmila Majumdar^b, Ben Ma^c

^aDepartment of Bioengineering, Imperial College London, UK; ^bDepartment of Radiology, University of California San Francisco, USA; ^cDepartment of Orthopaedic Surgery, University of California San Francisco, USA

4. Integration of Finite Helical Axis Location with Magnetic Resonance Images of the Knee #5472

Ingrid Fjeld^a, Jessica Johnson^a, Janet Ronsky^a, Richard Frayne^b; ^a University of Calgary, Calgary, Canada; ^bSeaman's Family MR Research Centre, Foothills Medical Centre, Calgary, Canada

5. Analysis of Tibio-Femoral Joint Kinematics and Contact Area Using MRI #5590

Hidenori Yoshida^a, Keiichi Watanabe^a, Yuji Tanabe^b, Koichi Kobayashi^c, and Makoto Sakamoto^c; ^a Graduate School of Science and Technology, Niigata University, Niigata City, Japan; ^b Faculty of Engineering, Niigata University, Niigata City, Japan; ^c Faculty of Medicine School of Health Sciences, Niigata City, Japan

6. Development of a Low Cost, Easily Manufactured, Prosthetic Knee Technology with Improved Functionality Outcomes for Trans-Femoral Amputees in Developing Nations #6058

Stephen Ayers, Roger Gonzalez, Eric Minelga; Biomedical and Mechanical Engineering, LeTourneau University, Longview, Texas, USA

7. Relationship between femoro-tibial and femoro-patellar 3D kinematics in patients with patellar lateralisation #5313

Eva Brühl^a, Heiko Graichen^b, Stefan Hinterwimmer^c, Markus Siebert^d, Thomas Vogl^e, Rüdiger von Eisenhart-Rothe^a;

^aResearch Group for Kinematics and Biomechanics, Department of Orthopedic Surgery, University of Frankfurt, Germany; ^bAsklepios Orthopädische Klinik Lindenlohe, Schwandorf, Germany; ^cDepartment of Surgery, Ludwig-Maximilians-Universität, München, Germany; ^dInstitute for Medical Informatics, GSF Neuherberg, Oberschleißheim, Germany; ^eInstitute for Clinical and Interventional Radiology, University of Frankfurt, Germany

8. Personalized finite element model of the knee joint in vivo #5952

M. Sangeux^a, F. Marin^a, F. Charleux^b, L. Dürselen^c and M.-C. Ho Ba Tho^a; ^a Laboratoire de Biomécanique et Génie Biomédical, UMR CNRS-UTC 6600, Compiègne, France ; ^b Centre d'imagerie avancé de Compiègne, Compiègne, France ; ^c Institut für Unfallchirurgische Forschung und Biomechanik of Ulm, Ulm, Germany

9. Dynamics stability in landing with ACL deficient knee joint #5180

Mario Kasović^a, Vladimir Medved^a, Mario Cifrek^b, Mladen Mejovšek^a; ^a Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia; ^b Faculty of Electrical Engineering and Computing, University of Zagreb, Zagreb, Croatia

10. A movement index as proposal for an unified description in arthrokinematics #5864

Paul Klein; Université Libre de Bruxelles (URTM), Brussels, Belgium

11. A mobile axis knee joint model for gait analysis applications #7494

Pavan EE, Taboga P, and Frigo C; TBM Lab, Laboratory of Movement Biomechanics and Motor Control, Department of Bioengineering, Polytechnic of Milan, Milan, Italy

12. Alteration in knee alignment and muscle activation pattern during walking after frequent cutting training #5218

Pei-Yun Lee^a, Chyun-Yu Yang^b, Wen-Ling Chen^c; ^aDepartment of Physical Medicine and Rehabilitation, Cheng Ching Hospital, Taichung, Taiwan; ^bDepartment of Orthopedics, National Cheng Kung University, Tainan, Taiwan; ^cDepartment of Physical Therapy, National Cheng Kung University, Tainan, Taiwan

13. MRI-Based Modeling of Changes in Knee Positioning and Cartilage Contact Related to Injury and Weightbearing #6042

PJ Barrance, DL Benoit, J Twomey, TS Buchanan; Center for Biomedical Engineering Research, University of Delaware, Newark, Delaware, USA

14. Influence of Achilles Tendinopathy on Lower Extremity Joint Stiffness Strategies during Single-Legged Hopping #5426

Shruti Arya^a, Stanislaw Solnik^b, Kornelia Kulig^a; ^aDepartment of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, USA; ^bUniversity School of Physical Education, Wroclaw, Poland

15. Subchondral bone density pattern in the normal canine carpal joint #4809

Johann Maierl^a, Annette Kaiser^a, Peter Böttcher^b, Hans-Georg Liebich^a, Ulrike Matis^c

^a Institute of Veterinary Anatomy, Ludwig-Maximilians-University, Munich, Germany; ^b Department of Small Animal Medicine, University of Leipzig, Leipzig, Germany; ^c Clinic of Veterinary Surgery, Ludwig-Maximilians-University, Munich, Germany

16. Isometric Assessment of Ankle-Joint Function in Presence of Diabetes #5771

C. Giacomozzi^a, E. D'Ambrogio^b, L. Uccioli^b, V. Macellari^a; ^aIstituto Superiore di Sanità, Rome, Italy

^bUniversity of Rome "Tor Vergata", Rome, Italy

17. Foot Bone Motion during Patient Specific Movements #7504

William Ledoux,^{a,b,c} Michael Fassbind,^a Eric Rohr,^a Y. Hu,^d; David Haynor,^c Bruce Sangeorzan^{a,c}

^aDepartment of Veterans Affairs, RR&D Center of Excellence, Seattle, WA, USA; Departments of ^bMechanical Engineering; ^cOrthopaedics and Sports Medicine; and ^dBioengineering and ^eRadiology, University of Washington, Seattle, WA, USA

18. Differences in Trunk Control between Youth and Professional American Baseball Pitchers #7260

Michael R. Torry², Michelle Sabick⁴, Michael J. Decker³, Tom R. Hackett¹, Richard J. Hawkins⁵, Peter Millett¹

¹Steadman-Hawkins Sports Medicine Clinic, Vail, CO, USA; ²Steadman-Hawkins Research Foundation, Vail, CO, USA; ³University of Texas-Austin, Austin, TX, USA; ⁴Boise State University, Boise, ID, USA; ⁵Steadman-Hawkins of the Carolinas, Spartanburgh, SC, USA

19. Interphalangeal joint moments in functional grasping #4824

Christian Pylatiuk, Artem Kargov, Stefan Schulz; Institute for Applied Computer Science, Forschungszentrum Karlsruhe GmbH, Eggenstein, Germany

20. Muscle Effort of the Upper Extremity during Pushing Up and Keeping Balance in a Wheelie Activity #7065

Po-Chou Peter Lin^a, Lan-Yuen Guo^b, Chien-Ju Lin^a, Fong-Chin Su^a; ^aInstitute of Biomedical Engineering, National Cheng Kung University, Tainan, Taiwan; ^bFaculty of Sport Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

21. Evaluation of Adjacent Segment Morbidity After Spinal Fusion and Flexible Stabilization #4985

K. Kitahara^a, K. Takano^b, T. Hara^c; ^a Venture Business Laboratory, Niigata Univ., Niigata, Japan; Kariwagun Hospital, Kashiwazaki, Japan; ^c Faculty of Engineering, Niigata Univ., Niigata, Japan

22. Influence of pregnancy on the musculotendinous stiffness of wrist flexors #6892

Cécile Bisch^{a,b}, Erwan Stephan^a, Jean Gondry^c, Jean-Pierre Libert^a, Chantal Pérot^b, Frédéric Telliez^a

^a Equipe DMAG-INERIS (EA 3901), Université de Picardie Jules Verne, Amiens, France; ^b Département de Génie Biologique, UMR CNRS 6600, Université Technologique de Compiègne, France; ^c Centre Gynécologique et Obstétrique, CHU, Amiens, France

23. Relative Moment Potential Balance in the Metacarpal-Phalangeal Joints of the Hand #5247

William L. Buford, Jr., Shukuki Koh, Clark R. Andersen, Steven F. Viegas; University of Texas Medical Branch, Galveston, TX,

24. Improvement of the ISB joint coordinate system to describe shoulder joint kinematics #5818

^a Annie Levasseur, ^{a,b} Patrice Têtreault, ^a Jacques A de Guise, ^a Natalia Nuño, ^a Nicola Hagemeister

^a Laboratoire de recherche en imagerie et orthopédie, École de technologie supérieure, Montréal, Canada

^b Hôpital Notre-Dame, CHUM, Montréal, Canada

25. Skeletal landmark morphology of the humeral bone for motion analysis #6866

Serge Van Sint Jan^a, Victor Sholukha^{a,b}, Patrick Salvia^a, David Allouche^a, Fedor Moiseev^{a,b}, Marcel Rooze^a

^a Department of Anatomy, Université Libre de Bruxelles, Brussels, Belgium; ^b Department of Applied Mathematics, Polytechnical University, Saint Petersburg, Russia

26. Are spinal cord injured individuals more predisposed to glenohumeral osteoarthritis? A quantitative shoulder cartilage study #5925

Heidi Knuesel^a, Jacek Krzycki^b, Nassos Petrou^b, Edgar Stuessi^a; ^aLaboratory for Biomechanics, ETH Zurich, Switzerland; ^bSwiss Paraplegic Center, Nottwil, Switzerland

27. Estimation of hand preshaping during human grasping by using instrumented glove #5575

Tamara Supuk, Vlasta Zanchi; Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia

28. Moment Arms of the Upper and Lower Portions of the Subscapularis Muscle #7578

Takashi Yanagawa^a, Michael R. Torry^a, Kevin B. Shelburne^a, Marcus G. Pandy^b; Steadman-Hawkins Research Foundation, Vail, Colorado, U.S.A. ; ^b Department of Mechanical and Manufacturing Engineering, University of Melbourne, Australia

29. Reliability of Local Dynamic Stability of Human Walking#6077

Hyun Gu Kang , Jonathan B. Dingwell; Department of Kinesiology & Health Education, University of Texas, Austin, Texas, USA

30. Mass customization of foot orthosis for rheumatoid arthritis#6147

Jari Pallari ^a, Kenneth Dalgarno ^a, James Woodburn ^b ; ^a School of Mechanical Engineering, University of Leeds, Leeds, UK; ^b School of Health & Social Care and HealthQWest, Glasgow Caledonian University, Glasgow, Scotland UK

31. Assessment of standing balance throughout pregnancy and 6 months postpartum #5467

Elizabeth T. Hsiao-Wecksler and John Jang; Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA

32. 2-d knee kinematics during jump landings in different female athletic populations #6465

D.Rosenbaum^a, K.Hägele^a, D.Klein^a, W.Petersen^b ; ^aMovement Analysis Lab, Orthopaedic Department; ^bTraumatology Department, University Hospital Münster, Germany

33. Frequency spectrum analysis to measure balance performance #7608

Jos Vanrenterghem, Mark Lake, Gabor Barton, Adrian Lees; Liverpool John Moores University, Liverpool, UK

34. Assessment Of Balance Control While Standing On A Narrow Beam #5231

Krystyna Gielo-Perczak, Angela DiDomenico, Raymond W. McGorry, Chien-Chi Chang; Liberty Mutual Research Institute for Safety, Hopkinton, MA, USA

35. Biomechanical Analysis of Obstacle-Crossing in Patients with Well-Controlled Diabetes #4676

Ming-Wei Liu^{a,b}, Wei-Chun Hsu^a, Tung-Wu Lu^a, Hao-Ling Chen^a and Hwa-Chang Liu^a

^aInstitute of Biomedical Engineering, National Taiwan University and NTUH, Taipei, Taiwan; ^bTaiwan Adventist Hospital, Taipei, Taiwan

36. Locomotor behaviour assessment in the rat by kinematic analysis #7028

Jocemar Ilha^a, Leonardo A. Peyré-Tartaruga^{ab}, Rafaela Trois Araujo^a, Fernanda Metzen^b, Taís Malysz^a, Fabio Canto^b, Matilde Achaval Elena^a, Jefferson Fagundes Loss^b; ^aLaboratório de Histofisiologia Comparada, Programa de Pós-Graduação em Neurociências, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil; ^bLaboratório de Pesquisa do exercício, Programa de Pós-Graduação em Ciências do Movimento Humano, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil

37. Validation of Measuring Basic Stride Kinematics from a Treadmill with Embedded Pressure Sensing #7054

Jeffrey J. Chu ^a, Karen L. Troy ^b, Paul M. Fowler ^b, Alexander W. Jessiman ^a, Richard M. Greenwald ^a, Mark D. Grabiner^b; ^a Simbex, Lebanon, New Hampshire, USA; ^b Musculoskeletal Biomechanics Laboratory, University of Illinois-Chicago, Chicago, Illinois, USA

38. Peripheral vision dominates visually induced postural sway and tilt perception #5343

Hee Won Park, Sukyung Park; Mechanical Engineering Dept, Korea Advanced Institute of Science and Technology, Taejeon, Korea

39. Derivative gain in the neural controller accounts for the temporal relationship between body sway and muscle activity #7257

Kei Masani^{a, b}, Albert H. Vette^{a, b}, Masaki Abe^c, Kimitaka Nakazawa^c, Milos R. Popovic^{a, b}

^a Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada; ^b Rehabilitation Engineering Laboratory, Toronto Rehab, Toronto, Canada; ^c Research Institute NRCD, Tokorozawa, Japan

40. Measurement of intervertebral stiffness in cadaver lumbar spine using a muscle active simulator #5376

Yoshimori Kiriya^{a, c}, Nobutoshi Yamazaki^b, Takeo Nagura^c, Morio Matsumoto^d, Toshiyasu Nakamura^c, Hideo Matsumoto^c, Kazuhiro Chiba^c, Yoshiaki Toyama^c; ^a Clinical Research Center, National Murayama Hospital, Tokyo, Japan; ^b Department of Science and Technology, Keio University, Yokohama, Japan; ^c Department of Musculoskeletal Reconstruction & Regeneration Surgery, Keio University, Tokyo, Japan

^d Department of Orthopedic Surgery, Keio University, Tokyo, Japan

41. Towards dynamic neck kinesthetic tests #5956

Véronique Feipel, Laure Legendre, Guillaume Chaminade, Patrick Salvia, Marcel Rooze
Laboratory of Functional Anatomy, Université Libre de Bruxelles, Brussels, Belgium

42. Lateral Stabilization of Neurally Controlled Bipedal Walking #5105

Sonja Karg^a, Shen Zhang^a, Klaus Jahn^b, Stefan Glasauer^b; ^a Institute for Real-Time Computer Systems, Technische Universität, Munich, Germany; ^b Department of Neurology, Ludwig-Maximilians Universität, Klinikum Großhadern, Munich, Germany

43. A strategy for walk-run transitions at constant speeds #6718

S. Lipfert, E. Dittrich, A. Seyfarth; Locomotion Laboratory, University of Jena, Germany

44. Why are passive dynamic robotics efficient? Or at least not wildly inefficient? #5338

Manoj Srinivasan^{a,b}, Andy Ruina^b; ^a Mechanical and Aerospace Engineering, Princeton University, Princeton, New Jersey, USA; ^b Theoretical and Applied Mechanics, Cornell University, Ithaca, New York, USA

45. Assessment of the effect of functional trimming on the dynamic pressure distribution under the bovine foot during walk #5679

Daniel Johansen^a, Christian Gammelgaard Olesen^a, Omar Feix do Nascimento^a, Vivi Mørkøre Thorup^b and Michael Voigt^a; ^aDept. of Health Science and Technology, Aalborg University, Denmark

^bDept. of Animal Health, Welfare and Nutrition, Danish Institute of Agricultural Sciences, Tjele, Denmark.

46. Three-dimensional dynamic simulation of human walking with a backpack #6583

Lei Ren^a, Richard K Jones^b, David Howard^b; ^a The Royal Veterinary College, University of London, London, UK; ^b Centre for Rehabilitation and Human Performance Research, University of Salford, Salford, UK

47. A trajectory of the body's mass center in human level walking #4358

Valery B. Kokshenev; Departamento de Fisica, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil

48. Effects of actuation methods on dynamic walking #7057

Maxine Kwan, Mont Hubbard; Sports Biomechanics Lab, Dept. Mechanical and Aeronautical Engineering, University of California, Davis, CA, USA

49. Characterization and signal analysis in a tilted force platform #6255

Andrea Cedraro, Lorenzo Chiari, Angelo Cappello; Department of Electronics, Computer Science & Systems, University of Bologna, Italy

50. New adaptation of measurement to improve the reliability of hand-held dynamometers used for large muscle strength tests #4687

Ching-Chuang Cheng^a, Wen-Ling Chen^a, Shyh-Jou Shieh^b; ^a School and Graduate Institute of Physical Therapy, College of Medicine, National Cheng-Kung Univ., Tainan, Taiwan; ^b Section of Plastic Surgery, Dept. of Surgery, National Cheng-Kung Univ. Hospital, Tainan, Taiwan

51. 3D kinematic sensors for the objective evaluation of shoulder pathology after surgery #7694

Brian Coley^a, Brigitte Jollès-Haeberli^b, Alain Farron^b, Kamiar Aminian^a; ^aEcole polytechnique fédérale de Lausanne, EPFL, Switzerland; ^bUniv. Hospital of Lausanne HOSR, Switzerland

52. Assessment of balance of a patient submitted to triple arthrodesis of foot – pilot project #7114

Tulio Diniz Fernandes^a, Cristina Dallemole Sartor^b, Felix Ricardo Andrusaitis^b, Rafael Trevisan Ortiz^a, Marcio Freitas^a, Renato A. Masagão^a, Isabel de Camargo Neves Sacco; ^aFoot and Ankle Division, Institute of Orthopaedic and Traumatology of the Hospital of Clinics, São Paulo, Brazil; ^bPhysiotherapy Division, Institute of Orthopaedic and Traumatology of the Hospital of Clinics, São Paulo, Brazil

53. Shoulder Kinematic and Kinetic Pitching Profiles in Youth And Professional Baseball Players #7250

Michael R. Torry², Michelle Sabick⁴, Michael J. Decker³, Tom R. Hackett¹, Richard J. Hawkins⁵, Peter Millett¹; ¹Steadman-Hawkins Sports Medicine Clinic, Vail, CO, USA; ²Steadman-Hawkins Research Foundation, Vail, CO, USA; ³Univ. of Texas-Austin, Austin, TX, USA; ⁴Boise State Univ., Boise, ID, USA; ⁵Steadman-Hawkins of the Carolinas, Spartanburgh, SC, USA

4. Implants for Trauma and Orthopedics-Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Erwin Steinhauser, Cheng Kung Cheng

4.1 Biomechanical Analysis of Retrieval Implants Posters

Session Organizers: Michael Morlock, Luca Cristofolini

1. Analyses of two long-term retrieved acetabular liners of highly crosslinked polyethylene #6247

Karl Knahr^a, Petra Köttig^b, Wolfgang Schneider^b, Hanns Plenk jr.^c; ^a Orthopädisches Spital Wien – Speising, Wien, Austria; ^b Zimmer GmbH, Winterthur, Switzerland; ^c Histologisches-embryologisches Institut der Universität Wien, Austria

2. Failure analysis of revision implants for total hip replacement #4595

Erwin Steinhauser, Stefan Eichhorn, Ulrich Schreiber, Reiner Gradinger
Klinik für Orthopädie und Unfallchirurgie, TU München, Germany

3. Are allergic reactions to bone cement components associated with failure of knee arthroplasty? #7431

P Thomas^a, E Steinhauser^b, R Bader^c, W Mittelmeier^c, F Mazoochian^d, A Schuh^e, B Summer^a

^aKlinik und Poliklinik für Dermatologie und Allergologie der Ludwig-Maximilians-Universität, München, Germany;

^bKlinik für Orthopädie und Sportorthopädie der Technischen Universität, München, Germany; ^cOrthopädische Klinik und Poliklinik der Universität, Rostock, Germany; ^dOrthopädische Klinik und Poliklinik der Ludwig-Maximilians-Universität, München, Germany; ^eResearch Unit Klinikum Neumarkt, Akademisches Lehrkrankenhaus der Friedrich-Alexander-Universität, Erlangen-Nürnberg, Germany

4. Influences of activities of daily living on wear in Total Knee Arthroplasties #5453

Thorsten Schwenke^a, Erich Schneider^b, Markus A. Wimmer^a; ^aRush University Medical Center, Chicago, USA; ^bAO Research Institute, Davos, Switzerland

4.2.1 Hip Endoprosthetics Posters

Session Organizers: Erwin Steinhauser, Luca Cristofolini

5. In vitro study on periprosthetic fractures: A comparison between a conventional and a short-stemmed-prosthesis #5729

Eike Jakobowitz, Christoph Lee, Marc Thomsen; Orthopedic Surgery Hospital, University of Heidelberg, Germany

6. Further research on simplified cemented hip models under contact effects #7471

Christopher G. Provatidis; National Technical University of Athens, Mechanical Design and Control Systems Section, Biomechanics Unit, Athens, Greece

7. Numerical analysis of design features of femur resurfacing cup #5079

Chang Jiang Wang, James Cubillo; School of Engineering, University of Wolverhampton, Telford, UK

8. Evolution of the residual stresses and temperature during polymerization of bone cement of an idealized hip implant: experimental results #5195

A. Madrala, D. Plamondon and N. Nuño; Département de génie de la production automatisée, Laboratoire de recherche en imagerie et orthopédie, École de technologie supérieure, Montréal, Canada

9. Needle-palisade fixation for total resurfacing arthroplasties of hip and other joints: -biomechanical principles #5439

Piotr Rogala^a, Ryszard Uklejewski^{a,b}; ^aPoznań University of Medical Sciences, Spine Surgery, Orthopedic and Traumatology Dept., Poznan, Poland; ^bKazimierz Wielki University of Bydgoszcz, Institute of Technology, Dept. of Fundamentals of Medical Bioengineering and Dept. of Pediatric Endocrinology, Bydgoszcz, Poland

10. Primary hip stem stability: the effect of bone pathology on micromotion #5591

Mohammed R. Abdul Kadir^{a,b}, Ulrich N. Hansen^a, Ralf Klabunde^c, Andrew A. Amis^a; ^aDepartment of Mechanical Engineering, Imperial College London, UK; ^bBiomechanics Laboratory, Universiti Teknologi Malaysia, Malaysia; ^cZimmer European Headquarters, Winterthur, Switzerland.

11. The effect of malalignment and undersizing on primary stability of cementless stems #5597

Mohammed R. Abdul Kadir^{a,b}, Ulrich N. Hansen^a, Ralf Klabunde^c, Andrew A. Amis^a; ^aDepartment of Mechanical Engineering, Imperial College London, UK; ^bBiomechanics Laboratory, Universiti Teknologi Malaysia, Malaysia.; ^cZimmer European Headquarters, Winterthur, Switzerland.

12. On the use of fiber Bragg sensors to assess temperature and thermal induce strain profiles in cemented hip mantles #5681

A. Ramos, I. Ilda, M.W.Schiller, P. Lopes, R. Nogueira, J. L. Pinto, J. A. Simões; Universidade de Aveiro, Aveiro, Portugal

13. Periprosthetic fractures in elderly patients: An experimental study cementless vs cemented system #5756

Eike Jakobowitz, Jörn Seeger, Michael Clarius, Marc Thomsen; Orthopedic Surgery Hospital, University of Heidelberg, Germany

14. Model-based-RSA of a hip stem using geometrical shape models #5867

Kaptein, B.L.^a, Valstar, E.R.^{a,b}, Spoor, C.W.^a, Stoel, B.C.^c, Reiber, J.H.C.^c, Rozing, P.M.^a; ^aBiomechanics and Imaging Group, Dept. of Orthopaedics, Leiden University Medical Center, Leiden, The Netherlands; ^bDept. of Biomechanical Engineering, Faculty of Mechanical, Marine, and Materials Engineering, Delft University of Technology, Delft, The Netherlands; ^cDept. of Radiology, Division of Image Processing, Leiden University Medical Center, Leiden, The Netherlands.

15. Evaluation of femoral stress distribution change caused by hip stem implantation conditions #7373

Toshikatsu Washio^a, Kazuyuki Mizuhara^{b,a}, Hajime Mishima^c, Syumpei Miyakawa^d, Koji Hyodo^a

^aInstitute for Human Science and Biomedical Engineering, AIST, Tsukuba, Japan; ^bFaculty of Engineering, Tokyo Denki University, Tokyo, Japan; ^cInstitute of Clinical Medicine, Tsukuba University, Tsukuba, Japan; ^dHealth, Physical Education and Sport Sciences, Tsukuba University, Tsukuba, Japan

16. Automated digital migration analysis in total hip replacement #5900

Ulrich Böhling^a, Martin Baatz^b; ^a HELIOS Klinikum Emil von Behring, Berlin, Germany; ^b Definiens AG München, Germany

17. Modelling the Mechanics of the Cement-Bone Interface #4248

Suk Yee Leung, Andrew New, Martin Browne; Bioengineering Research Group, School of Engineering Sciences, University of Southampton, Southampton, UK

18. The influence of vibration on morsellised bone under impact #4071

N. Kaehler, K.Lunde, O.Foss, L.Fosse, J. Klaksvik; Norwegian Orthopaedic Implant Research Unit, St. Olavs Hospital, Trondheim, Norway

19. Femoral implants comparison by means of thermoelastic stress analysis #6897

Elisabetta M. Zanetti, Stefano S. Musso, Alberto L. Audenino; Department of Industrial and Mechanical Engineering, University of Catania, Catania, Italy

20. The variability of prosthesis positioning and the resulting geometry of coxo-femoral joint #6884

Elisabetta M. Zanetti, Massimiliano Salaorno, Alberto L. Audenino; Department of Industrial and Mechanical Engineering, University of Catania, Catania, Italy

21. Femoral stem shape optimization for prosthesis stability #4424

R. Ruben^a, J. Folgado^b and P. R. Fernandes^b; ^a School of Technology and Management – Polytechnic Institute of Leiria, Leiria, Portugal; ^b IDMEC-IST, Av. Rovisco Pais, Lisboa, Portugal

22. Numerical comparison of femoral stress and strain changes in different total hip replacement designs and anchoring techniques #4516

B.-A. Behrens^a, A. Bouguecha^a, I. Nolte^b, D. Helmsmüller^b, A. Meyer-Lindenberg^b, H. Windhagen^c, C.J. Wirth^c, T. Pressel^c; ^aInstitute of Metal Forming, University of Hannover, Germany; ^bSmall Animal Clinic, University of Veterinary Medicine Foundation Hannover, Germany; ^cDepartment of Orthopaedic Surgery, Medical University of Hannover, Germany

23. Proximal Femur Geometric Basis For The Choice Of Femoral Implant In Cemented Hip Replacement #4287

Yu-Shu Lai^a, Yong-Eng Lee^a, Hung-Wen Wei^b, Cheng-Kung Cheng^a; ^a Institute of Biomedical Engineering, National Yang Ming University, Taipei, TAIWAN; ^b Joint Prosthesis Technology Research Center, National Yang Ming University, Taipei, TAIWAN

24. Range of Motion Simulation of a Hip Resurfacing Implant #4154

R. Howald^a, S. Mehl^a, E. Siggelkow^a, M. Lavigne^b, P. Vendittoli^b; ^a Zimmer Corporate Research, Winterthur, Switzerland; ^b Maisonneuve-Rosemont Hospital Montreal, Quebec, Canada

4.3.1 Knee Endoprosthetics Posters

25. Contact area in dome vs. sombrero shaped patellar implants #5228

Mariana Kersh, Dr. Heidi-Lynn Ploeg; Bone and Joint Biomechanics Lab, University of Wisconsin, Madison, Wisconsin, United States of America

26. Kinematic analysis for mobile bearing total knee arthroplasty during walking #5715

Takeshi Shimoto^a, Hidehiko Higaki^a, Terutaka Suzaki^a, Takatoshi Umeno^b, Yoshitaka Nakanishi^c, Kosaku Kurata^a, Hiromasa Miura^c and Yukihide Iwamoto^c; ^aFaculty of Engineering, Kyushu Sangyo University, Fukuoka, Japan; ^bVenture Business Laboratory, Nigata University, Nigata, Japan; ^cFaculty of Medicine, Kyushu University, Fukuoka, Japan

27. Computational Contact Pressure Prediction of TKR Prosthesis by Combining a Rigid Body Dynamic Simulation and a Flexible Body FEM Analysis #6820

Hadi Rahemi, Mostafa Mohajeri, M.T. Mannari; School of Mechanical Engineering, Sharif University of Technology, Tehran, Iran

28. A finite element analysis of long stemmed distal tip fixation conditions in tibial knee replacement #5616

A. Completo^a, J. A. Simões^a, F. Fonseca^b; ^a Universidade de Aveiro, Aveiro, Portugal; ^b Universidade da Beira Interior, Covilhã, Portugal

29. Determination of forces required for polyethylene inlay dislocation in UKA – in vitro testing and validation with computational simulation tools #5832

Daniel Baumgartner^a, Andre Butscher^a, Beat Gasser^a, Christoph Fankhauser^b Urs Jacobs^c
^a Dr Robert Mathys Foundation, Bettlach, Switzerland; ^b Mathys AG Bettlach, Bettlach, Switzerland
^c Bytics Technologie AG, Uster, Switzerland

30. Development of finite element models to critically evaluate stem selection for a revision total knee arthroplasty #5958

Jill Schmidt^a, Adam Henderson^b, Heidi Ploeg^a, Kevin Deluzio^b, Michael Dunbar^c; ^a Bone and Joint Biomechanics Lab, University of Wisconsin – Madison, Madison, United States; ^b School of Biomedical Engineering, Dalhousie University, Halifax, Canada; ^c QEII Health Science Center, Halifax, Canada

31. Stress analysis of anterior tibial post in posterior stabilized knee prosthesis #4320

Chang-Hung Huang^a, Jiann-Jong Liao^b, Chun-Hsiung Huang^{b,c}, Cheng-Kung Cheng^a

^a Institute of Biomedical Engineering, National Yang Ming University; Taiwan; ^b School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University, Taiwan; ^c Department of Orthopaedic Surgery, Mackay Memorial Hospital, Taipei, Taiwan

32. Is highflex TKA effective at higher flexion angles and does it maintain the good mechanical performance of standard TKA at normal flexion angles? #5660

Marco Barink ^a, Maarten de Waal Malefijt ^a, Albert van Kampen ^a, Nico Verdonshot ^a

^a Orthopaedic Research Lab, Radboud University Nijmegen Medical Center, Nijmegen, Netherlands

33. Failure of the United rotating hinge total knee prosthesis – A case report #7146

Te-Yang Huang, MD ^a; Hon-Ming Ma, MD ^a; Fang-Yuan Ho, MS ^b; Chen-Yu Lung, PhD ^c; and Chun-Hsiung Huang, MD ^{a,d}, ^a Department of Orthopaedic Surgery, Mackay Memorial Hospital, Taipei, Taiwan; ^b Biomechanics Research Laboratory, Mackay Memorial Hospital, Taipei, Taiwan; ^c Production Development Department, United Orthopedic Department, Taipei, Taiwan; ^d Institute of Biomedical Engineering, National Yang Ming University, Taipei, Taiwan.

34. Improving accuracy of fluoroscopic estimation of 3D-pose of total knee arthroplasty using radiographic stereometry #4576

Koichi Kobayashi^a, Makoto Sakamoto^a, Takashi Sato^b, Yoshio Koga^b, Go Omori^c, Yuji Tanabe^d

^aDept. of Health Sciences, Niigata University School of Medicine, Niigata, Japan; ^bDepartment of Orthopaedic Surgery, Niigata Kofari Hospital, Niigata, Japan; ^cCenter for Transdisciplinary Research, Niigata University, Niigata, Japan;

^dDept of Mechanical Engineering, Niigata University, Niigata Japan

35. withdrawn

36. Effects of stem end design on stem pain in TKR #7090

Yoon-Hyuk Kim^a, Kyo Min Koo^a, Oh-Soo Kwon^b, Dae-Kyung Bae^a; ^a Kyung Hee University, Korea; ^b The Catholic University of Korea, Korea

37. Statistical analysis of patellar resurfacing in Caucasian and Japanese subjects #7478

Clare Fitzpatrick ^a, David FitzPatrick ^a, Jordan Lee ^b, Dan Auger ^b; ^a Mechanical Engineering, University College Dublin, Dublin, Ireland; ^b DePuy Orthopaedics Inc., Warsaw, Indiana, USA

38. The Effect of femoral component design on conformity of the patellofemoral joint #7145

Fang-Yuan Ho, MS^a; Hon-Ming Ma, MD^b; Tiew-Guan, Kwok, MD^b; Chien-Yang Huang, MS^c; and Chun-Hsiung Huang, MD^{b,d}; ^a Biomechanics Research Laboratory, Department of Biomedical Research, Mackay Memorial Hospital, Taipei, Taiwan; ^b Department of Orthopaedic Surgery, Mackay Memorial Hospital, Taipei, Taiwan;

^c Institute of Mechanical Engineering, Chang Gung University, Taipei, Taiwan; ^d Institute of Biomedical Engineering, National Yang Ming University, Taipei, Taiwan.

39. The Influence of Surgical Malalignment on Contact Stress of Unicompartamental Knee Prosthesis -A finite Element Analysis #4758

Tsung-Wei Chang^a, Jiann-Jong Liao^b, Chun-Hao Wu^a, Chang-Hung Huang^a, Chun-Hsiung Huang, M.D. ^{a,c}, Cheng-Kung Cheng^a, ^a Institute of Biomedical Engineering, National Yang Ming University; Taipei, Taiwan; ^b School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University, Taipei, Taiwan; ^c Department of Orthopaedic Surgery, Mackay Memorial Hospital, Taipei, TAIWAN

40. In vitro measurements of loads and moments using an instrumented tibial tray #4503

Bernd Heinlein^a, Andreas Halder^b, Antonius Rohlmann^a, Friedmar Graichen^a, Georg Bergmann^a

^aCharité, Universitätsmedizin Berlin, CBF, Berlin, Germany; ^bHellmuth-Ulrich-Kliniken, Klinik für Endoprothetik, Sommerfeld, Germany

41. Mechanical aspects of the development of a ceramic bicondylar femoral knee component 37156

Thomas Pandorf, Meinhard Kuntz, Manuela Muhr-Schenk, Patricie Merkert; CeramTec AG, Plochingen, Germany

42. Finite axis of rotation versus femoral component condyle axis – two different TKA designs during sit down and step up tasks #5034

Monika Zihlmann, Renate List, Markus Weber, Edgar Stüssi; Laboratory for Biomechanics, D-MAVT, ETH Zurich, Zurich, Switzerland

43. Uni-Compartmental Knee Arthroplasty Modelling #5102

^a Andrew Hopkins, ^a Sara Esteban, ^a Mark Taylor, ^a Andrew New, ^b Ferdinando Rodriguez; ^a Bioengineering Research Group, University of Southampton, Southampton, UK.; ^b Mechatronics in Medicine Laboratory, Imperial College London, London, UK.

44. Evaluation of peak contact pressure of a contoured articular prosthetic unicondylar femoral resurfacing prosthesis (HemiCAP®) – a biomechanical study #5122

C. Becher^a, R. Huber^b, H. Thermann^a, H. Paessler^a, R. Lass^b, G. Skrbensky^b; ^a Centre for Knee & Foot Surgery/Sports Trauma, ATOS Clinic, Heidelberg, Germany

45. Morphologic analysis of proximal tibia for revision tibial component design #4950

Kuo-Hung Li, B.S. ^a, Chang-Bin Yang, M.D. ^{a,b}, Chih-Min Huang, B.S. ^b, Chang-Huang Huang, M.S. ^a, Yu-Ping Chou, M.S. ^c, Cheng-Kung Cheng, Ph.D. ^a; ^a Institute of Biomedical Engineering, National Yang Ming University, Taipei, Taiwan; ^b Taipei City Hospital Zhung-Xing branch, Taipei, Taiwan; ^c Department of Rehabilitation, Jen-Teh Junior College of Medicine, Nursing and Management, Miaoli, Taiwan

4.4. Spinal Implants Posters

Session Organizers: Po-Quang Chen, Hans-Joachim Wilke

46. The Effect of an Interspinous Spacer on Intradiscal Pressure #5938

HS Lee^a, DR Song^a, SC Jun^a, YH Ahn^a, KW Lee^b, SJ Lee^{a,c}; ^a Department of Biomedical Engineering, Inje University, Gimhae, Korea; ^b Department of Mechanical Engineering, Sejong University, Seoul, Korea; ^c Paik Institute for Clinical Research, Inje University, Busan, Korea

47. Biomechanical comparison of an anterior, posterior or combined approach of two column lesions in the thoracolumbar junction #7093

^aSchreiber U., ^aBence T., ^aSteinhauser E., ^bGrupp T., ^cMitteilmeier W.; ^a Clinic of Orthopedics and Traumatology, Dept. of Biomechanics, Technical University Munich, Germany; ^b Aesculap AG&Co. KG, Tuttlingen, Germany; ^c Clinic of Orthopedics, University of Rostock, Germany

48. Biomechanical comparison of anterior and posterior stabilization method in thoracolumbar burst fracture #7092

Yoon-Hyuk Kim^a, Won Man Park^a, Kyungsoo Kim^b, Ye-Soo Park^c; ^a Kyung Hee University, Yongin, Korea; ^b Seoul National University, Seoul, Korea; ^c Hanyang University, Seoul, Korea

49. Biomechanical investigations to changes in the stability of the spine after anterior, posterior and combined spondylodeses with a expandable vertebral body replacement after complete corpectomy #7094

^aSchreiber U., ^bDirrigl A., ^aSteinhauser E., ^cGrading R.; ^aClinic of Orthopedics and Traumatology, Dept. of Biomechanics, University Hospital Rechts der Isar, Munich, Germany; ^bClinic of Vascular Surgery, University Hospital Rechts der Isar, Munich, Germany; ^cClinic of Orthopedics and Traumatology, University Hospital Rechts der Isar, Munich, Germany

50. Mechanical stability of augmented spinal segments #6978

Gerd Huber^a, Lara Müller-Bergen^{a,b}, Jens Heinze^b, Christoph Eggers^b, Klaus Püschel^c, Michael M. Morlock^a
^a Biomechanics Section, Hamburg University of Technology, Hamburg, Germany; ^b Trauma Department, Asklepios Clinic St. Georg, Hamburg, Germany; ^c Legal Medicine Department, University Hospital Eppendorf, Hamburg, Germany

51. Development of a new implant to correct scoliosis by means of segmental translation #5032

Alfonso Oltra^a, Luis A. Pérez Millán^b, Carlos Atienza^a, José Luis Peris^a, Fernando Mollá^a, José Montero^a, Javier Sánchez^a, Jaime Prat^a; ^a Institute of Biomechanics of Valencia, Valencia, Spain; ^b "La Fe" Hospital of Valencia, Valencia, Spain

52. Finite Element Analysis of Four Different Lumbar Interbody Fusion Cage Designs #4563

Weng-Pin Chen^a, Chien-Yu Lin^a, Shih-Hao Chen^b, Chih-Hsun Chien^{a,c}; ^aDepartment of Biomedical Engineering, Chung Yuan Christian University, Chungli, Taiwan; ^bDepartment of Orthopaedic Surgery, Chang Gung Memorial Hospital, Kaohsiung, Taiwan; ^cDepartment of Orthopaedic Surgery, Ten-Chen General Hospital, Yangmei, Taiwan

53. Design Considerations for a Multi-Specimen Lumbar Spinal Disc Fatigue and Wear Simulator #4509

J.Lusk^a, G. McKewan^a, J.Price^b; ^aBose Corp. – ESG, Eden Prairie, MN, USA; ^bThekan Disc, Akron, OH, USA

54. Comparison of transpedicular screw fixation in soft and cured kyphoplasty cement #4042

O. Linhardt^a, C. Lüring^a, J. Matussek^a, C. Hamberger^a, W. Plitz^b, J. Grifka^a; ^a Orthopaedic Department of University Regensburg, Germany; ^b Orthopaedic Clinic of Ludwig-Maximilians-University Munich, Großhadern Clinic, Munich, Germany

55. Comparison of Constrained and Unconstrained ICR Types of Artificial Disc Replacements using FE Model #5377

Young Eun Kim, SangSeok Yun and SooTaek Kim; Dept. of Mechanical Engineering, Dankook University, Seoul, KOREA

4.5 Endoprosthetics of the Shoulder, Elbow, Foot and Ankle Posters

Session Organizers: Erich Schneider, Roger Scholz

56. Correlation of BMD of the glenoid bone with the pullout strength of Mitek GII anchors loaded with Orthocord™ suture #6004

Raghad Mim'ar^a, Richard M Hall^{a,b}, David Limb^b; ^aSchool of Mechanical Engineering, University of Leeds, Leeds, UK; ^bAcademic Unit of Orthopaedic Surgery, St James's University Hospital, Leeds, UK

57. Net torsional moments with unconstrained ankle arthroplasty: measurements, models and consequences #4736

Alex Stacoff, Markus Dettwyler, Renate List, Edgar Stüssi; Laboratory for Biomechanics, D-MAVT, ETH Zurich, Zurich, Switzerland

58. High-tech or solving the needs in developing countries #7688

Ulises Lanza, Carmen Müller-Karger, Carlos Graciano; Universidad Simón Bolívar, Department of Mechanical Engineering, Caracas, Venezuela

59. Development of an inner skeleton power - Assist system for forearm motion #6320

Kazuo Kiguchi, Subrata Kumar Kundu, Makoto Sasaki; Saga University, Saga, Japan

60. Metal-on-metal metatarsophalangeal prosthesis retrieval study and comparison with predicted lubrication regimes #4105

Tom Joyce; Centre for Rehabilitation and Engineering Studies, School of Mechanical and Systems Engineering, University of Newcastle upon Tyne, Newcastle upon Tyne, United Kingdom

4.6. Trauma Implants Posters**Session Organizers: Lutz Claes, Jimmy Cunningham****61. Use of an ARAMIS system to measure the motion of bone segments in two different distal radial fracture fixation systems #7466**

C.T. Reynolds^a, K.E. Tanner^a, M.C. Quaye^b, S. Owen-Johnstone^c; ^a Department of Materials, Queen Mary University of London, London, UK; ^b St Bartholomew's and The Royal London School of Medicine and Dentistry, London, UK; ^c Department of Orthopaedics, The Royal London Hospital, London, UK

62. A new test method to determine the cut-out behaviour of hip screws #7809

Bernhard Karich^a, Geert v. Oldenburg^{b,c}, B. Simon^b, C. Bauer^{b,o} ^a Klinik für Unfallchirurgie, Heinrich-Braun-Krankenhaus Zwickau, Germany; ^b Stryker Osteosynthesis, Schoenkirchen, Germany; ^c Association Internationale pour l'Osteosynthèse Dynamique (AIOD), Nice, France

63. Comparison of a Distal Radius Fracture treated by an Intramedullary Nail or Plate and Screws: A Biomechanical Study #6943

Martin Simnacher^a, Marc Riner^a, Claude Mathieu^a, Jonas Gehr^b, Wilhelm Friedl^b
^a PLUS Orthopedics AG, Aarau, Switzerland; ^b Klinikum Aschaffenburg, Aschaffenburg, Germany

64. A New Test Set-up to Evaluate Osteosynthesis Implants of the Proximal Humerus #7091

^aSchreiber U., ^aEichhorn S., ^bTrapp O.M., ^aSteinhauser E. ^aClinic of Orthopedics and Traumatology, Dept. of Biomechanics, University Hospital Rechts der Isar, Technical University of Munich, Munich, Germany; ^bTraumacenter Murnau, Murnau, Germany

65. Stabiliser with adaptable kinematics for functional treatment of periarticular fractures of the knee joint – experimental research, computer simulation, first clinical trial #4904

Włodzimierz Choromanski, Grzegorz Dobrzynski, Warsaw University of Technology, Faculty of Transport, Warsaw, Poland

66. Investigation into the re-use of stainless steel Ilizarov half rings #4606

Frances Ellis^a, Sam Dalal^b, Todd D Stewart^a, Toby Branfoot^c, Simon L Royston^d, Mick G Dennison^d
^aInstitute of Medical and Biological Engineering, The University of Leeds, Leeds, UK; ^bBlackburn Royal Infirmary, Blackburn, UK; ^cDepartment of Orthopaedics, St. James' Hospital, Leeds, UK; ^dDepartment of Orthopaedics, Northern General Hospital, Sheffield, UK

67. The Pelvis Compression Fixator #5935

F. Krug^a, S. Reinecke^b, G.v.Oldenburg^c, M. Morlock^b; ^aDepartment of Orthopaedic and Trauma Surgery, Asklepios Klinikums Eilbek, Eilbek, Hamburg; ^bDepartment of Biomechanic Engineering, Technische Universität Hamburg-Harburg; ^cStryker Trauma, Kiel

68. Dynamized unilateral stabilization of tibia: strains and stresses in tissues of fracture callus #6064

Jarosław Piekarski; Institute of Fundamental Technological Research PAS, Warsaw, Poland

69. Comparison of fixation methods for use in osteoporotic femoral heads: twin hooks and lag screw

Peter Olséen^a, Fred Kjellson^b, Leif Ceder^a, Ola Olsson^a, Elizabeth Tanner^c, Ian McCarthy^b; ^aDepartment of Orthopedics, Helsingborg Hospital, Helsingborg, Sweden; ^bCentre for Biomechanics, Lund University, Sweden; ^cDepartment of Materials, Queen Mary University of London, UK

70. Difference in severity of inflammatory tissue response in plate osteosyntheses with stainless steel and titanium #6720

Taeger G^a, Hußmann B^a, Grabellus F^b, Podleska L^a, Nast-Kolb D^a, Ruchholtz S.^a; ^a Klinik für Unfallchirurgie, Universitätsklinikum Essen, Germany; ^b Institut für Pathologie, Universitätsklinikum Essen, Germany

4.7 Implantable Telemetry Posters**Session Organizers: Georg Bergmann, Antonius Rohlmann****71. Smart implants with inductive power supply and radio-frequency data link #6276**

F. Graichen, A. Rohlmann, A. Bender, P. Westerhoff, B. Heinlein, U. Gabel, G. Bergmann; Biomechanics Lab., biomechanik.de, Charité, CBF, Berlin, Germany

72. Calibration technique for a 6 DOF force-measuring telemetric shoulder prosthesis #6979

Stephen JG Taylor, David Cuenca, Gordon Blunn; Centre for Biomedical Engineering, Institute of Orthopaedics and Musculoskeletal Science, University College London, Stanmore, UK

73. Low power 9-channel telemetry transmitter on a single chip #6277

F. Graichen^a, R. Arnold^b, A. Rohlmann^a, G. Bergmann^a; ^aBiomechanics Lab., biomechanik.de, Charité, CBF, Berlin, Germany; ^bInstitute for Computer Engineering and Microelectronics, TU Berlin, Germany

74. An instrumented vertebral body replacement for in vivo load measurements #5008

Antonius Rohlmann, Udo Gabel, Friedmar Graichen, Georg Bergmann; Biomechanics Laboratory, Charité Campus Benjamin Franklin, Berlin, Germany

4.8. Biotribology of Implants (Hip, Knee, Spine, etc.) Posters

Session Organizers: John Fisher, Zhongmin Jin

75. Prediction of lubrication regimes in two-piece metatarsophalangeal prostheses #4106

Tom Joyce; Centre for Rehabilitation and Engineering Studies, School of Mechanical and Systems Engineering, University of Newcastle upon Tyne, Newcastle upon Tyne, United Kingdom

76. Effect of dose level ranged from 5Mrad to 100Mrad on the wear behaviour of cross-linked UHMWPE evaluated in the multi-directional pin-on-plate wear test #6845

^aTakanori Sawano, ^bYoshinori Sawae, ^bTeruo Muratami; ^aGraduate School of Engineering, Kyushu University, Fukuoka, Japan; ^bFaculty of Engineering, Kyushu University, Fukuoka, Japan

77. Analysis of Surface Stresses for the Tribological System in Total Hip Prostheses #6413

B.-A. Behrens^a, G. Helms^a, O. Pösse^a, I. Nolte^b, A. Meyer-Lindenberg^b, C.J. Wirth^c, T. Pressel^c
^aInstitute of Metal Forming and Metal Forming Machine Tools, University of Hannover, Germany; ^bSmall Animal Clinic, University of Veterinary Medicine Hannover, Germany; ^cDepartment of Orthopedic Surgery, Hannover Medical School, Germany

78. Computational simulation of wear rate and heat generation on a hip joint #4354

P.R. Fernandes, J. Fialho, J. Folgado and L. Eça; DEM-IST, Av. Rovisco Pais, Lisboa, Portugal

79. The effect of the conformational changes of proteins on the frictional properties in an artificial cartilage material #6520

Kazuhiro Nakashima, Yoshinori Sawae and Teruo Murakami; Graduate School of Engineering, Kyushu University, Fukuoka, Japan

80. Sphericity related Contact Mechanics in Ceramic-On-Ceramic Hip Joint Replacements #6473

S. Leyen, S. Köbel, W. Weber; Metoxit AG, Thayngen, Switzerland

81. The influence of contact hip joint stress distribution on polyethylene cup wear #6133

^{a,b}Veronika Kralj-Iglič, ^cMatej Daniel, ^bRobert Košak, ^bVane Antolič, ^dAleš Igljč; ^aInstitute of Biophysics, Medical Faculty, University of Ljubljana, Ljubljana, Slovenia; ^bDepartment of Orthopaedic Surgery, Clinical Centre, Ljubljana, Slovenia; ^cTechnical University of Košice, Košice, Slovakia; ^dFaculty of Electrical Engineering, University of Ljubljana, Ljubljana, Slovenia

82. Evaluation of trace metals in primary cementless THA using three different articulation types #6216

Lukas Karamat, Karl Knahr; Orthopädisches Spital Wien-Speising, Wien, Austria

83. A Friction Study of Metal-on-Metal Resurfacing and Total Hip Replacements #5670

Claire Brockett^a, Sophie Williams^a, Zhongmin Jin^a, Graham Isaac^b, John Fisher^a; ^aInstitute of Medical and Biological Engineering, University of Leeds, UK; ^bDePuy International, Leeds, UK

5. Occupational and Impact Injury Biomechanics Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Heiner Bubb, Narayan Yoganandan, Brian Stemper

5.1 Real World Injuries Posters

Session Organizers: Frank A. Pintar, Mark Scarboro

1. The Role of Composite helmets in reducing head injuries during direct head impacts #7675

Seyed Mohammad Rajaai, Bardia Vesalpour and Shahab Mansur Baghaei; School of Mechanical Engineering, Iran University of Science and Technology, Narmak, Tehran, Iran

2. Investigation of the Dynamic Response Contribution of Vasculature in a 3D Finite Element Head Model #6319

Johnson Ho, Svein Kleiven; Department of Neuronic Engineering, Royal Institute of Technology, Stockholm, Sweden

3. Study of Optimal Size of Compressive Craniectomy using Finite Element Method #6772

L. Liu^a, L. P. Chua^a, D. N. Ghista^a, C.B.T Ang^b and I.H.B Ng^b; ^aSchool of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore; ^bNational Neuroscience Institute, Singapore

4. Analysis of Pedestrian Impact Using SIMon #7526

Kyle Ott, John Wiechel, Dennis Guenther; The Ohio State University, Columbus, Ohio, USA

5. Head Impacts Associated with Daily Living Activities: Diagnosis Versus Injury Potential #7566

Adam Bartsch^a, Douglas Morr^a, John Wiechel^{a,b}; ^aSEA, Limited, ^bThe Ohio State University, Columbus, Ohio, USA

6. Sternocleidomastoideus Muscle Activation Index; a promising tool for evaluating functional changes following whiplash associated disorders #5640

Inge Ringheim, Aage Indahl; Hospital for Rehabilitation, Rikshospitalet University Hospital, Stavern, Norway

5.3. Spine Kinematics and Injury Biomechanics Posters

Session Organizers: Dale Bass, Barclay Morrison

7. Experimental and computational analysis of the spinal cord-fragment interactions during the burst fracture process #4114

R.J.Oakland^a, R.K.Wilcox^a, D.C.Barton^a, R.M.Hall^{ab}; ^a School of Mechanical Engineering, University of Leeds, UK; ^b Musculoskeletal Services, School of Medicine, University of Leeds, UK

8. Finite element simulation of chiropractic adjustment in the cervical spine #7487

Johanna Dahlkvist, Karin Brolin, Peter Halldin; Division of Neuronic Engineering, Royal Institute of Technology, Sweden

9. Computational analysis of the spinal cord during the thoracolumbar burst fracture#4703

R.J.Oakland^a, R.K.Wilcox^a, D.C.Barton^a, R.M.Hall^{ab}; ^a School of Mechanical Engineering, University of Leeds, UK; ^b Musculoskeletal Services, School of Medicine, University of Leeds, UK

10. Development of multi-layer ATD neck lumped-mass computer model subjected to rear impact #4544

T.J. Huang, Jun-Tai Wu, Meng-Han Yeh; Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

11. Experimental Analysis of Lumbar Spine Behavior under High Velocity Flexion and Compression Loadings #5622

Sebastien LAPORTE^a, Samuel BERTRAND^a, Jean-Louis POLARD^a, Marc PAJON^c, David MITTON^a, Xavier TROSSEILLE^b, François LAVASTE^a; ^a Laboratoire de Biomécanique, ENSAM CNRS UMR 8005, Paris, France; ^b Laboratoire d'Accidentologie et de Biomécanique, GIE PSA Renault, Nanterre, France
^c FAURECIA, Etampes, France

12. Development of models of scoliosis for crash safety analysis of wheelchair occupants #6851

Jennifer Walsh^a, Ciaran Simms^a, David FitzPatrick^b, John Tiernan^c; ^a Trinity Centre for Bioengineering, Trinity College, Dublin, Ireland; ^b School of Electronic and Mechanical Engineering, University College Dublin, Belfield, Dublin, Ireland; ^c Eastern Region Postural Management, Enable Ireland, Sandymount, Dublin, Ireland

13. An Experimental Approach to Elicit the Biomechanical Response of Full Cervical Spine Under Sustained +Gz Acceleration #4400

Chee-Hoong Cheong, Hau-Kong Chan Kelvin and Vee-Sin Lee Peter; Defence Medical and Environmental Research Institute, DSO National Laboratories, Singapore

5.4. Head/Brain Injury: Macro-Biomechanics Posters

14. Review of the Measurement of Linear Center of Gravity and Angular Head Accelerations #7510

Douglas R. Morr, John F. Wiechel, C. Brian Tanner, Adam J. Bartsch; SEA, Limited, Columbus, Ohio, USA

15. Modal analysis of the dry human skull #6840

Esmeralda Forausbergher^a, Hans Delye^b Peter, Verschueren^a, Jan Goffin^b, Georges Van der Perre^a
^a Division of Biomechanics and Engineering Design, Catholic University of Leuven, Leuven, Belgium; ^b Department of Neurosurgery, University Hospital Gasthuisberg, Leuven, Belgium

16. A Novel Algorithm to Measure Linear and Rotational Head Acceleration using Single-Axis Accelerometers #6514

Jeffrey J. Chu^a, Jonathan G. Beckwith^a, Joseph J. Crisco^b Richard M. Greenwald^a; ^a Simbex, Lebanon, New Hampshire, USA; ^b Brown Medical School, Providence, Rhode Island, USA

5.6. Abdominal Injury Biomechanics Posters

Session Organizers: Warren Hardy, Ali Elhagediab

17. A pelvic fracture model for the assessment of treatment options in a laboratory environment #5422

Dietmar Krappinger, Heinrich Schubert, Michael Blauth, Werner Schmoelz
Department of Trauma Surgery and Sports Medicine, Medical University Innsbruck, Innsbruck, Austria

18. Stochastic Process Methods in the Dynamics of Deformation of Tissues #7652

Mariusz R. Slawomirski; University College of Environmental Sciences, Radom, Poland; and Strata Mechanics Research Institute, Polish Academy of Sciences, Krakow, Poland

5.7.1 Extremity and Pedestrian Injury Biomechanics Posters

Session Organizer: Jeff Crandall

19. The influence of the impact point on pedestrian lower limb injury and criteria #4328

Catherine Masson, Christian Brunet; Laboratory of Applied Biomechanics. French National Institute for Transport and Safety Research-Faculty of Medicine of Marseille, Marseille, France

20. Impact analysis of reverse punch technique and related injuries in karate do athletes #4934

Vinicius Aguiar de Souza^a, Alberto Tamagna^b, Levent Kirkayak^c; ^{a,c} Structure and Systems Laboratory, Graduate School of Frontier Sciences, The University of Tokyo, Tokyo, Japan; ^b Mechanical Vibrations and Acoustics Laboratory, Mechanical Engineering Department, Rio Grande do Sul Federal University, Porto Alegre, Brazil

5.9. Computer Simulation Posters

Session Organizers: King H. Yang, Jess Snedeker

21. Biofidelity Assessment of 3-Year-Old Child FE Human Model #6403

Takayuki Koizumi^a, Nobutaka Tsujiuchi^a, Nobuhiro Taki^b, Ronald de Lange^c, Lex van Rooij^c

^a Department of Mechanical Engineering, Faculty of Engineering, Doshisha University, Kyoto, Japan; ^b Department of Mechanical Engineering, Doshisha University Graduate School, Kyoto, Japan; ^c TNO Science and Industry Business unit Automotive, Delft, The Netherlands

22. Computer simulation of blunt trauma to the eye and the optic nerve #4858

Serge Cirovic^a, RM Bhola^b, DR Hose^b, IC Howard^b, PV Lawford^b, J Marr^b, MA Parsons^b, A Yoxall^b

^a The Centre for Biomedical Engineering, University of Surrey, Guildford, Surrey, UK; ^b The University of Sheffield, Sheffield, UK

23. Utilization of MADYMO to Determine and Verify Occupant Kinematics, Kinetics and Injury Mechanisms During a Real World Collision #7565

Adam Bartsch, Douglas Morr, John Wiechel; SEA, Columbus, Ohio, USA

24. Evaluation of Wheelchair Occupant Safety in Frontal & Side Impact of Wheelchair Loaded Vehicle by Computer Simulation Analysis Method (ADAMS+LifeMOD) #5560

Sung Min Kim, In Chul Yang, Sung Yun Park, Man Pyo Lee; Department of Biomedical Engineering, Konkuk University, Chungju, South Korea

25. The Cervical Spine Injury Pattern Without and With Helmet in Motorcycle Accident #5413

Sai-Wei Yang^a, Ying-Lung Cheng^a, King H. Yang^b, Sheng-Jia Hsieh^a; ^a Institute of Biomedical Engineering, National Yang-Ming University, Taiwan; ^b Department of Biomedical Engineering, Wayne State University, Detroit, Michigan, USA

26. Finite element simulation of pelvis during a backward fall #5276

Santanu Majumder^a, Amit Roychowdhury^a, Subrata Pal^b; ^a Department of Applied Mechanics, Bengal Engineering and Science University, Shibpur; Howrah, West Bengal, India; ^b School of Bio-science and Engineering, Jadavpur University, Kolkata, India

5.10. Ergonomics Posters

Session Organizers: Heiner Bubb, M. Xuguang Wang

27. Effect of second handle positions on EMG activities during snow shoveling #6767

Hitoshi Yanagi^a, Noriyuki Yamamoto^b, Katsumi Miyakoshi^a, Ping Wu^a, Ryoji Fukushima^a, and Tadao Isaka^c

^a Satellite Venture Business Laboratory, Kitami Institute of Technology, Kitami, Japan; ^b Japanese Red Cross Hokkaido College of Nursing, Kitami, Japan; ^c Ritsumeikan University, Kusatsu, Japan

28. Lifting strategies between experienced rod handlers have a significant effect on back loading #4294

André Plamondon^a, Alain Delisle^a, Karin Trimble, Pierre Desjardins; ^a Institut de recherche Robert Sauvé en santé et en sécurité du travail (IRSST), Montréal, Québec, Canada

29. Application of thermography for evaluation of mechanical load on the muscles of upper limb during wheelchair driving #6771

Takashi Matsuo, Shin-ichi Watanabe, Katsumi Takahashi, Takako Sakamoto, and Keijiro Yamamoto
Faculty of Engineering, Kanagawa Institute of Technology, Atsugi, Japan

30. Foreshoes: Portable ground reaction sensors for biomechanical analysis in the work place #5221

Brent Carmichael^{a,b}, Tilak Dutta^{a,b}, Geoff Fernie^b; ^a Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada; ^b Toronto Rehabilitation Institute, Toronto, Canada

31. Integration of 3D motion analysis with the Mobile Usability Lab for biomechanical analyses of human-device interfaces #5145

Megan O. Conrad, Melissa R. Lemke, Jack M. Winters; Rehabilitation Engineering Research Center on Accessible Medical Instrumentations (RERC-AMI) Marquette University, Milwaukee, Wisconsin, USA

32. Vehicle Ergonomics: Effect of automobile seating on foot posture and callus development #5040

Bharti Rajput, Rami Abboud; Institute of Motion Analysis & Research (IMAR), University of Dundee, Scotland, UK.

5.11 Occupational Disorders, Repetitive Strain Injury Posters

Session Organizers: Albert King, Hans-Joachim Wilke

33. Assessment of neuromuscular efficiency and fatigability of back extensor muscles in pregnant women with low back pain #6868

Cécile Bisch^{a,b}, Jean Gondry^c, Clotilde Vanhoutte^a, Chantal Pérot^a; ^a Département de Génie Biologique, UMR CNRS 6600, UTC, Compiègne, France; ^b Laboratoire DMAG (EA 3901), UPJV, Amiens, France; ^c Centre gynécologique et obstétrique, CHU, Amiens, France

34. The Influence of Individual Geometry on the Results of a Numerical Model of the Lumbar Spine – Experimental Data and Simulation #6566

Christoph Mischke^a, Gerd Huber^b, Michael M. Morlock^b, Horst Peter Wölfel^a; ^a Darmstadt University of Technology, Dept. of Structural Dynamics, Darmstadt, Germany; ^b Hamburg University of Technology, Biomechanics Section, Hamburg, Germany

5.12. Rehabilitation Mechanics- Posters

35. Shoulder muscle function in females with trapezius myalgia #5029

Andersen LL, Hansen PB, Andersen C, Skovholm K, Rosendal L, Sjøgaard K, Sjøgaard G.
National Institute of Occupational Health, Copenhagen, Denmark

36. Frequency-dependent vibration penetration into soft tissue in a fingertip #4361

John Z. Wu, Daniel E. Welcome, and Ren G. Dong; National Institute for Occupational Safety and Health, Morgantown, WV, USA.

5.13 Spine Kinematics Posters

Session Organizers: Guiseppe Androni, H.P. Wölfel

37. Real-time patient-specific finite element analysis of residual limb stresses in transtibial amputees during treadmill walking #4110

Sigal Portnoy^a, Gilad Yarnitzky^a, Ziva Yizhar^b, Anat Kristal^c, Uri Oppenheim^c, Itzhak Siev-Ner^c, Amit Gefen^a
^aDepartment of Biomedical Engineering, Tel Aviv University, Israel; ^bDepartment of Physical Therapy, Tel Aviv University, Israel; ^cDepartment of Orthopaedic Rehabilitation, Chaim Sheba Medical Center, Israel

38. Development of the vibration absorption caster for wheelchair #4263

Shojiro George Terashima^a, Yumitsu Kikawa^b ^aMechanical and Control Eng., Niigata Institute of Technology, Kashiwazaki, Niigata, Japan; ^bEchigo Kougyou Inc., Santoh-Gun, Niigata, Japan

39. Design and construction of new instrumented keyboards for a comprehensive dynamic assessment of hand finger function #7163

Giovanni Maccioni, Sandra Morelli, Daniele Giansanti, Velio Macellari; Department of Technologies and Health, National Institute of Health, Rome, Italy.

40. Assessment of the hand functionality by means of Unsupervised Neural Networks #7161

Daniele Giansanti, Giovanni Maccioni, Sandra Morelli, Stefano Cesinaro, Velio Macellari
Department of Technologies and Health, National Institute of Health, Rome, Italy.

41. Mechanics of dropfoot rehabilitation with a shape memory alloy active splint #5664

Simone Pittaccio^a, Adelaide Nespoli^a, Marco Pini^a, Elena Villa^a, Stefano Besseghini^a, Franco Molteni^b, Anna Carla Turconi^c; ^aInstitute for Energetics and Interphases, National Research Council, Lecco, Italy
^bVilla Beretta, Ospedale Valduce, Costa Masnaga, Italy; ^cIstituto E. Medea, Associazione La Nostra Famiglia, Bosisio Parini, Italy

42. Benefit of an orthopaedic hip orthosis for the innervation characteristic during walking #5985

Walter Rapp, Thomas Horstmann; Medical Clinic of Sport Medicine, University of Tübingen, Germany

43. Discussion on Different Spine Mobility Calculations for Rehabilitation Purposes Using Optoelectronic System #6132

^aPetar Bacic, ^aStanislav Peharec, ^cTomislav Pribanic; ^aLaboratory for Biomechanical Research – Polyclinic Peharec, Pula, Croatia; ^cFaculty of electrical engineering and computing, University of Zagreb, Zagreb, Croatia

44. Contact pressures of hand-made drape and rapid prototyped prosthetic PTB socket during gait #6807

Khye Soon Andy Yew^a, Chin Ghim Lim^a, Cho Hong James Goh^{a,c}, Siew Lok Toh^{a,b}, and Vee Sin Peter Lee^{a,d};
^aDivision of Bioengineering, ^bDepartment of Mechanical Engineering and ^cDepartment of Orthopaedic Surgery, National University of Singapore, Singapore; ^dDefense Medical and Environmental Research Institute, DSO National Laboratories, Singapore

45. A Novel Prosthetic Design Incorporating A Modified Hydraulic System #6793

Prakash Viswanathan, Narayanan Ramachandran, Prakash Elumalai; Mechanical Engineering, St. Joseph's College of Engineering, affiliated to Anna University, Chennai, Tamil Nadu, India

46. Verification of Interface Pressures between Prosthetic Socket and Stump of Below-Knee Amputee at Stance Phase #4974

L. H. Hsu^a, P. L. Yang^a, G. F. Huang^b, and H. S. Shih^b; ^aDepartment of Mechanical Engineering, National Cheng Kung University, Taiwan; ^bDepartment of Physical Therapy, Fooyin University, Taiwan

5.14 Spine Kinematics Posters

Session Organizers: Guiseppe Androni, H.P. Wölfel

47. The Validity and Reliability of Measurement of Thoracic Kyphosis Using Flexible Ruler in Postural Hyperkyphotic Patients #7665

Khalkhali M^a, Parnianpour M^b, Karimi H^c, Mobini B^d, Kazemnejhad A^e; ^aPhysiotherapy Department, Rehabilitation Faculty, Shaheed Beheshti Medical University, Tehran, Iran; ^bBiomechanics Department, Faculty of Mechanics, Sharif Rehtchnical University, Tehran, Iran; ^cPhysiotherapy Department, Rehabilitation Faculty, Iran Medical University, Tehran, Iran; ^dSpinal Surgery Department, Iran Medical University, Tehran, Iran; ^eBiostatistics Department, Faculty of Medicine, Tarbiat Modarres University, Tehran, Iran

48. Repeatability of EOS Stereoradiography for Assessing the 3D Position of Cervical Vertebrae *in vivo* #7084

Marc-Antoine Rousseau^a, Sebastien Laporte^a, Estelle Chavary-Bernier^{a,b}, Wafa Skalli^a
^a Laboratoire de Biomécanique, ENSAM CNRS UMR 8005, Paris, France; ^b Institut de Médecine Aérospatiale du Service de Santé des Armées, Brétigny sur Orge, France

49. *In-vivo* 3D kinematics of the cervical spine segments during the manipulation at C4/C5 level #5829

Walid Salem^{a,b}, Jacques Mathieu^c, Nicole Hermanus^c, Paul Klein^{a,b}; ^a Université Libre de Bruxelles (URTM), Brussels, Belgium; ^b Sutherland College of Osteopathic Medicine, Namur, Belgium; ^c CHU Brugmann (Service de Radiologie), Brussels, Belgium

50. Kinematics and Transmission Properties of Spine #7173

Martin Otáhal^a, Jaroslav Lukeš^a, Stanislav Otáhal^b, Miroslav Sochor^a; ^a Czech Technical University in Prague, Czech Republic; ^b Charles University in Prague, Czech Republic

51. Biomechanical model of flexion/extension mobility of the lumbar spine: consideration on soft tissue artifacts #7365

Giuseppe Luca Ciavarro, Giorgio Cesare Santambrogio, Giuseppe Androni; Dipartimento di Bioingegneria, Politecnico di Milano, Italy

52. Sagittal kinematics of the hip-spine interaction during sit-to-stand in healthy subjects #7285

^a Fotoohabadi Mohammad Reza, ^b Tully Elizabeth, ^b Galea Mary; ^a Rehabilitation Faculty, Shiraz Medical University, Shiraz, Fars, Iran; ^b School of Physiotherapy, University of Melbourne, Victoria, Australia

53. New indicator of spinal function derived from non-invasive measurements with reduced effect of skin artifact #6932

Wen-Ling Chen^a, Wen-Paw Lin^a, Ruey-Mo Lin^b; ^a Department of Physical Therapy, National Cheng Kung University, Tainan, Taiwan; ^b Department of Orthopedics, National Cheng Kung University Hospital, Tainan, Taiwan

54. Assessment of the Influence of Shoe design on Lumbar Spine Motion #6470

NT O'Malley^a, D FitzPatrick^b, J Quinlan^a, SK O'Rourke^a; ^a Department of Orthopaedics, St Vincent's University Hospital, Dublin 4, Ireland; ^b School of Electrical, Electronic & Mechanical Engineering, University College Dublin, Dublin 4, Ireland

55. Analytical and Computational Methods to Evaluate the Effect of Bone Geometry in Tibial Loading Response #7556

Damien Subit, Dipan Bose, Johan Ivarsson, Costin Untaroiu, Jeff Crandall; Center for Applied Biomechanics, Charlottesville, VA, USA

6. 13 Sport Biomechanics-Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Andreas Imhoff, Benno M. Nigg, Erich Müller

6.1 Sport Injuries Posters

1. Fatigue-Related Changes in Stance Leg Mechanics during Soccer-Related Maneuvers in Female Soccer Players #7248

Giorgio Sanna^{ab}, Kristian M. O'Connor^a; ^a Neuromechanics Laboratory, Department of Human Movement Sciences, University of Wisconsin, Milwaukee, USA; ^b Dipartimento di Scienze del Movimento Umano e dello Sport, Istituto Universitario di Scienze Motorie, Roma, Italy

2. Evaluating paddling performances through force acquisitions with a specially instrumented Kayak ergometer #5920

Giovanni Mimmi, Carlo Rottenbacher, Manuel Regazzoni; Dipartimento di Meccanica Strutturale, Università di Pavia, Pavia, Italy

3. Effects of mild Leg Length Discrepancy on Vertical Ground Reaction Forces in running #6251

Carla S.Pereira, José G.M.Silva, Isabel C.N.Sacco; Lab. Biomechanics of Human Movement and Posture, Dept. Physical Therapy, Speech and Occupational Therapy, School of Medicine, University of São Paulo, São Paulo, SP, Brazil

4. Feasibility of resistance training employing daily physical actions for improvement of muscle strength #5833

Yohei Takai^a, Norihide Sugisaki^a, Hiroaki Kanehisa^b, Yasuo Kawakami^a, Tetsuo Fukunaga^a; ^a Graduate School of Sports Sciences, Waseda University, Saitama, Japan; ^b University of Tokyo, Tokyo, Japan

5. Lateral force components on pedals measured by a cycle ergometer with three axial load cells #5908

Giovanni Mimmi, Carlo Rottenbacher, Giovanni Bonandrini; Dipartimento di Meccanica Strutturale, Università di Pavia, Pavia, Italy,

6. The cue of breathing in cannot decrease landing forces in the maximal vertical jump #6702

Yu En Kuo^a, Chung Yu Chen^b, Ti Yu Chen^a; ^a Graduate Institute of Applied Sport Science, National Changhua University of Education, Changhua, Taiwan; ^b Graduate School of Physical Education, National Taiwan College of Physical Education, Taichung, Taiwan

7. Experimental considerations regarding the human ankle joint by using the technical system for training #7348

Emil Budescu^a, Cezar Honceriu^b, Florentin Buium^a; ^a Technical University “Gh. Asachi” of Iasi, Biomechanics Laboratory, Iasi, Romania; ^b University “Al. I. Cuza” of Iasi, Faculty of Physical Education and Sports, Iasi, Romania

8. The results of a pilot study to design a portable instrument to measure frontal plane angular changes in the lumbar spine of elite rowers #6902

Wilson F^a, Gormley J^a, Simms C^b; ^a School Of Physiotherapy, Trinity College Dublin, Ireland; ^b Dept Of Bioengineering, Trinity College Dublin, Ireland

9. Special bicycle ergometer for optimum rider position #5615

Giovanni Mimmi, Carlo Rottenbacher, Giovanni Bonandrini, Emilio Buzzi; Dipartimento di Meccanica Strutturale, Università di Pavia, Italy

10. Indian Trends In Percentage Height Of Centre Of Gravity (A Cross-Sectional Study From 3 To 78 Years Of Age Of Male And Female) #7604

Dhananjoy Shaw; Department of Natural/Medical Sciences Incharge, Biomechanics Laboratory, IGIPSS, University of Delhi, New Delhi, India

11. Variation of the carrying angle of the elbow during flexion-extension #7670

Zampagni M.L., Casino D., Martelli S., Visani A., Marcacci M.; Biomechanics Laboratory, Istituti Ortopedici Rizzoli, Bologna, Italy

12. Anterior cruciate ligament repair technique alters knee joint forces during isometric flexion/extension #6119

DL Benoit, PJ Barrant, K Manal, TS Buchanan; Department of Mechanical Engineering, Center for Biomedical Engineering Research, University of Delaware, Newark, DE, USA

13. Method For The Recovery Through Kinetotherapy Of The Paralysis Of The External Scyatic Popliteus Nerve #7016

Marin Chirazi; Faculty of Physical Education and Sports, University “Al I. Cuza”, Iasi, Romania

14. The Effect of Taping on the Shock Attenuation Capacity of the Heel Pad in Patients with Plantar Heel Pain #5495

Chen C.-L.^a, Wang S.-F.^b, Wang C.-L.^c, Shau Y.-W.^d, Chai H.^b; ^a Department of Rehabilitation Technology, Tzuhui Institute of Technology, Pingtung, Taiwan; ^b School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University, Taipei, Taiwan; ^c Department of Orthopedic Surgery, National Taiwan University Hospital, Taipei, Taiwan; ^d Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan

15. Kinetic Alterations Of The Lower Limb During Stair Locomotion In Anterior Cruciate Ligament Injured Subjects #5537

Hsiu-Chen Lin^{ab}, Tung-Wu Lu^a, Horng-Chaung Hsu^c; ^a Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; ^b School of Physical Therapy, China Medical University, Taichung, Taiwan
^c Department of Orthopedics, China Medical University Hospital, Taichung, Taiwan

16. Antagonist Muscle Activity during Maximal Isometric Knee Strength Testing #7552

Williams GN^{ab}, Krishnan C^a; ^a Graduate Program in Physical Therapy & Rehabilitation Science, ^b University of Iowa Sports Medicine Center, University of Iowa, Iowa City, IA, USA

17. Rotary Instability Of The Knee Joint During Walking In Anterior Cruciate Ligament Injured Subjects #5539

Hong-Chaung Hsu^a, Pei-Wen Chiu^b, Hsiu-Chen Lin^{c,d}, Tung-Wu Lu^d,^a Department of Orthopedics, China Medical University Hospital, Taichung, Taiwan; ^b Institute of Medical Science, Taichung, Taiwan; ^c School of Physical Therapy, China Medical University, Taichung, Taiwan; ^d Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

18. Differences in age-related changes in the plantar flexor muscles and Achilles tendon in men #5275

Keitaro Kubo^a, Masanori Morimoto^b, Teruaki Komuro^b, Naoya Tsunoda^b, Hiroaki Kanehisa^a and Tetsuo Fukunaga^c; ^a Univ. of Tokyo, ^b Kokushikan Univ., ^c Waseda Univ.

6.2 Computer-Simulation in Sport Posters

Session Organizer: Jason Cheung

19. Use of computer software for improvement of skills of young football players #6857

Durmishkhan Chitashvili^a, Alexander Egoyan^a, Merab Mirtskhulava^a, Iliia Khipashvili^a, Elene Korinteli^a

^a Physiology lab., State Academy of Physical Education and Sport of Georgia, Tbilisi, Georgia

20. Sport biomechanics of movements in resisting media #6376

R.N. Rudakov^a, A.R. Podgaets^b, R.M. Podgaets^a, A.A. Razumov^a, Y.V. Yakovleva^a; ^a Perm State Technical University, Perm, Russia; ^b Delft University of Technology, Delft, Netherlands

21. The Giant Circle with the Joystick — Interactive Computersimulation of Movements in Sports #6832

Karin Gruber^a, Torsten Hans^b, Hanns Ruder^b; ^a Institut of Sport Science, University of Koblenz-Landau, Koblenz, Germany; ^b Institute für Astronomy und Astrophysics, Dept. of Biomechanics, University of Tübingen, Germany

22. A model based method to control training #6998

Sigrid Thaller, Markus Tilp, Martin Sust; Institute of Sports Science, Karl-Franzens University Graz, Austria

23. Biomechanics of sprinting amputees athletes #7346

Cugini Umberto, Bertetti Massimiliano, Bonacini Daniele; Department Mechanical Engineering, Politecnico of Milan, Italy

24. The simulation of cycling – optimization of sport performance based on different frequency of pedaling #5850

Miloslav Vilimek; Dept. of Mechanics, Fac. of Mech. Engineering, Czech Technical University in Prague, Prague, Czech Republic

25. Wind Effect on the Performances of Canoes and Kayaks in Flatwater Races #4502

Michel Guilbaud^a, François Durand^b; ^a Laboratoire d'études Aérodynamiques, Université de Poitiers, France; ^b Research group of the Fédération Française de Canoë-Kayak, CAIPS-CREPS, Poitiers, France

26. Numerical Optimisation Of Slalom Canoe And Kayak Hulls Performances #4500

Michel Guilbaud, Serge Huberson, Mathieu Voisine; Laboratoire d'études Aérodynamiques, Université de Poitiers, France

27. Biomechanical Modelling and Simulation of Human Body by means of DYNAMICUS #5606

Thomas Härtel, Heike Hermsdorf; Institute of Mechatronics at the Chemnitz University of Technology, Chemnitz, Germany

6.3. Footwear-Movement Control Posters

Session Organizers: Joe Hamil, Darren Sefanshyn

28. Mechanical properties of different midsole materials in running shoes #6444

Jens Heidenfelder, Stephan Odenwald, Thomas Milani; Technische Universität Chemnitz, Institut für Sportwissenschaft, Chemnitz, Germany

29. The development of hallux valgus index using plantar image #4770

Xin-Lin Kuo^a, Jia-Lin Xie^b, & Tzyy-Yuang Shiang^c; ^a Institute of Sports Equipment Technology, Taipei Physical Education College, Taipei, Taiwan; ^b Institute of Sports Equipment Technology, Taipei Physical Education College, Taipei, Taiwan; ^c Institute of Sports Equipment Technology, Taipei Physical Education College, Taipei, Taiwan

30. Quasi-static tarsal bone motion of dynamically categorised runners #5070

Peter Wolf^a, Alex Stacoff^a, Roger Luechinger^b, Edgar Stuessi^a; ^a Laboratory for Biomechanics, ETH Zurich, Zurich, Switzerland; ^b Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland

31. Two-segment foot kinematics during running #5078

Renate List, Stephanie Unternährer, Alex Stacoff, Thomas Ukelo, Edgar Stüssi; Laboratory for Biomechanics, D-MAVT, ETH Zurich, Zurich, Switzerland

32. Development of a lining for a comfortable sport shoe #6675

Manuela Neves^a, Joana Cunha^a, Jose Teixeira^b, Pedro Lobarinhas^b; ^a University of Minho, Department of Textile Engineering, Guimarães, Portugal; ^b University of Minho, Department of Mechanical Engineering, Guimarães, Portugal

33. Barefoot vs. Shod Kicking in Soccer – What's Faster? #4190

T. Sterzing, J. Kroihner & E. Hennig; Biomechanics Laboratory, University of Duisburg Essen, Essen, Germany

34. Roll-Over Characteristics Of Prosthetic Feet Used In Developing Nations #4869

Gonzalez, RV, Vaughan, M, and Ayers, S; Biomedical and Mechanical Engineering, LeTourneau University, Longview, Texas, USA

6.4 Sports Activity Posters

Session Organizers: Hermann Schwameder, Th. Jöllenbeck, Erich Müller, Veit Senner

35. Differences of standing vertical jump with different arm action #6059

Xiaoyan Wei, Zhenke Du; Shanghai University of Sports, Shanghai, China.

36. Complex biomechanical analysis of sports technique on the example of long jumps #5566

Alexander Egoyan, Merab Mirtskhulava, Durmishkhan Chitashvili, Carlo Moistrapishvili, Revaz Salukvadze, Gela Piranashvili, Tinatin Kotorashvili, Ilia Khipashvili, Elene Korinteli, Giorgi Eradze, Zviadi Pkhaladze Physiology lab., State Academy of Physical Education and Sport of Georgia, Tbilisi, Georgia

37. The validity evaluation for vertical jump meter #6655

Yu Ting Chen^a, Chung Yu Chen^a, Ti Yu Chen^b; ^aGraduate School of Physical Education, National Taiwan College of Physical Education, Taichung, Taiwan; ^bDepartment of Physical Education, National Changhua University of Education, Changhua, Taiwan

38. Is age-related difference in vertical jump a function of arm swing and stretch shortening cycle for children? #6656

Chung Yu Chen^a, Ti Yu Chen^b, Yu Ting Chen^a; ^aGraduate School of Physical Education, National Taiwan College of Physical Education, Taichung, Taiwan; ^bDepartment of Physical Education, National Changhua University of Education, Changhua, Taiwan

39. Long jump technique of elite female lower-limb amputee athletes #7003

Lee Nolan^a, Benjamin L. Patrilli^b, Kathy J. Simpson^c; ^aLaboratory for Biomechanics and Motor Control, Karolinska Institutet and University College of Physical Education and Sports, Stockholm, Sweden; ^bDepartment of Physical Medicine and Rehabilitation, Harvard Medical School, Spaulding Rehabilitation Hospital, Boston, MA, USA; ^cDepartment of Kinesiology, University of Georgia, Athens, GA, USA

40. Vertical jump height represents a body size independent index of muscle power #4442

Goran Markovic^a, Slobodan Jaric^b; ^aFaculty of Kinesiology, University of Zagreb, Zagreb, Croatia; ^bHuman Performance Lab, University of Delaware, Newark, USA

41. Analysis of the plantar foot pressure during walking: VFE position and VRI position #7628

Jonathan Perin^a; Guillaume Agnesina^a; Redha Taiar^a, Yuli Toshev^b; ^aLaboratory for Analysis of Mechanical Constraints LRC/CEA EA 3304, University of Reims CA, France; ^bInstitute of Mechanics and Biomechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria

42. Dynamic Measurement of Pressure Distribution of Bi-Ski Seat Interface #7330

Hisayuki Yajima^a and Kazuhiko Sasagawa^b; ^aGraduate School of Science and Technology, Hirosaki University, Japan; ^bFaculty of Science and Technology, Hirosaki University, Hirosaki, Japan

43. A 10-year Longitudinal Study of the In-Run Position Kinematic Changes in Ski Jumping #6006

Miroslav Janura^a, Lee Cabell^b, Milan Elfmak^a, Frantisek Vaverka^a; ^aDepartment of Biomechanics and Engineering Cybernetics, Faculty of Physical Culture, Palacky University, Olomouc, Czech Republic
^bDepartment of Graduate Programs in Health Sciences, School of Graduate Medical Education, Seton Hall University, South Orange, New Jersey, U.S.A.

6.5 Technology and Equipment Posters

Session Organizers: Darren Stefanyshyn, W. Nachbauer

44. Feasibility of Using Real-time MRI to Measure Joint Kinematics #4642

Christine Draper^a, Lampros Kourtis^a, Juan Santos^b, Thor Besier^c, Garry Gold^d, Gary Beaupre^c, Scott Delp^{a,c,e}
^aMechanical Engineering, ^bElectrical Engineering, ^cBioengineering, ^dRadiology, Stanford University, Stanford, USA; ^eVA RR&D Center, Palo Alto, USA

45. Tuning racquets mechanical properties on tennis player structure and skills #6126

Michele Camposaragna, Federico Casolo, Matteo Cocetta; Dept. Electrical Engineering, Man-machine Systems Mechanics Unit, Politecnico di Milano, Italy

46. The Study of A New Designed Table Tennis Racket for Training Strike Accuracy #7697

Chien-Yu Peng, Jiann-Li Chen, Tzyy-Yuang Shiang; Taipei Physical Education College, Taipei, Taiwan

47. The new design of movable target dummy device for Taekwondo #4741

Chang-Jung Lee^a, Wei-Hua Ho^b, An-Bao Chen^c; ^aInstitute of Sports Equipment Technology, Taipei Physical Education College, Taipei, Taiwan; ^bInstitute of Sports Technique, Taipei Physical Education College, Taipei, Taiwan; ^cDepartment of Technique Sports Science, Taipei Physical Education College, Taipei, Taiwan.

48. Development of a foot-to-foot impedancemeter for measuring body composition during exercise #4838

M-V Moreno^a, H Mehalebi^a, G Baquet^b, D Thevenet^c, FX Gamelin^b, S Berthoin^b, MY Jaffrin^a

^a- Dept of Biol. Engineering, UMR-CNRS 6600, Tech. University of Compiègne, France; ^b- Laboratory of human motricity (EA n°3608), Dept. of sport science, University of Lille 2, France; ^c- Laboratory of Motricity, Interactions, Performance (JE n°2438), UFR STAPS of Nantes, France

49. How long do insoles last: a simulation study? #5216

Chakradhar Birudavolu, Graham Arnold, Tim Drew, Rami Abboud; Institute of Motion Analysis & Research (IMAR), University of Dundee, Scotland, UK

50. The Evaluation of the Impact-Absorption Properties of Rubber Tiles for the Playground #4767

Li-Tung Chang^a, Tsair-Jeong Huang^b

^aDepartment of Childhood Education and Nursery, Chia Nan University of Pharmacy and Science, Tainan, Taiwan; ^bDepartment of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

51. Biomechanical analysis in the development of a new cardiovascular equipment #4498

Andrea Biscarini^a, Paolo Benvenuti^b, Fabrizio Cecchinelli^b, Silvano Zanusso^b; ^aDepartment of Physics, LAMS Laboratory, University of Perugia, Perugia, Italy; ^bTechnogym Scientific Department, Technogym S.p.A., Gambettola (FC), Italy

6.6 Performance Pattern Variability Posters

Session Organizers: Wolfgang Schöllhorn, Natalai Balague

52. Finite Element Analysis of Kayak Paddle in Diverse Surface #6708

Y-H Lin, T-Y Shiang, W-H Ho ; Taipei Physical Education College, Taipei, Taiwan

53. Estimation of the Quantification of the Elastics Loads on the Jump Fit Circuit #6032

Paulo Eduardo Schiehl, Leonardo Alexandre Peyré-Tartaruga, Guilherme de Matos Zingano, Jefferson Fagundes Loss; Exercise Research Laboratory, Rio Grande do Sul Federal University, Porto Alegre, RS, Brazil

54. Analysis of the neuromuscular control in a rowing specific force endurance test – an approach to evaluate inter-subjective variability of test results #4874

Lars Janshen^a, Klaus Mattes^b; ^aInstitute for Sport Science, Humboldt-University Berlin, Germany; ^bFaculty of Education, Psychology and Human Movement, University of Hamburg, Germany

55. Developmental Stages of Musical Skill of Samba #5501

Tomoyuki Yamamoto, Kohei Ishikawa and Tsutomu Fujinami; School of Knowledge Science, Japan Advanced Institute of Science and Technology, Ishikawa, Japan

56. Biomechanical and electromyographic study of individual rugby union scrummaging skills of front-row player: Effect of playing level #6548

Julien Piscione, Didier Gamet; Biomechanics and Biomedical Engineering Laboratory, University of Technology of Compiègne, France

57. Samba helps football players improve their skill #5486

Junpei Iguchi, Tomoyuki Yamamoto, Tsutomu Fujinami; Japan Advanced Institute of Science and Technology, Ishikawa, Japan

58. Reliability of time-to-contact measures to assess postural stability #4961

Jonathan Wheat^a, Robert Scaife^a, Jeffrey Haddad^b; ^aSheffield Hallam University, Sheffield, UK

^bUniversity of Massachusetts, Amherst, USA

59. Anthropometric and strength variables as predictors of 50m freestyle performance in Master swimmers #6898

M. L. Zampagni^a, D. Casino^a, G. Donà^a, S. Martelli^a, A. Visani^a, P. Benelli^b, M. Marcacci^a and G. De Vito^c

^aBiomechanics Laboratory - Rizzoli Orthopaedic Institute Bologna, Italy; ^bUniversity of Urbino “Carlo Bo”, Urbino, Italy; ^cDepartment of Human Movement and Sport Science – IUSM Roma, Italy

6.7. New Trends in Movement Analysis Posters

Session Organizers: Mario Lamontagne, Tom Anddriacchi

60. Accuracy of Dynamic Electromagnetic Tracking #7508

Andrew B. Mor; Institute for Computer Assisted Orthopaedic Surgery, The Western Pennsylvania Hospital, Pittsburgh, PA, USA

61. Correlation Between Muscles Strength In Relation To Dorsiflexion, Planterflexion, Eversion & Inversion Strength With Body Balance #7151

Hema Pant, K.Sukumar, Hemant Sharma, Mr. Alok Kumar Pandey, Mr. S.N Goel; IIT Roorkee, Uttranchal, India

62. The Use of Time-to-Contact Measures in Assessing Postural Stability #7019

Jeffrey Haddad^a, Jeff Gagnon^{ab}, Christopher Hasson^a, Richard E. A. van Emmerik^a, Joseph Hamill^a

^aUniversity of Massachusetts, Amherst, USA; ^bSpringfield College, Massachusetts, USA

63. The Comparison of Grab Start and Track Start in Force, Time, Stretch-Shorten-Cycle, and Performance Efficiency #7623

Su-Ting Chen^a, Wen-Tzu Tang^a, Hsin-Jung Hsiao^b; ^aGraduate Institute of Coach Science, National Collage of Physical Education and Sports, Taoyuan, Taiwan; ^bTunghai University, Taichung, Taiwan

64. The Relative Distribtuion for Body Segments Weight According to the Different Amputation Disability #7655

Mostafa Ali Atwaa; Physical Education faculty , Menoufeya University, Cairo, Egypt

65. Using the change of angular momentum and muscle electromyography data to qualify the muscle function in tennis forehand volley #6861

Hwai-Ting Lin^a, Lan-Yuen Guo^a, Wen-Lan Wu^a, Lin-Hwa Wang^b; ^aFaculty of Sports Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan; ^bDepartment of Physical Education, National Cheng Kung University, Tainan, Taiwan

66. Statistically appropriate computation of mean segment orientation #6355

John H. Challis; Biomechanics Laboratory, The Pennsylvania State University, University Park, PA, USA

67. Biomechanical validation of reaction tests #5856

Tobias Mayer, Beate Prätorius, Thomas L. Milani; Chemnitz University of Technology – Institute of Sport Science, Chemnitz, Germany

68. Use of video-computer modeling of sports technique during competitions #5642

Merab Mirtskhulava, Alexander Egoyan, Durmishkhan Chitashvili, Carlo Moistrapishvili, Revaz Salukvadze, Gela Piranashvili, Tinatin Kotorashvili, Ilia Khipashvili, Elene Korinteli, Giorgi Eradze, Zviadi Pkhaladze Physiology Lab., State Academy of Physical Education and Sport of Georgia, Tbilisi, Georgia

69. Evaluation of the skeletal muscle characteristics with viscous loading #5425

Kenji Shigetoshi^a, Tadao Isaka^b, Ryuta Ozawa^b, Tetsuya Morizono^c and Sadao Kawamura^b

^a Shiga University of Medical Science, Otsu, Japan; ^b Ritsumeikan University, Kusatsu, Japan

^c Toyota Technological Institute, Nagoya, Japan

6.8 Pressure Distribution in Sport Posters

Session Organizers: Stefan Grau, Peter Brüggermann

70. Biomechanical Loads Of The Lower Limb At The Basketball Game #7157

Emil Budescu^a, Radu Iacob^b, Eugen Merticaru^a, Dan Zaharia^c; ^a Technical University “Gh. Asachi” of Iasi, Biomechanics Laboratory, Iasi, Romania; ^b University “Al. I. Cuza” of Iasi, Faculty of Physical Education and Sports, Iasi, Romania; ^c University of Medicine and Pharmacy “Gr. T. Popa” of Iasi, Bioengineering Faculty, Iasi, Romania

71. Changes of plantar pressure in the *fumikiri* movement of *kendo* #5673

Kentaro Takahashi^a, Naoya Yokoyama^b, Fuminori Nakiri^c; ^aGunma National College of Technology, Maebashi, Japan; ^bYokohama National University, Yokohama, Japan; ^cTokyo University of Agriculture and Technology, Tokyo, Japan

72. Evaluation of pressure distribution under a fitting saddle with different saddle pads #5845

A. Baltacis, A. Hofmann, H. Schobesberger and C. Peham; Movement Science Group, Department V, Clinic of Orthopaedics in Ungulates, University of Veterinary Medicine, Vienna, Austria

73. Evaluation of pressure distribution under a too wide saddle with different saddle pads #5835

A. Hofmann, A. Baltacis, H. Schobesberger and C. Peham; Movement Science Group, Department V, Clinic of Orthopaedics in Ungulates, University of Veterinary Medicine, Vienna, Austria

6.9. Sport Analysis Posters

Session Organizer: Tzyy-Yuang Shiang

74. The Effect of Suspension Training to Human Balance Ability #4281

Chang, F.Y.; National Penghu University, Taiwan

75. Maximum sprint power on the bicycle ergometer at high load: Correlation with maximum pedal frequency at low load #7660

Fürhapter-Rieger A., Müller W.; Institute of Biophysics, Human Performance Research Center, Karl Franzens University and Medical University of Graz, Austria

76. Electromyography comparisons on the upper extremity between shot put and discus standing throw #5279

Hsien-Te Peng, Chenfu Huang; Department of Physical Education, National Taiwan Normal University, Taipei, Taiwan

77. The impact of video instruction on the performance of male university students in beginning badminton #7302

Chang Chia-Chang, Hsiung Wan-chun; National Chunghua university of education, Chunghua, Taiwan

78. withdrawn

79. A new protocol for kinematic analysis of two volleyball players simultaneously during spike and block using stereo-photogrammetry #5859

Silvia Fantozzi^a, Roberto Lobietti^b, Rita Stagni^a, Franco Merni^b; ^aDepartment of Electronics, Computer Science and Systems, University of Bologna, Italy; ^bFaculty of Exercise and Sport Science, University of Bologna, Italy

80. An Investigation of Rugby Scrumming Posture and Individual Maximum Pushing Force #4665

Wen-Lan Wu ^a, Jyh-Jong Chang ^b, Jia-Hroung Wu ^c, Lan-Yuen Guo ^a, Hwai-Ting Lin ^a; ^a Faculty of Sports Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan; ^b School of Occupational Therapy, Kaohsiung Medical University, Kaohsiung, Taiwan; ^c Department of Industrial Management, Hsiuping Institute of Technology, Hsiuping, Taiwan

81. Electromyography Change In A 15-Day Cycling Tour For Untrained Subjects #4678

Yi-Wen Chang^a, Hong-Wen Wu^b, Yen-Chen Chiu^a, Ching-Lin Wu^a, Chen-Kang Chang^c

^aDepartment of Exercise and Health Science, National Taiwan College of Physical Education, Taichung, Taiwan;

^bSchool of Sports Medicine, China Medical University, Taichung, Taiwan; ^cSports Science Research Center, National Taiwan College of Physical Education, Taichung, Taiwan

82. Dynamic Analysis of the Supporting Limb During ‘Grand Rond de Jambe’ #4679

Wei-Chun Hsu^{a,b}, Tung-Wu Lu^a, Kuo-Wei Tseng^b and Hao-Ling Chen^a; ^aInstitute of Biomedical Engineering, National Taiwan University, Taiwan; ^bDepartment of Physical Education and Health, Taipei Physical Education College, Taiwan

83. Investigating Skill and Knacks of Fake Motion without Ball in Futsal #4562

Kenichiro IMAMURA ^a, Ryuuji KAWAMOTO ^b, Yoshimasa SUDA ^c, Tadahiko FUKUDA ^d

^a Graduate School of Media and Governance, Keio University, Fujisawa, Japan; ^b Faculty of Sports & Health Science, Daito Bunka University, Higashimatsuyama, Japan; ^c Institute of Physical Education, Keio University, Hiyoshi, Japan; ^d Faculty of Environmental Information, Keio University, Fujisawa, Japan

84. Impact timing and stretch in relation to foot velocity in a taekwondo kicking combination #4828

Andy Roosen, Matthew T. G. Pain; School of Sports and Exercise Sciences, Loughborough University, Loughborough, UK

85. Effects of Stride Length and Workload on the Lower Limb Biomechanics during Elliptical Exercise #4680

Hui-Lien Chien and Tung-Wu Lu; Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

86. The EMG activity of the lower extremities in badminton smash stroke #6726

Chien-Lu Tsai^a, Chan-Chang Yang^a, Mei-Shiu Lin^a, Kuei-Shu Huang^a, Shaw-Shiun Chang^b

^a National Taiwan Normal University, Taipei, Taiwan; ^b National Taiwan Ocean University, Keelung, Taiwan

87. The postural control in Tai Chi push-hand #6944

Yu-Bin Huang^a, Lin-Hwa Wang^{a,b}, Chien-Ju Lin^a, Chung-Ying Tsai^a, & Fong-Chin Su^a; ^aInstitute of Biomedical Engineering, ^bDepartment of Physical Education, National Cheng Kung University, Tainan, Taiwan

88 The comparison of kinematics characteristics between single and successive kicking techniques for the Taekwondo player with an Olympic medal: a case study #6945

Yu-Hsiang Nien ^a, Jung-San Chang ^b, Wen-Tzu Tang ^a; ^a Institute of Coaching Science, National College of P.E. & Sports, Taoyuan, Taiwan; ^b Department of Sports Training Science-Combats , National College of P.E. & Sports, Taoyuan, Taiwan

89. One repetition maximum prediction from a submaximal performance in weight lifting #4015

Manne Hannula , Jukka Jauhiainen and Sami Äijälä; Medical Engineering Research Center, Oulu Polytechnic, Finland

90. Flying ball trajectories are anticipated in basketball throwing #5137

B. Pflanz^a, C. H. Wagner^a, C. U. Jungnickel^b, P. Maisser^b, R. Blickhan^a; ^AInstitute of Sports Science, Friedrich-Schiller-University, Jena, Germany; ^BInstitute Of Mechatronic, Technical University, Chemnitz, Germany; ^Cinstitute Of Sports Sciences, Westfälische Wilhelms-University, Münster, Germany

91. Kinematic and electromyography analysis of lower extremity in Tai Chi push-hand #6775

Lin-Hwa Wang^{a,b}, Chien-Ju Lin^a, Yu-Bin Huang^a, Fong-Chin Su^a; ^aInstitute of Biomedical Engineering, ^bDepartment of Physical Education, National Cheng Kung University, Tainan, Taiwan

92. Biomechanical analysis of three different blocking footwork techniques in volleyball: a pilot study #6974

Giulia Donà ^a, Elena Zorzi ^a, Nicola Petrone ^b, Zimi Sawacha ^a, Claudio Cobelli ^a; ^a Department of Information Engineering, University of Padova, Italy; ^b Department of Mechanical Engineering, University of Padova, Italy

93. Significant difference of football throw-in movements during football match #6106

Shan Jiang, Xiaoyan Wei; Shanghai University of Sports, Shanghai , China.

94. Evaluation of soccer-specific field tests #6098

Dragan M. Mirkov^a, Aleksandar Nedeljkovic^a, Slobodan Jaric^b; ^a The Research Center, Faculty of Sport and Physical Education, University of Belgrade, Serbia and Montenegro; ^b Department of Health, Nutrition, and Exercise Sciences, University of Delaware, USA

95. Biomechanical research on one circle somersault connection techniques of Trampoline #6092

Junmei Shao , Xiaoyan Wei; Shanghai University of Sports, Shanghai , China

6.10. Vibration Load in Sport -Fundamentals on Vibration Posters

Session Organizers: Jochen Mester, James Wakeling

96. Short-term Effects of Whole Body Vibration in Different Resting Periods on Count Movement Jump Performance #7631

Mao-Ying Huang^a, Wan-chin Chen^b, Pei-ying Tsai^a, Tzyy-Yuang Shiang^a, ^a Taipei Physical Education College, Taipei, Taiwan; ^b National College of Physical Education and Sports, Taoyuang, Taiwan

97. Short-term effects of different whole body vibration frequencies on the Shallow Drop Jump in sprinter #5831

Wan-chin Chen^a, Mao-Ying Huang^b, Tzyy-Yuang Shiang^b, ^a National College of Physical Education and Sports, Taoyuang, Taiwan; ^b Taipei Physical Education College, Taipei, Taiwan

7.6 Dental Biomechanics Poster Session

Wednesdy, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Arturo Natali, Jos Vander Sloten

1. The peculiarities of biomechanics of the mandible during osteosynthesis with bone-borne plates with screws #5839

Anatoly N. Chuiko^a, Dmitry K. Kalinovsky^b, Igor N. Matros-Taranets^b, Ikhsan Khalil Dufash^b, ^aKharkov State University of Feed and Trade, Kharkov, Ukraine; ^bDonetsk State Medical University named after M.Gorky, Donetsk, Ukraine

2. Three-dimensional finite Element analysis of the effect of miniscrew implant length on stress distribution in the miniscrew and cortical bone #5000

Thongchai Fongsamoot^a, Nopparat Seehawong^a, Boonsiva Buranastidporn^b, ^aDepartment of Mechanical Engineering, Chiang Mai University, Chiang Mai, THAILAND; ^bDepartment of Orthodontics, Chiang Mai University, Chiang Mai, THAILAND

3. Dental implant osseointegration investigation via radiography image processing #5680

Fernando Marques de Almeida Nogueira^a, Flávio de Souza Barbosa^a and Mauro Cruz^b, ^aFederal University of Juiz de Fora, Brazil; ^bClinical Center of Research in Stomatology, Juiz de Fora, Brazil

4. The influence of superstructure materials on distal single implant : A 2-dimensional finite element analysis #4659

Hung-Chan Kao^{a,b}, Wei-Ning Chung^c, Fang-Ching Chen^c, Cheng-Kung Cheng^b, Ming-Lun Hsu^c
^a Biomechanics Research Lab, Medical Research Depart, Mackay Memorial Hospital, Taipei, Taiwan; ^b Institute of Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan; ^c Dental School, National Yang-Ming University, Taipei, Taiwan

5. Influence of off-axis loading upon an anterior maxillary implant: A 3-dimensional finite element analysis #4657

Ming-Lun Hsu^a, Fang-Ching Chen^a, Hung-Chan Kao^{b,c}, Cheng-Kung Cheng^c, ^aDental School, National Yang-Ming University, Taipei, Taiwan; ^b Biomechanics Research Lab, Medical Research Depart, Mackay Memorial Hospital, Taipei, Taiwan; ^c Institute of Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan

6. Biomechanical properties of healing periodontal ligament after replantation of teeth treated with PDGF #5522

Koichiro Komatsu, Tatsuya Shibata, Akemi Shimada, Shinji Shimoda, Shinichiro Oida, Kenzo Kawasaki
School of Dental Medicine, Tsurumi University, Yokohama, Japan

7. Novel experimental technique for testing the periodontal ligament #6263

Marzio Bergomi^a, Aissa Mellal^a, John Botsis^a, H W Anselm Wiskott^b, Urs C Belser^b, ^a Ecole Polytechnique Fédérale de Lausanne, LMAF, Switzerland ; ^b School of Dental Medicine, University of Geneva, Switzerland

8. Enamel Canine Surface Wear Evolution In Bruxism #4739

Estevam B. Las Casas^a, Flávia de Souza Bastos^a, Agnes Batista Meireles^b, Tulimar P. M. Cornacchia^b, Geralda Cristina Durães de Godoy^a and Vicente Tadeu Lopes Buono^a, ^aSchool of Engineering, Federal University of Minas Gerais, Belo Horizonte, Brazil; ^bSchool of Dentistry, Federal University of Minas Gerais, Belo Horizonte, Brazil.

9. Measurement of human masticatory biomechanics – preliminary study of chewing kinematics #4991

Tomáš Goldmann^a, Svatava Konvičková^a, Stanislav Holý^a, Lucie Himmlová^b, ^a Czech Technical University in Prague, Prague, Czech Republic; ^b Institute of Dental Research, Prague, Czech Republic

10. Kinematic analysis of the chewing cycle of horses before and after dental treatment #5780

Niederl M., Anen C., Simhofer H., Peham C. University of Veterinary Medicine, Dept V. Vienna, Austria

11. A computational study on NiTi rotary endodontic instruments #6538

Silvia Necchi^a, Lorenza Petrini^a, Silvio Taschieri^b, Gabriele Dubini^a, ^a LaBS - Laboratory of Biological Structure Mechanics, Department of Structural Engineering, Politecnico di Milano, Milan, Italy; ^b Department of Odontology, Galeazzi Institute, University of Milan, Italy

12. CAD-Based Optimum Design of Functional Occlusal Surface in Accordance with Patient's Tooth Excursions #4748

Tomoaki MARUYAMA^a, Yasuo NAKAMURA^b, Toyohiko HAYASHI^{a,b}, Kazuto TERADA^c, Ryunosuke KAZAMA^d, Kato KAZUMASA^d, ^aGraduate School of Science and Technology, Niigata University, Niigata, Japan; ^bDepartment of Biocybernetics, Faculty of Engineering, Niigata University, Niigata, Japan; ^cNiigata University Medical & Dental Hospital, Niigata, Japan; ^dInstitute of Oral Science, Matsumoto Dental University, Nagano, Japan

13. First step FE-Modelling of internal composite behaviour during curing dental restorations #5815

C. Koplín, C.R. Jaeger; Fraunhofer-Institut für Werkstoffmechanik, Freiburg, Germany

14. Geometrical modeling, Finite Element Analysis and Simulation of operations in the area of the denture #7096

T. Charamis, E. Karatsis, I. Chalkidis, G. Athanasiadis; Laboratory of Machine Elements & Machine Design, Department of Mechanical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

15. FEA and experimental FBG sensing system for the analysis of different dental implant concepts #6592

P. Carvalho^a, I. Abe^b, M.W.Schiller^b, L. Carvalho^c, J. A. Simões^a; ^aDepartamento de Engenharia Mecânica, Universidade de Aveiro, Portugal; ^bDepartamento de Física, Universidade de Aveiro, Portugal; ^cInstituto Superior de Saúde do Norte, Gandra, Portugal

16. Continuous clenching analysis of temporomandibular joint: Individual model-based analysis for factors inducing joint disorder #7607

Masao Tanaka^a, Reiji Fujita^a, Eiji Tanaka^b, Takeshi Matsumoto^a, Hisashi Naito^a; ^a Department of Mechanical Science and Bioengineering, Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; ^b Department of Orthodontics and Craniofacial Developmental Biology, Graduate School of Biomedical Science, Hiroshima University, Minami, Hiroshima, Japan

17. Osseointegration of ceramic dental implants #6965

Stefan Köbel, Oliver Bothe, Wolfram Weber; Metoxit AG, Thayngen, Switzerland

18. From Quantum to Biomechanics: Improving the Host Response to Implantable Devices #6063

Paulo G. Coelho^a, Jack E. Lemons^b, J. Nilo Freire^c, Ana L. Coelho^d; ^a Biomaterials and Biomimetics, New York University, New York, NY, USA; ^b Prosthodontics and Biomaterials, University of Alabama at Birmingham, Birmingham, AL, USA; ^c Private Practice, Florianopolis, Brazil; ^d UNICENP, Curitiba, Brazil

19. Pressure Simulation of Orthodontic Force #4409

Uwe Baumert^a, Ilan Golan^a, Meir Redlich^b, HA Roos^b, Aaron Palmon^c, Dieter Muessig^a

^aDepartment of Orthodontics, University of Regensburg, Germany; ^bDepartment of Orthodontics, and

^cInstitute of Dental Sciences, Hebrew University-Hadassah Faculty of Dental Medicine, Jerusalem, Israel

8.7 Computer-Assisted Surgery Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Rainer Burgkart, Lutz Nolte, Klaus Radermacher

1. Orthosim, a telematic tool for the preoperative planning #7633

Alfonso Ultra^a, Rubén Lafuente^b, Carlos Atienza^a, Ignacio Bermejo^a, Carolina Avila^a, Thomas Mosnier^c, Ricardo Dejoz^a, Jaime Prat^a; ^aInstitute of Biomechanics of Valencia, Valencia, Spain; ^bAdapting S.L., Valencia, Spain; ^cLaboratoire de BioMécanique ENSAM, Paris, France

2. 3-D size and shape variation in the distal femur: effect of ethnicity, gender and osteoarthritis #6596

Niall Rooney^a, David FitzPatrick^a, Goodwin Lawlor^a, Hideaki Ishibashi^b, Jordan Lee^c

^aDepartment of Mechanical Engineering, University College Dublin, Ireland; ^bTokyo Metropolitan Geriatric Medical Centre, Tokyo, Japan; ^cDePuy Orthopaedics Inc., Warsaw, IN, USA

3. Evaluation of applicability and accuracy of different surface scanning systems in medicine #7570

G. Brockmann^a, A. Zimmermann^a, N.A. Papadopoulos^b, M.A. Papadopoulos³, L. Kovacs^a; ^aDepartment of Plastic and Reconstructive Surgery, Klinikum rechts der Isar, Technical University Munich, Germany; ^bDepartment of Orthodontics, School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece

4. Three-Dimensional Computer-Assisted Intuitive Breast Surgery Planning #7324

L. Kovacs, M. Eder, A. Müller, M. Endlich, N.A. Papadopoulos, E. Biemer

Department of Plastic and Reconstructive Surgery, Klinikum rechts der Isar of the Technical University Munich, Germany

5. 3D Shape Iterative Reconstruction Method Based on Statistical Models for TKA applications #7269

Elena De Momi^a, Pietro Cerveri^a, Giancarlo Ferrigno^a; ^aTBM Lab, Bioengineering Department, Politecnico di Milano, Milan, Italy; ^bLIMA Lto Spa, Udine, Italy

6. Component placement and femoropelvic anatomy affect range of motion after total hip arthroplasty #7107

Dr. Oliver Kessler^a, Dr. Stefan Wirth^b, Dr. Stefan Czaja^c, Dr. Eckhard Mayr^d, Dr. Shantanu Patil^e, Dr. Clifford W. Colwell^e, Dr. Darryl D'Lima^e; Stryker Orthopaedics, Zürich, Switzerland^a

Orthopaedic University Hospital Balgrist, Zürich Switzerland^b; Kantonsspital for Orthopaedic surgery, Liestal, Switzerland^c; University hospital for Orthopaedic Surgery Innsbruck, Austria^d; Division of Orthopaedic Surgery, Scripps Clinic, La Jolla, USA^e

7. Preoperative Non-Invasive Assessment of Hips with Femoro-acetabular Impingement (FAI) #7008

Moritz Tannast^{a,b}, Monika Kubiak-Langer^c, Timo Ecker^{a,b}, Marc Puls^c, Stephen Murphy^b, Frank Langlotz^c, Klaus Siebenrock^a; ^a Department of Orthopaedic Surgery, University of Bern, Bern, Switzerland; ^b Center for Computer Assisted and Reconstructive Surgery, Tufts University, Harvard Medical School, Boston, MA, USA; ^c MEM Research Center for Orthopaedic Surgery, ISTB, University of Bern, Bern, Switzerland

8. Measuring pelvic flexion from lateral radiographs #6973

Kort Eckman^a, Mahmoud Hafez^b, Branislav Jaramaz^{ab}, Anthony DiGioia^b; ^aThe Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA; ^bICAOS, The Western Pennsylvania Hospital, Pittsburgh, Pennsylvania, USA

9. Anterior-posterior radiographs and pelvic flexion #6961

Kort Eckman^a, Mahmoud Hafez^b, Branislav Jaramaz^{ab}, Anthony DiGioia^b; ^aThe Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA; ^bICAOS, The Western Pennsylvania Hospital, Pittsburgh, Pennsylvania, USA

10. Describing the variation in complex bone shapes #6849

YHM Yang^{a,b}, AM Hill^a, AMJ Bull^a, D Rueckert^b; Departments of Bioengineering^a and Computing^b, Imperial College London, UK

11. The determination of joint axes: The performance of a new approach #6615

W. R. Taylor, R. M. Ehrig, G. N. Duda, M.O. Heller; ^aCMSC, Charité – Universitätsmedizin Berlin, Germany; ^bZuse Institute Berlin, Berlin, Germany

12. Development of a biomechanics validated Finite Element model of the pelvis #7634

Jörg Böhme^a, Stefan Klima^a, Jeannette Dorow^b, Roland Hülse^a, Volker Slowik^b, Christoph Josten^a
^a Department of Trauma, Reconstructive and Plastic Surgery, University of Leipzig, Germany; ^b Institute of Experimental Mechanics, Civil Engineering Department, Leipzig University of Applied Sciences, Leipzig, Germany

13. Modeling of the Lower Esophagus Sphincter for Virtual Reality Surgical Simulation of Laparoscopic Esophageal Procedure #4262

Jung Kim, Bumho Ahn, Changmok Choi, Hyonyoung Han, Dept. of Mechanical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

14. The Robin Heart robot choreography and advisory system #6344

Zbigniew Nawrat^{a,c}, Paweł Kostka^{ab}, Zbigniew Małota^a, Marek Koźlak^b; ^a Foundation of Cardiac Surgery Development, Zabrze, Poland; ^b Silesian University of Technology, Gliwice, Poland; ^c Silesian Medical Academy, Zabrze, Poland

15. New Perspectives of Computer Assisted Surgical Reconstruction after Severe Facial Injuries #6209

Laszlo Kovacs^a, Alexander Zimmermann^b, Horst Wawrzyn^c, Hermann Seitz^d, Carsten Tille^d, Matthias Endlich^a, Andreas Müller^a, Nikolaos Papadopoulos^a, Edgar Biemer^a; ^a Department of Plastic and Reconstructive Surgery, Klinikum rechts der Isar, Technical University Munich; ^b Department of Surgery, Klinikum rechts der Isar, Technical University Munich; ^c Center of Advanced Studies in Maxillo-Facial Surgery, Klinikum rechts der Isar, Technical University Munich; ^d Center of Advanced European Studies and Research, Bonn

16. Geometrical changes of the pelvis after Salter osteotomy #6056

Pressel T, Max S, Hurschler C, Windhagen H; ^a Department of Orthopaedic Surgery, Medical University of Hannover, Germany

17. Automatically generating reconstruction-proposals for acetabular reconstructive surgery #4037

Frederik Gelaude^a, Tim Clijmans^a, Bert Lauwers^b, Jos Vander Sloten^a; Division of Biomechanics and Engineering Design, Katholieke Universiteit Leuven, Heverlee, Belgium; ^b Division Production, Machine Design and Automation, Katholieke Universiteit Leuven, Heverlee, Belgium

18. Simulation of the interaction between a knee-prosthesis and a bone #4485

Heiko Andrä, Julia Orlik, and Aivars Zemitis; Fraunhofer ITWM, Kaiserslautern, Germany

19. A method to investigate the boundary between cortical and cancellous bone of proximal tibia- by using Magic Wand algorithm #5403

Hung-Jen Lai^a, Chih-Yi Hung^a, Chang-Hung Huang^a, Kuo-Hung Li^a, Charng-Bin Yang^{a,b}, Cheng-Kung Cheng^a

^a Institute of Biomedical Engineering, National Yang Ming University, Taipei, TAIWAN

^b Orthopedic Institute of Taipei City Hospital, Taipei, TAIWAN

20. MRI-based Surgical Navigation System for ACL Reconstruction #7525

^a B Jaramaz, ^b C Nikou, ^c N Watterson, ^d P Murtha, ^e AB Mor; ^a ICAOS: Institute for Computer Assisted Orthopaedic Surgery, The Western Pennsylvania Hospital, Pittsburgh, PA, USA; ^b Blue Belt Technologies, Pittsburgh, PA, USA

21. Alignment before and after component implantation in navigated TKA #4689

^a Ensini A, ^{a,b} Catani F, ^a Bianchi L, ^b Leardini A, ^{a,b} Giannini S, ^a VI Divisione Clinica Ortopedica, ^b Laboratorio di Analisi del Movimento, Istituti Ortopedici Rizzoli, Bologna, Italy

22. A Navigated Procedure For Kinematic Evaluations During Knee Surgery #5921

Sandra Martelli, Stefano Zaffagnini, Simone Bignozzi, Nicola Lopomo Rizzoli Institutes, Lab. Biomeccanica, Bologna, Italy

23. Improved Knee Kinematics After Intraoperative Soft Tissue Balancing By Computer Assisted Knee Arthroplasty #6682

M Bhattacharyya, B Gerber; University Hospital Lewisham, London, UK

24. Non-rigid alignment of preoperative MRI, fMRI and DT-MRI with intraoperative MRI to enhance visualization and navigation in image-guided neurosurgery #5488

Neculai Archip, Olivier Clatz, Stephen Whalen, Dan Kacher, Ferenc Jolesz, Alexandra Golby, Peter M. Black, Simon K. Warfield; Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA

25. The Robin Heart telemanipulation user interface #6346

Zbigniew Nawrat^{a,c}, Paweł Kostka^{a,b}; ^a Foundation of Cardiac Surgery Development, Zabrze, Poland

^b Silesian University of Technology, Gliwice, Poland; ^c Silesian Medical Academy, Zabrze, Poland

26. Evaluation of newly developed algorithms for calculating anatomical landmarks from surface contours on the lower extremities #6054

Catherine Hetzer^a, Walter Rapp^a, Marcin Witkowski^b, Robert Sitnik^b, Bart Haex^c, Nico Bogaert^c,

Jos Vander Sloten^c, Thomas Horstmann^a; ^aMedical Clinic of Sport Medicine, University Tübingen, Germany

^bDepartment of Micromechanics, University of Warsaw, Poland; ^cDepartment of Biomechanics and Engineering Design, Katholieke University Leuven, Belgium

27. Optimisation of Three-Dimensional Imaging of the Breast Region with 3D Laser Scanners #7599

Eder, M.; Zimmermann, A.; Brockmann, G.; Kovacs, L.

Department of Plastic and Reconstructive Surgery, Klinikum rechts der Isar of the Technical University Munich, Munich, Germany

9.7 Tissue Engineering Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Axel Stemberger, Ralf Huss, Takashi Ushida

1. Evaluation of human osteoblast-like cell adhesion strength on Ti substrates functionalized by bioactive peptide grafting #7799

Andrea Bagno^a, Monica Dettin^a, Alessandro Piovan^a, Paola Brun^b, Roberta Gambaretto^a, Giovanni Fontana^c, Carlo Di Bello^a, Giorgio Palù^b, Ignazio Castagliuolo^b; ^aDepartment of Chemical Process Engineering, University of Padova, Padova, Italy; ^bDepartment of Histology, Microbiology and Medical Biotechnology, University of Padova, Padova, Italy; ^cDepartment of Medical and Surgical Specialties, University of Padova, Padova, Italy

2. Effects of mechanical loading and crosslinking density on gene expression of chondrocytes encapsulated in hydrogels #7488

Garret Nicodemus, Stephanie J. Bryant; Department of Chemical and Biological Engineering, University of Colorado, Boulder, CO, USA

3. Water Jet Cutting, an alternative method for cutting cartilage #7499

Honl, M; Shekhawat, VK; Pacione, C; Schwenke, T; Wimmer, MA; Rush University Medical Center, Chicago, IL, USA

4. In vivo cartilage regeneration using a scaffold-free 3-D synthetic tissue cultured from synovium-derived cells #6818

D. Katakai^a, H. Fujie^a, M. Imura^a, W. Ando^b, K. Tateishi^b, H. Yoshikawa^b, N. Nakamura^b

^aBiomechanics Lab, Kogakuin University, Tokyo, Japan; ^bDepartment of Orthopaedic Surgery, Osaka University Medical School, Osaka, Japan

5. Adhesion of Primer Cells for Cartilage Tissue Engineering #6191

E. Eisenbarth^a, A. Schmidt^a, O. Krummhauer^b, D. Toykan^b, R. Janssen^b; ^aHamburg University of Technology, Biomechanics Section, Hamburg, Germany; ^bHamburg University of Technology, Advanced Ceramic Group, Hamburg, Germany

6. Effect of intermittent loading on redifferentiation of chondrocytes and cartilage formation #5578

Katharina Wiegandt^a, Jan Heyland^a, Christiane Goepfert^a, Stephanie Nagel-Heyer^a, Udo Schumacher^b, Ralf Pörtner^a;

^aInstitute of Bioprocess- and Biochemical Engineering, Hamburg University of Technology, Hamburg, Germany;

^bDepartment of Anatomy II: Experimental Morphology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

7. Biomechanical and biochemical properties of native and in vitro porcine cartilage. A new bioreactor for the cultivation of cartilage with realistic joint loading #5068

Eduard Ilinich^a, Roman Böer^b, Eva Eisenbarth^b, Christiane Goepfert^c, Ralf Pörtner^c, Michael Morlock^b, Karl Schulte^a,^a Polymer Composites, Technical University Hamburg-Harburg, Hamburg, Germany; ^b Biomechanics, Technical University Hamburg-Harburg, Hamburg, Germany; ^c Bioprocess and Biochemical Engineering, Technical University Hamburg-Harburg, Hamburg, Germany

8. Tissue engineered cartilage development in a perfused high pressure bioreactor #7176

Katia Laganà^a, Matteo Moretti^{a,b}, Manuela T. Raimondi^a, Gabriele Dubini^a; ^a Laboratory of Biological Structure Mechanics, Dept. of Structural Engineering, Politecnico di Milano, Milano, Italy; ^b Harvard-MIT Division of Health Science and Technology, Massachusetts Institute of Technology, Cambridge, USA

9. Effect of endothelial progenitor cells on the formation of in vitro three dimensional network #6438

Yoshiyuki Ozaki^a, Masaki Koga^a, Akinori Ueda^a, Ryo Sudo^a, Mariko Ikeda^a, Kimiko Yamamoto^b, Joji Ando^b and Kazuo Tanishita^a; ^a Dept. of System Design Engineering, Keio University, Kanagawa, Japan; ^b Dept. of System Physiology, University of Tokyo, Japan

10. Structure-property relations of native and tissue engineered aortic valve leaflets: determination using spherical indentation #4785

Martijn A.J. Cox, Niels J.B. Driessen, Carlijn V.C. Bouten, and Frank P.T. Baaijens; Eindhoven University of Technology, Department of Biomedical Engineering, Eindhoven, The Netherlands

11. Withdrawn

12. A three dimensional matrix for guided mesenchymal stem cell and urothelial cell growth and differentiation #5617

Catharina Adelöw, Tatiana Segura, Jeffrey A. Hubbell, Peter Frey; Laboratory for Regenerative Medicine & Pharmacobiology, École Polytechnique Fédéral de Lausanne, Switzerland

13. A Strain-Gradient Model for Capturing Size-Effects in Biodegradable NanoFibers #7191

J. Wang^a, Ray P.S. Han^b and B. Yuan^c; ^aDepartment of Material Science, Fudan University, Shanghai, China; ^bAAME Department, Peking University, Beijing, China and MIE Department, The University of Iowa, Iowa City, USA; ^cDepartment of Engineering Science & Mechanics, Fudan University, Shanghai, China

14. CFD model of mass transport with the microarchitecture of engineered cartilage during perfusion culture #5666

Margherita Cioffi^a, Jürg Küffer^b, Simon Ströbel^c, Gabriele Dubini^a, Ivan Martin^c and David Wendt^c
^aLaboratory of Biological Structure Mechanics, Politecnico di Milano, Italy; ^bInstitute for Product and Production-Engineering, University of Applied Sciences Northwestern Switzerland, Switzerland; ^cInstitute for Surgical Research, University Hospital Basel, Switzerland

15. Transdifferentiation of dense connective tissue to chondroid bone in lordotic vertebrae of sea bass (*Dicentrarchus labrax* L.) #7352

Sander Kranenbarg, Henk Schipper, Johan van Leeuwen; Experimental Zoology Group, Wageningen University, Wageningen, The Netherlands

16. Bioreactor for mechano-stimulation and material property evaluation in functional tissue engineering #7060

Michael Bottlang^a, Mark Sommers^a, Brian Johnstone^a, Cameron Long^a, Oliver Kessler^b; ^aBiomechanics Laboratory, Legacy Research & Technology Center, Portland, Oregon; ^bStryker Europe, Thalwil, Switzerland

17. Flow perfusion of HYAFF based engineered vascular constructs prevent cell apoptosis #6906

Chiara Arrigoni^a, Annalisa Chittò^a, Sara Mantero^b, and Andrea Remuzzi^a; ^a Bioengineering Department, Mario Negri Institute, Bergamo, Italy; ^b Department of Biomedical Engineering, Politecnico di Milano, Milano, Italy

18. Effect of cyclic stretching and TGF- beta pathway on the extra cellular matrix synthesis in tissue engineering #7647

Kadi A, Fawzi-Grancher S, Lakisic G, L, De Isla N, Huselstein C, Stoltz JF, Muller S; Bioengineering, LEMTA-UMR 7563 CNRS, Faculté de Médecine, Vandoeuvre-lès-Nancy, France

19. Cyclic stretching and co-culture with fibroblasts promote the differentiation of rat mesenchymal stem cells to ligament fibroblasts #6579

Lei Zhang^{a,b}, Xiong Wang^b, Huai-Qing Chen^a, Nguyen Tran^c; ^a Institute of Biomedical Engineering, West China Medical Center, Sichuan University, Chengdu, China; ^bGroup of Cell and Tissue Engineering, LEMTA UMR 7563 CNRS, Vandoeuvre-les-Nancy, France; ^c School of Surgery, Faculty of Medicine of Nancy, Vandoeuvre-les-Nancy, France

10.9 Cellular and Molecular Mechanics Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Roger Kamm, Hiroshi Wada

10.1. Cell Mechanics: Biomechanics at Micro- and Nanoscale Levels Posters

Session Organizers: Kazuo Tanishita, Ed Guo

1. High-Throughput Microfluidic Delivery of Suspended Cells for Marker-Free Deformability Measurement #7002

Bryan Lincoln, Stefan Schinkinger, Falk Wottawah, Jochen Guck; Institute for Soft Matter Physics, Univ. of Leipzig, Leipzig, Germany

2. Idealization of pericellular fluid space geometry strongly influences the prediction of local stresses imparted by fluid drag on cell surfaces #7448

Eric J. Anderson, Melissa Knothe Tate; Mechanical Engineering, Case Western Reserve Univ., Cleveland, OH, USA

3. Cellular Mechanisms of Neural Injury and the Neuroprotective Effects of Poloxamer 188 #5882

Kenneth A. Barbee,^a Devrim Kilinc,^a Gulyeter Serbest,^a Joel Horwitz,^b and Gianluca Gallo^c; ^aSchool of Biomedical Engineering, Science and Health Systems; ^bDept. of Pharmacology and Physiology; ^cDept. of Neurobiology and Anatomy, Drexel Univ., Philadelphia, USA

4. Effects of actin filaments and microtubules on tensile properties and internal tension of aortic smooth muscle cells cultured on substrates #5511

Kazuaki Nagayama, Akira Tsugawa, and Takeo Matsumoto; Biomech. Lab., Dept. Mech. Engng., Nagoya Inst. Univ., Nagoya, Japan

5. Correlated particle motion in an endothelial cell monolayer #6612

Carina Raupach, Johannes Pauli, Claudia Mierke, Ben Fabry; Center of Medical Physics and Technology, Biophysics Group, Univ. of Erlangen, Germany;

6. Viscoelastic Properties of Chondrocytes Change with Aging and Cartilage Degeneration #6642

Nikolai Steklov,^a Ajay Srivastava,^a KL. Paul Sung,^b Peter C. Chen,^a Clifford W. Colwell Jr,^a Martin Lotz,^a Darryl D. D'Lima,^a ^aShiley Center for Orthopaedic Research and Education at Scripps Clinic, La Jolla, CA, USA; ^bUniversity of California, San Diego, La Jolla, CA, USA

7. The effects of cyclic stretching on vascular endothelial cell orientation, division and proliferation #7103

Hongbing Wang^a, Yubo Fan^b, Qiping Huang^a, Xiaoyan Deng^b; ^aCollege of Bioengineering, Chongqing Univ., Chongqing, China; ^b Dept. of Bioengineering, Beihang Univ., Beijing, China

8. An in vitro study on the overlapping growth of hepatic tumor cells #7105

Hongbing Wang^a, Xiaoyan Deng^b, Xiaodong Yang^a, Yang Benyanzi^a, Jing Shao^a, Weidong Gao^a, Yanming Liu^a; ^aCollege of Bioengineering, Chongqing Univ., Chongqing, China; ^bDept. of Bioengineering, Beihang Univ., Beijing, China

9. Coordinated volume and lateral surface reduction are linked with isochoric lumen initiation in epithelial 3D cultures #7364

Aldo Ferrari, Alexei Veligodskiy, Ruth Kroschewski; Institute of Biochemistry, ETH Zurich, Zurich, Switzerland

10. Response of Chondrocyte Cytoskeleton under Tensile Strain in Situ #4177

Yoshihiro Sasazaki^a, Roger C. Shore^b, Bahaa B. Seedhom^b; Dept. of Orthopaedic Surgery, National Hospital Organization Murayama Medical Centre, Musashimurayama, Japan^a; Univ. of Leeds, Leeds, UK^b

11. Probing single cell mechanics in a 3D matrix #4615

Denis Wirtz^{a,b} and Porntula Panorchan^a; ^aDept. of Chemical and Biomolecular Engineering, Johns Hopkins Univ., Baltimore, USA; ^bHoward Hughes Medical Institute graduate training program, Johns Hopkins Univ., Baltimore, USA

12. Effects of the disruption of actin filaments and microtubules on the tensile properties of fibroblasts #5712

Hiroshi Miyazaki, Kenta Okada, and Yoshihiro Ujihara; Division Of Bioengineering, Graduate School Of Engineering Science, Osaka Univ., Toyonaka, Osaka, Japan

10.2.1 Cell Mechanics Posters

Session Organizers: Ben Fabry, Crocker

13. Moved to oral session 10.2

14. Withdrawn

15. Defining critical surface parameters for cancer cell adhesion #6938

Roger Tran-Son-Tay^{a,b}, Cécile M. Perrault^a, Anthony Brennan^{a,c}, Sarah Glover^d; ^a Dept. of Biomedical Engineering, Univ. of Florida, Gainesville, FL, USA; ^b Dept. of Mechanical and Aerospace Engineering, Univ. of Florida, Gainesville, FL, USA; ^c Dept. of Material Science and Engineering, Univ. of Florida, Gainesville, FL, USA; ^d Section of Digestive Diseases and Nutrition, Univ. of Illinois at Chicago, Chicago, IL, USA

16. Evaluating the Biomechanical Behaviour of the Erythrocyte at Large Deformation Using a Three-Dimensional Fluid-Structure Interaction Model #6808

C. Y. Chee,^a H. P. Lee,^{a,b} and C. Lu^a; ^aInstitute of High Performance Computing, Singapore; ^bDept. of Mechanical Engineering, National Univ. of Singapore, Singapore

17. The Effect of α -Actinin Over-Expression on Whole-Cell Stiffness #7300

Wesley M. Jackson, Michael J. Jaasma, Andrew D. Baik and Tony M. Keaveny; Orthopaedic Biomechanics Laboratory, Univ. of California, Berkeley, USA

18. Effects of dexamethasone in contraction of alveolar epithelial cells #6479

N. Gavara, F. Puig, R. Sunyer, R. Farré, D. Navajas; Unitat Biofísica i Bioenginyeria, Facultat Medicina, Universitat Barcelona-IDIBAPS, Barcelona, Spain.

19. Numerical modeling of the cytoskeleton prestressed structure #7379

H. Baudriller^a, B. Maurin^a, P. Cañadas^a, N. Bettache^b, P. Montcourrier^b, A. Parmeggiani^b

^aLaboratoire de Mécanique et Génie Civil, UMR CNRS 5508, Université Montpellier 2, France; ^bDynamique Moléculaire des Interactions Membranaires, UMR CNRS 5539, Université Montpellier 2, France

20. A Mathematical Model of Cell Reorientation in Response to Substrate Stretching #4946

Konstantinos A. Lazopoulos^a and Dimitrije Stamenović^b; ^aMechanics Laboratory, Faculty of Applied Sciences, National Technical Univ. of Athens; Athens, Greece; ^bDept. of Biomedical Engineering, Boston Univ., Boston, Massachusetts, USA

21. Numerical optimum design for parallel plate flow chamber #4788

Wentao Jiang^a, Yubo Fan^{b,a}, Yuanwen Zou^a, Junkai Chen^a; ^a Biomechanical Engineering Laboratory, Sichuan Univ., Chengdu, China; ^b Dept. of Bioengineering, Beihang Univ., Beijing, China

22. A computational analysis of water transport through chondrocytes #5811

Gerard A. Ateshian^{a,b}, Kevin D. Costa^a, Clark T. Hung^a; ^aDept. of Biomedical Engineering and ^bDept. of Mechanical Engineering, Columbia Univ., New York, USA

23. Effects of Axial Strain on Mechanical Properties of 3T3 Fibroblasts #5264

Ming-Shaung Ju^{a,b}, Tzung-Han Lee^b, Chou-Ching K. Lin^c; ^aDept. of Mechanical Engineering, National Cheng Kung Univ., Tainan, Taiwan; ^bInstitute of Nanotechnology and Microsystem, National Cheng Kung Univ., Tainan, Taiwan; ^cDept. of Neurology, Univ. Hospital, National Cheng Kung Univ., Tainan, Taiwan

24. Evaluation of mechanical properties of osteoblasts during spreading #5576

A. Moutzouri, G. Athanassiou; Biomedical Engineering Laboratory, Dept. of Mechanical Engineering and Aeronautics, Univ. of Patras, Greece

25. Power laws in cell microrheology : creep function, viscoelastic modulus and modelization #4977

François Gallet, Atef Asnacios, Martial Balland, Julien Browaeys, Nicolas Desprat, Sylvie Hénon, Delphine Icard; Laboratoire Matière et Systèmes Complexes, associé au CNRS et à l'Université Paris 7 Paris, France

26. Computational model of single cell deformation using a viscoelastic finite element approach #4980

Soo-Kng Teo^{a,b}, Kim H. Parker^b and Andrew B. Goryachev^{a,c}; ^a Bioinformatics Institute, Singapore, Singapore

^b Dept. of Bioengineering, Imperial College, London, UK; ^c Dept. of Bioengineering, National Univ. of Singapore, Singapore

10.3. Cell Migration and Molecular Motors Posters

Session Organizers: Matt Lang, Dan Hammer

27. Effect of BMP-2, FGF-2, PDGF-bb on cell migration of primary and subcultured mesenchymal stem cells #5509

Kentaro Uchida^a, Ken Urabe^b, Kouji Naruse^b, Masanobu Ujihira^a, Kiyoshi Mabuchi^a, and Moritoshi Itoman^b

^aGraduate School of Medical Sciences, Kitasato Univ., Sagamihara, Japan; ^bDept. of Orthopedics Surgery, Kitasato Univ. School of Medicine, Sagamihara, Japan

10.4. Cytoskeletal, Nuclear, and Membrane Rheology Posters

Session Organizers: Dennis E. Discher, Andreas Bausch

28. Investigation of biopolymers of the cytoskeleton and the nuclear pore complex #4826

Bernd Wagner, Andreas Bausch; E22 Dept. for Biophysics of TUM, Munich, Germany

29. Evaluation of coculture model composed of Sinusoidal endothelial cells and Small hepatocytes #6377

Hiroyuki Asami^a, Ryo Sudo^a, Toshihiro Mitaka^b, Mariko Ikeda^a and Kazuo Tanishita^a; ^a Dept. of System Design Engineering Keio Univ., Kanagawa, Japan; ^b Dept. Of Pathophysiology, Cancer Research Institute, Sapporo Medical Univ. School Of Medicine, Sapporo, Japan

10.5. Mechanotransduction Posters

Session Organizers: Mohammad Kaazempur-Mofrad, Brian Helmke

30. Anisotropic response of cardiomyocytes to cyclic strain #7558

Sam Senyo^a, Brenda Russell^{a,b}; ^a Bioengineering Dept., Univ. of Illinois at Chicago, Chicago, Illinois, USA; ^b Physiology & Biophysics Dept., Univ. of Illinois at Chicago, Illinois, USA

31. Plaque-prone hemodynamic induction of preproendothelin-1 gene is regulated at transcriptional and post-transcriptional levels #4966

Rafaela da Silva, Céline Chambaz, Nikos Stergiopoulos and Paolo Silacci; Laboratory of Hemodynamics and Cardiovascular Technology, Swiss Federal Institute of Technology, Lausanne, Switzerland

32. A Systems Approach to Bone Mechanotransduction and Osteoporosis #5334

K.C. Mynampati^a, P.V.S. Lee^{b, a} Graduate Programme in Bioengineering, National Univ. of Singapore, Singapore;^b Defence Medical & Environmental Research Institute, Singapore

33. Development of a bioreactor for the application of Hydrostatic Pressure and Stretch (HyPaS) on monolayer cell cultures #6804

Eyckmans J.^a, Spaepen P.^b, Van Oosterwyck H.^b, Luyten F.P.^a; ^aLaboratory for Skeletal Development and Joint Disorders, K.U.Leuven, Leuven, Belgium; ^bDivision of Biomechanics and Engineering Design, K.U.Leuven, Leuven, Belgium

34. Extracellular Matrix and Medium Serum Levels Influence the Rate of Fibroblast Reorientation in Response to Tensile Strain #6770

Katherine Baria^{a, b}, Hazel Screen^a, Dan Bader^a, David Lee^a; ^aMedical Engineering Division, Dept. of Engineering, Queen Mary Univ. of London, UK; ^bDept. of Bioengineering and Robotics, Tohoku Univ., Sendai, Japan

35. Mechanical loading of porcine knee joint cartilage activates the Akt/PKB signaling pathway #5964

Anja Niehoff^a, Wilhelm Bloch^b, Michael Offermann^b, Annette Schmidt^b, Jens Dargel^a, Gert-Peter Brüggemann^a
^aInstitute of Biomechanics and Orthopaedics, German SportUniv. of Cologne, Germany

^bDept. of Molecular and Cellular Sport Medicine, German SportUniv. of Cologne, Germany

36. Effects of PEMFs on the Cellular Activity of Osteoblast-Like Cells #7410

Carlos Martino^a, Jerry Qi^a, Dmitry Belchenko^a, Virginia Ferguson^a, Sheila Preiss^b

^aDept. of Mechanical Engineering, Univ. of Colorado at Boulder, Boulder, Colorado, USA; ^bDept. of Endocrinology, Univ. of Colorado Health Science Center, Aurora, CO, USA

10.8 Molecular Biomechanics Posters

Session Organizers: Cheng Zhu, Wendy Thomas

37. Unbinding of Vesicles under flow at a stagnation point #5959

Sunita Chatkaew and Marc Léonetti; IRPHE, UMR CNRS 6594, Universities Aix-Marseille I and II, Technopole de Chateau-Gombert, Marseille, France

38. Protein-Lipid Interactions: Correlation of a predictive algorithm for lipid-binding sites with 3D-structural data #5126

Gerold Diez¹, David L. Scott², Wolfgang H. Goldmann^{1,2}; ¹Friedrich-Alexander-University of Erlangen-Nuerenberg Center for Medical Physics and Technology, Biophysics Group, Erlangen, Germany

²Structural Biology Program, Massachusetts General Hospital/Harvard Medical School, Charlestown, MA, USA

39. On mathematical modeling of “intelligence” #5369

A.A. Kolpakov; The Novosibirsk StateUniv. 324, Novosibirsk, Russia

40. Determining the dissociation kinetics of rollingly adherent cells on E-selectin at low shear stress #6078

Annica M. Wayman^a, Rodger P. McEver^b, and Cheng Zhu^{a, c}; ^aWoodruff School of Mechanical Engineering and ^cJoint Emory/Georgia Tech Coulter School of Biomedical Engineering, Georgia Institute of Technology, Atlanta, Georgia USA; ^bCardiovascular Biology Research Program, Oklahoma Medical Research Foundation, and ; ^cDept. of Biochemistry and Molecular Biology and Oklahoma Center for Medical Glycobiology, Univ. of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma USA

41. Probing single cell micromechanics *in vivo* #4622

Denis Wirtz^{a, b} and Brian R. Daniels^a; ^aDept. of Chemical and Biomolecular Engineering, Johns HopkinsUniv., Baltimore, USA; ^bHoward Hughes Medical Institute graduate training program, Johns HopkinsUniv., Baltimore, USA

42. Self-organized tissue structures for mechanical attachment to artificial materials #5006

Kazuo Takakuda, Seiji Asoda, Takayuki Arita, Hazuki Koshitomae, Yoshihisa Koyama
Institute of Biomaterials and Bioengineering, Tokyo Medical and DentalUniv., Tokyo, Japan

11.6 Artificial Organs Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Michel Jaffrin, Heinrich Schima,

1. Evaluation of polymyxin B interaction with endotoxins by molecular modeling #6000

Monica Soncini, Simone Vesentini, Alessandro Zaupa, Gianfranco B. Fiore, Alberto Redaelli
Dept. of Bioengineering, Politecnico di Milano, Milan, Italy

2. Diminishing airways resistance and work of breathing by a novel design of the paediatric endotracheal tube #5842

Barbara Stankiewicz^a, Marek Darowski^a, Jaroslaw Glapinski^a, Marcin Rawicz^b, Marcin Michnikowski^a, Andrzej Rogalski^a; ^aCentre of Excellence ARTOG, Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, Warsaw, Poland; ^bDept. of Anaesthesiology and Intensive Care, Warsaw MedicalUniv., Poland

3. Unique differential lung ventilation system #5790

Jaroslav Glapiński^a, Marek Darowski^a, Andrzej Nestorowicz^b, Mirosław Ston^b, Marcin Michnikowski^a, Andrzej Rogalski^a, Barbara Stankiewicz^a; ^aCentre of Excellence ARTOG, Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, Warsaw, Poland; ^bDept. of Anaesthesiology and Intensive Therapy, Univ. School of Medicine, Lublin, Poland

12.4 Biomaterials Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Yannis Misirlis, Birgit Glasmacher

12.1. Biomaterials for Therapeutic Delivery Posters

Session Organizers: Yannis Missirlis, Hasan Uludag

1. Retrieval study of failed percutaneous endoscopic gastrostomy devices and evaluation against examples incubated in vitro #4104

Tom Joyce, Centre for Rehabilitation and Engineering Studies, School of Mechanical and Systems Engineering, Univ. of Newcastle upon Tyne, Newcastle upon Tyne, United Kingdom

2. Candida Biofilm on Biomaterial Surfaces #7722

Vishnu Aggarwal and Vikas Pruthi; Molecular Microbiology Lab., Dept. of Biotechnology, IIT Roorkee, Roorkee, India

3. A novel assay for testing biological activity of immobilized BMP-2 on metal bone implants #7480

Maria Chatzinikolaidou, Markus Laub, Marina Suslo, Herbert P. Jennissen; Institute for Physiological Chemistry, Univ. of Duisburg-Essen, Essen, Germany

4. Preparation and characterisation of ultra-hydrophilic, nanostructured surfaces on transition metals with chromosulfuric acid #7225

Steffen Lüers^a, Thorsten Sanger^a, Ulrich Gerth^b and Herbert P. Jennissen^a; ^aUniv. of Duisburg-Essen, Institute for physiological chemistry, Essen, Germany; ^bUniv. of Munster, Institute of physical chemistry, Munster, Germany

5. Immobilization and release kinetics of rhBMP-2 from bone replacement materials #7221

Kristin Zurlinden and Herbert P. Jennissen

Institut fur Physiologische Chemie, Universitatsklinikum Essen, Essen, Germany

6. Protocol for the mechanical characterisation and comparison of commercial insulin therapy needles #5655

Adelaide Nespoli, Simone Pittaccio, Francesca Passaretti, Giordano Carcano, Stefano Besseghini
Institute for Energetics and Interphases, National Research Council, Lecco, Italy

12.2 Smart Biomaterials Posters

Session Organizers: Joerg Vienken, Birgit Glasmacher

7. Prototyping and experimental characterization of shape memory alloy grippers #4325

Silvia Necchi, Gabriele Dubini, Virginio Quaglini, Tomaso Villa, Riccardo Pietrabissa

LaBS - Laboratory of Biological Structure Mechanics, Dept. of Structural Engineering, Politecnico di Milano, Milan, Italy

8. Novel Virtual Learning Tool to predict mechanical Stent performance for Next Generation (NG) materials beyond Stainless Steel (SST) #4426

Michael Kuhling^a, Torsten Scheuermann^a, Dominique Seidel^a, Peter Albrecht^a, H.Gese^b, G. Oberhofer^b

^aboston Scientific Technologie Zentrum GmbH, Munich, Germany; ^bmatfem Partnerschaft, Munich, Germany

12.3.1 Biomaterial in Biomechanical Applications- Posters

Session Organizers: Elizabeth Tanner, Damien Lacroix:

9. Stent Fatigue Testing According to in vivo Strain Cycles #5731

A. Fischer^a, A. Meißner^a, H. Brauer^b, S. Weiß^a; ^aUniv. of Duisburg-Essen, Institute of Product Engineering, Materials Science and Engineering II, Duisburg, Germany; ^bSalzgitter Mannesmann Forschung GmbH, Duisburg, Germany

10. The effect of gentamicin on the fracture properties of bone cement #5872

Cecilia Persson, Massimiliano Baleani, Luciano Guandalini and Marco Viceconti
Laboratorio di Tecnologia Medica, Istituti Ortopedici Rizzoli, Bologna, Italy

11. A Biograde Alumina Matrix Composite for Advanced Applications #6935

Meinhard Kuntz, Patricie Merkert; CeramTec AG, Plochingen, Germany

12. Natively Charged Hydroxyapatite Nanoparticles For Implants #5281

Yu. Dekhtyar^a, V. Bystrov^b, A. Karlov^c, A. Katashev^a, C. Meissner^a, A. Patmalnieks^d, E. Paramonova^b, N. Polyaka^a; ^aRiga Technical Univ., Riga, Latvia, ^bInstitute of Mathematical Problems of Biology, Puschino, Russia, ^cCentre for Orthopaedy and Medical Material Sciences, Tomsk, Russia,

^dUniv. of Latvia, Riga, Latvia

13. Cell shape and focal adhesion complexes distribution of adipose-derived stem cells and bone-marrow stromal cells on the alkanethiol-modified surfaces #4952

Hsiao-Feng Chieh ^a, Fong-Chin Su ^b, Sheng-Che Lin ^c, Jiunn-Der Liao^a; ^a Institute of Materials Science and Engineering, National Cheng Kung Univ., Tainan, Taiwan; ^b Institute of Biomedical Engineering, National Cheng Kung Univ., Tainan, Taiwan; ^c Surgery Dept. of National Cheng Kung Univ. Hospital, Tainan, Taiwan

14. A sensor for the study of the plantar forces's distribution in subjects with hallux valgus and its possible correlation with the pes planus #5444

Elaine Cristina Martinez Teodoro, José Elias Tomazini, Stephanie de Oliveira Rigon, Luiz Fernando Costa Nascimento; Universidade Estadual Paulista (Unesp), Faculdade de Engenharia de Guaratinguetá, São Paulo, Brasil

13.7 Invited Respiratory Mechanics Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: Robert C Schroter, David Elad

1. Particle distribution in four-generation obstructed lung airways #4230

H.Y. Luo and Yang Liu; Dept. of Mechanical Engineering, The Hong Kong Polytechnic Univ., Hung Hom, Kowloon, Hong Kong

2. Differential regulation of pulmonary endothelial barrier recovery by varying degrees of cyclic stretch #4145

Anna A. Birukova, Santipongse Chatchavalvanich, and Konstantin G. Birukov; Dept. of Medicine, the Univ. of Chicago, Chicago, IL, USA

3. Use of Computational Fluid Dynamics for Respiratory Units to Simulate Air-Flow through a Radial Fan #4239

Nutan Sampat, Martin Gabi; Dept. of Fluid Machinery, Faculty Mechanical Engineering, Univ. Karlsruhe, Germany

4. 3D-Spirogram: a combinatory system of image analysis and computational mechanics #4401

Hiroko Kitaoka, Takashi Kijima, and Ichiro Kawase; Dept. of Respiratory Disease, Graduate School of Medicine, Osaka Univ., Japan

5. Dexamethasone induces stiffening of alveolar epithelial cells #6480

F. Puig, N. Gavara, R. Sunyer, D. Navajas, R. Farré; Unitat Biofísica i Bioenginyeria, Facultat Medicina, Universitat Barcelona-IDIBAPS, Barcelona, Spain.

6. Computer-aided Segmentation and Quantification of the Human Airway Tree on the Basis of Multi CT Images #6244

Takahito Miki ^a, Shigeo Wada ^a, Masanori Nakamura ^a, Ken-ichi Tsubota ^a, Takami Yamaguchi ^a, Yuji Suda^b, Gen Tamura^c; ^a Dept. of Bioengineering and Robotics, Tohoku Univ., Sendai, Japan; ^b Sendai Open Hospital, Sendai, Japan; ^c Tohoku Univ. Hospital, Sendai, Japan

7. Relationship Between Ozone Absorption and Uric Acid Concentration in the Human Nasal Cavities #6162

James S. Ultman^a, Ali Fassih^a, Lizzie Y. Santiago^b, Abdellaziz Ben-Jebria^a; ^aDept. of Chemical Engineering, Penn State Univ., Univ. Park, Pennsylvania, USA; ^bDept. of Surgery, Univ. of Pittsburgh, Pittsburgh, Pennsylvania, USA

8. Theoretical Study of Gas Exchange in Total Liquid Ventilation #6328

Hideki Fujioka^a, Stefano Tredici^b, Ronald B. Hirschl^b, Robert H. Bartlett^b, and James B. Grotberg^{ab}; ^a Biomedical Engineering Dept., Univ. of Michigan, Ann Arbor, USA; ^b Dept. of General Surgery, Univ. of Michigan, Ann Arbor, USA

9. Flow of aerosol in a 3D alveolated bend: experimental measurements by Particle Image Velocimetry (PIV) and Particle Tracking Velocimetry (PTV) #6370

P. Corieri^a, R. Theunissen^a, N. Buchmann^a, C. van Ertbruggen^b, C. Darquenne^b, M.L. Riethmuller^a

^a von Karman Institute for Fluid Dynamics, Rhode-St-Genèse, Belgium

^b Dept. Medicine, Univ. of California San Diego, La Jolla, USA

10. Flow in a 3D alveolated bend: validation of CFD predictions with experimental results #5219

C. van Ertbruggen^a, N. Buchmann^b, R. Theunissen^b, P. Corieri^b, M.L. Riethmuller^b, C. Darquenne^a

^a Dept. Medicine, University of California at San Diego, La Jolla, USA; ^b von Karman Institute for Fluid Dynamics, Rhode-St-Genèse, Belgium

11. Alveolar Macrophages probe and respond to the stiffness of their substrate #6373

Sophie Féréol, Redouane Fodil, Stéphane Galiacy, Béatrice Labat, Valérie M. Laurent, Bruno Louis, Emmanuelle Planus and Daniel Isabey ; Inserm U651, Equipe Biomécanique Cellulaire et Respiratoire, Faculté de Médecine, Créteil, France

12. Hyperoxia combined with high tidal volume mechanical ventilation reduces alveolar type II cell adhesion: reduced phosphorylation of focal adhesion proteins and effect of KGF #6414

Christopher M. Waters^a, Leena P. Desai^a, Scott E. Sinclair^b, Aviv Hassid^a, Kenneth E. Chapman^a; ^aDept. of Physiology, Univ. of Tennessee Health Science Center, Memphis, TN, USA; ^bDept. of Medicine, Univ. of Tennessee Health Science Center, Memphis, TN, USA

13. Experimental modelling of airflow in airway bifurcations #6599

Kevin B. Heraty, Nathan J. Quinlan; NCBES, National Univ. of Ireland, Galway, Ireland

14. Evaluation of nasal airway patency by analysis of breathing sounds #6215

Uri Zaretsky^a, David Elad^a, Adi Primov-Fever^b, Michael Wolf^{b,c}

^aDept. of Biomedical Engineering, Tel Aviv Univ., Tel Aviv, Israel; ^bDept. of Otorhinolaryngology, Sheba Medical Center, Tel HaShomer, Israel; ^cSackler Faculty of Medicine, Tel Aviv Univ., Tel Aviv, Israel

15. Mechanics of respiratory muscles in single-lung transplanted emphysematic patients #6696

Anat Ratnovsky^a, Mordechai R. Kramer^b, David Elad^a; ^aDept. of Biomedical Engineering, Tel Aviv Univ., Tel Aviv, Israel; ^bPulmonary Institute, Rabin Medical Center, Petach Tikva, Israel

16. Surface Tension Distribution In Lungs With Surfactant Deficiency #6911

^a S. Ben-Zaken, ^b A. Marmur, ^c Z. Weintraub, ^a E. Kimmel; ^a Biomedical Engineering Dept., Technion IIT, Haifa, Israel; ^b Chemical Engineering Dept., Technion IIT, Haifa, Israel; ^c Neonatal Dept., Western Galilee Hospital Nahariya, Medicine Dept., Technion IIT, Haifa, Israel

17. The Experimental Evaluation of Asymmetric Ventilation Waveforms on Surfactant Transport during Airway Reopening #6981

J.E. Pillert and D.P. Gaver III; Biomedical Engineering Dept., Tulane Univ., New Orleans, LA, USA

18. A computational model of the effects of airway reopening on the integrity of pulmonary epithelial tight junctions #6991

Anne-Marie Jacob, Donald P. Gaver; Biomedical Engineering Dept., Tulane Univ., New Orleans, LA, USA

19. Long-term cyclic stretch diminishes surfactant secretion in alveolar type II epithelial cells #6127

Stephen P. Arold^a, Elizabeth Bartolák-Suki^b, Béla Suki^a; ^aDept. of Biomedical Engineering, Boston University, Boston, MA, USA; ^bAeris Therapeutic Inc. Woburn, MA, USA

20. Evolution of oscillatory mechanics in a two-week murine model of bleomycin-induced lung injury: a case control study #7237

Mariona Pinart^{a*}, Anna Serrano^b, Oriol Bulbena^b, and Pablo V. Romero^a; ^Alaboratory Of Experimental Pneumology. Idibell. L'hospitalet. Barcelona. Spain; ^BDept. Of Experimental Pathology, IIBB-CSIC, Idibaps. Barcelona. Spain

21. Regional assessment of pulmonary function during forced maneuvers using MRI-based spirometry #7230

Abram Voorhees^a, Roberta M. Goldring^b, Kenneth I. Berger^b, Qun Chen^a; ^a Center for Biomedical Imaging, Dept. of Radiology, New York Univ. School of Medicine, USA; ^b Dept. of Medicine, New York Univ. School of Medicine, USA

22. Assessing respiratory mechanics in obstructive diseases by forced oscillation technique: importance of expiratory flow-limitation (EFL) #7455

Raffaele L. Dellaca^{*}, Dipartimento di Bioingegneria, Politecnico di Milano Univ., Milano, Italy

23. Optimality Of The Length-To-Diameter Ratio In The Human Bronchial Tree #7735

Eugene Lee^a, Min Y. kang^b, Hoe-jin Yang^b, Jin W. Lee^b; ^aCity health Center, Pohang, Korea; ^bDept. of Mechanical Engineering and also Systems Bio-Dynamics Research Center, Pohang Univ. of Science and Technology, Pohang, Korea

24. Intravital endo-microscopy of alveoli: a new method to visualize alveolar dynamics #7779

C A Stahl^a, S Schumann^a, H Knorpp^a, M Schneider^a, K Möller^b, J Guttmann^a; ^aDept. of Anesthesiology and Critical Care Medicine, Univ. of Freiburg, Germany; ^bBiomedical Engineering, Furtwangen Univ., Germany

25. Airway Reopening: Oscillating Air Finger Propagation Through a Liquid-Filled Tube #7022

Bradford J. Smith and Donald P. Gaver III; Tulane Univ., New Orleans, USA

26. Direct maximum expiratory flow modeling from lung function testing of pediatric patients #4700

Josué Sznitman^a, Ben Spycher^b, Urs Frey^c and Johannes H. Wildhaber^d; ^a Institute of Fluid Dynamics, ETH Zurich, Switzerland; ^b Dept. of Social and Preventive Medicine, Univ. of Berne, Switzerland; ^c Pediatric Respiratory Medicine, Dept. of Pediatrics, Univ. Hospital of Berne, Switzerland; ^d Division of Respiratory Medicine, Univ. Children's Hospital Zurich, Switzerland

27. Lung tissue mechanics after bleomycin-induced lung injury: Inflammation vs fibrosis #7354

Mariona Pinart^{a*}, Anna Serrano^b, Elnara M Negri^c, Roberto Cabrera^a, Patricia RM. Rocco^d, and Pablo V. Romero^a; ^aLaboratory of Experimental Pneumology, IDIBELL, L'Hospitalet, Barcelona, Spain; ^bDept. of Experimental Pathology, IIBB-CSIC, IDIBAPS, Barcelona, Spain; ^cDept. of Pathology, Clinical Hospital, Univ. of Sao Paulo, Sao Paulo, Brazil; ^dLaboratory of Respiration Physiology, Carlos Chagas Filho Biophysics Institute, Federal Univ. of Rio de Janeiro, Rio de Janeiro, Brazil

28. Multi-Scale Modeling of Cellular Deformation and Adhesion during Acute Lung Injury #6051

Hannah L. Dailey^a, Samir N. Ghadiali^{a,b}; ^a Mechanical Engineering and Mechanics, Lehigh Univ., Bethlehem, PA, USA; ^b Bioengineering Program, Lehigh Univ., Bethlehem, PA, USA

29. A pulmonary parenchyma as an acoustic medium saturated by air bubbles with constrained walls: the long-wave approximation #4286

Valery N. Oliynik, Institute of Hydromechanics of NAS of Ukraine, Kyiv, Ukraine

30. Pulmonary extracellular matrix fragmentation induced by mechanical ventilation #4476

Daniela Negrini^a, Andrea Moriondo^a, Alberto Passi^a, Manuela Viola^a, Cristiana Marcozzi^a, Paolo Pelosi^a, Paolo Severgnini^a, Vittoria Ottani^b, Marilisa Quaranta^b; ^aDip. Scienze Biomediche Sperimentali e Cliniche, Università degli Studi dell'Insubria, Varese, Italy; ^bDip. Scienze Anatomiche Umane, Università degli Studi di Bologna, Bologna, Italy

31. Effects of Cyclic Compression on Epithelial Transport and Viral Infection in an Engineered Airway Wall Model #4724

A. Tomei^a, M.M. Choe^b, and M.A. Swartz^{a,b}; ^aInstitute of Bioengineering, École Polytechnique Fédérale de Lausanne (EPFL); ^bDept. of Biomedical Engineering, Northwestern Univ.

32. Multiscale models for the acoustic properties of lung parenchyma #4561

Malin Siklosi^a, Richard Tew^b & Oliver Jensen^b; ^aNumerical analysis, KTH School of Computer Science and Communication, Stockholm, Sweden; ^bSchool of Mathematical Sciences, University of Nottingham, Univ. Park, Nottingham, UK

33. A Non Linear Mathematical Model to Investigate the Alveolar Diffusion #4568

G. Belmonte^a, E. Caroli^b, M. Fabbri^a, L. Fasano^c, A.M.G Pacilli^a, G. Pallotti^a; ^aDept. of Clinical Medicine and Biotechnology, Applied-University of Bologna, Italy; ^bINAF/IASF, Bologna, Italy; ^cHospital S.Orsola-Malpighi, Bologna, Italy; Faculty of Medicine and Surgery, "Alma Mater Studiorum" Univ. of Bologna, Italy

34. Special contact microphone for auscultation #4574

V.T.Grinchenko, A.A.Makarenkova; Institute of a Hydromechanics of the National Academy of sciences of Ukraine, Kiev, MSP, Ukraine

35. Small Airway Behavior In Healthy And Ovalbumin Treated Mice During Quasi-Static Lung Inflation #4675

Toshihiro Sera, Kentaro Uesugi, Naoto Yagi; Japan Synchrotron Radiation Research Institute (Spring-8/Jasri), Sayo, Japan

36. Coupling simulation of lung blood flow to pressure in the deforming lung tissue #4923

K S Burrowes^{a,b}, M H Tawhai^b; ^aOxford Univ. Computing Laboratory, The Univ. of Oxford, Oxford, England; ^bBioengineering Institute, The Univ. of Auckland, Auckland, New Zealand

37. Biomechanics of self-excited oscillation induced by flow-structure interaction in airway constriction #5356

Shinji Deguchi, Yusuke Miyake, Akiya Shiota, Yoshihiko Tamura, Seiichi Washio; Graduate School of Natural Science and Technology, Okayama Univ., Okayama, Japan

38. Protective effects of oxidized phospholipids on ventilator-induced lung injury #4296

Anna A. Birukova^a, Stephanie A. Nonas^b, Ian Miller^b, Santipongse Chatchavalvanich^a, Joe G.N. Garcia^a, and Konstantin G. Birukov^a; ^aDept. of Medicine, Univ. of Chicago, Chicago, Illinois, USA; ^bDept. of Medicine, Johns Hopkins Univ., Baltimore, Maryland, USA

39. Modeling pulmonary transport of liquid plugs in microfluidic channels #4868

Cédric Ody, Emmanuel de Langre, Charles N. Baroud; Laboratoire d'Hydrodynamique (LadHyX), Ecole Polytechnique, Palaiseau, France

40. Three-component Gas velocity mapping by magnetic resonance imaging #5401

Emmanuel Durand^a, Ludovic de Rochefort^a, Xavier Maître^a, Redouane Fodil^b, Bruno Louis^b, Laurence Vial^c, Luc Darrasse^a, Georges Caillibotte^c, Gabriela Sbirlea-Apiou^c, Jacques Bittoun^a, Daniel Isabey^b; CNRS/Université Paris-Sud (U2R2M-UMR8081), Bicêtre, France; ^bINSERM, UMR 651; Université Paris XII, Créteil, France; ^cAir Liquide, Groupe Gaz Médicaux, Les Loges en Josas, France.

41. Oscillatory flow in image-based bronchial airway model #5549

Gaku Tanaka^a, Genri Inagaki^a, Makoto Hishida^a, Hideaki Haneishi^b, and Xiao Hu^c; ^aDept. of Electronics and Mechanical Engineering, Chiba Univ., Chiba, Japan; ^bResearch Center for Frontier Medical Engineering, Chiba Univ., Chiba, Japan; ^cFluent Asia Pacific Co. Ltd., Tokyo, Japan

42. Response of cultured nasal goblet cells to wall shear stresses #5686

Nurit Even-Tzur^a, Uri Zaretsky^a, Michael Wolf^b, David Elad^a; ^aDept. of Biomedical Engineering, Tel Aviv Univ., Tel Aviv, Israel; ^bDept. of Otorhinolaryngology, Sheba Medical Center, Sackler Faculty of Medicine, Tel Aviv Univ., Tel Aviv, Israel

43. Flow in a 3D alveolated bend: validation of CFD predictions with experimental results #5218

C. van^a Dept. Medicine, Univ. of California at San Diego, La Jolla, USA; ^bvon Karman Institute for Fluid Dynamics, Rhode-St-Genèse, Belgium

44. Measurement of single-cell generated tractions in response to localized repetitive mechanical loading #5208

Ramaswamy Krishnan^a, Shaohua Hu^a, Jack T. Dennerlein^a, Ning Wang^{a,b}; ^aPhysiology Program, Dept of Environmental Health, Harvard School of Public Health, Boston, USA; ^bDept. of Mechanical and Industrial Engineering, Univ. of Illinois, Urbana-Champaign, USA

45. Structural contribution of the cytoskeleton to the dynamic response of adherent cells assessed by a viscoelastic tensegrity model #5092

Patrick Cañadas^a, Sylvie Wendling-Mansuy^b and Daniel Isabey^c; ^aCNRS, LMGC UMR 5508, Université de Montpellier 2, Montpellier, France, ^bCNRS, LABM USR 2164, Université de la Méditerranée, Marseille, France ^cINSERM, UMR 651, Université de Paris 12, Faculté de Médecine, Créteil, France

46. The steady propagation of an air finger into a partially collapsed, fluid-filled, elastic tube #5077

Alexandra Heap and Anne Juel, School of Mathematics, Univ. of Manchester, Manchester, UK

47. Coupled Mechanics and Airflow of a Human Lung #5332

K.L. Hedges, P.J. Hunter, M.H. Tawhai; Bioengineering Institute, Univ. of Auckland, Auckland, New Zealand

48. In situ imaging of collagen gel with a second-harmonic generation microscope #7933

Ryuichi Nakayama^a, Shuichiro Fukushima^a, Takeshi Yasui^a, Tsutomu Araki^a; ^aGraduate School of Engineering Science, Osaka Univ., Osaka, Japan

49. Understanding lung function and remodeling by a novel experimental model of severe allergic inflammation #4158

Patricia RM Rocco^a, Pedro L Silva^a, Caroline P Passaro^a, Viviane R Cagido^b, Marcelo Bozza^c, Marisa Dolhnikoff^d, Elnara M Negri^d, Vera L Capelozzi^d, Walter A Zin^b; ^aLaboratory of Pulmonary Investigation, ^bLaboratory of Respiration Physiology, Carlos Chagas Filho Biophysics Institute, ^cInstitute of Microbiology, Federal Univ. of Rio de Janeiro, Brazil; ^dDept. of Pathology, Univ. of São Paulo, São Paulo, Brazil

14.16 Cardiovascular Mechanics Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Don Giddens, Hermann Berger

14.1. Aneurysms Posters

Session Organizers: Tim McGloughlin, Ender A. Finol,

1. Computational haemodynamics in cerebral aneurysm custom models based on different reconstructive methodologies #4859

Laura Succi, Giancarlo Pennati, Francesco Migliavacca, Gabriele Dubini; Laboratory of Biological Structure Mechanics, Structural Engineering Dept., Politecnico di Milano, Milan, Italy

2. Mechanical properties of intraluminal thrombus from abdominal aortic aneurysm under compressive loads #5854

Federica Boschetti^a, Marina Camera^{b,c}, Laura Succi^a, Rita Spirito^d, Elena S. Di Martino^c; ^aLaboratory of Biological Structure Mechanics, Dipartimento di Ingegneria Strutturale, Politecnico di Milano, Milano, ITALY

^bDipartimento di Scienze Farmacologiche, Università degli Studi di Milano, Milano, ITALY; ^cLaboratory of Cell Biology and Biochemistry of Atherothrombosis, Centro Cardiologico Monzino, Milano, ITALY; ^dVascular Surgery Unit, Centro Cardiologico Monzino, Milano, ITALY; ^eInstitute for Complex Engineered Systems and Biomedical Engineering Dept., Carnegie Mellon Univ., Pittsburgh, USA

3. Numerical model for predicting dilatation of an Abdominal Aortic Aneurysm (AAA) #7689

Frank Helderma^a, Olaf Schouten^b, Ingrid Manoch^a, Harmen Buffart^a, A.F.W. van der Steen^a and Rob Krams^a; ^aCardiology, Erasmus MC, Rotterdam, The Netherlands; ^bAnaesthesiology, Erasmus MC, Rotterdam, The Netherlands

4. PET-CT-Imaging - A new approach predicting abdominal aortic aneurysm rupture? #5793

C. Reeps^a, P. Heider^a, O. Wolf¹, M. Hanke^a, S. Seidl^b, H.H. Eckstein^a; ^aDept. of Vascular Surgery and; ^bInstitute of Pathology Klinikum rechts der Isar, Technical Univ. of Munich, Munich, Germany

5. Withdrawn

6. Endovascular Wall Pressure-Forces in a Progressively Enlarged Aneurysm Model #6842

P. Neofytou^a, S. Tsangaris^a, M. Kyriakidis^{b,c}; ^aSchool of Mechanical Engineering, Fluids Section, National Technical Univ. of Athens, Greece; ^bMedical School, Univ. of Athens, Greece; ^cCardiology Clinic, Metropolitan Hospital, Faliro, Greece

7. Endovascular stenting of an intimal lesion with acute limb ischemia of the upper extremity after shoulder hemiarthroplasty: a case report #5003

Schmitt, S.^a, Gareis, R.^b, Schmidt, G.^b, Eichstädt, H.^c, Störk, Th.^b; ^aKarl-Olga-Krankenhaus, Baumann-Klinik, Dep. of Orthopaedic Surgery, Stuttgart, Germany; ^bKarl-Olga.Krankenhaus, Dep. of Cardiology, Stuttgart, Germany; ^cCharité, Campus Virchow, Dep. of Cardiology, Berlin, Germany

8. Biomechanics of the aortic wall: developing a method to predict aneurysm rupture #7635

M. Tenholt^a, F. Remek^a, G. Benderoth^b, G. Silber^b, Th. Schmitz-Rixen^a; Center of Biomedical Engineering (CBME), ^aDept. of Vascular and Endovascular Surgery, Johann Wolfgang Goethe Univ., Frankfurt/Main, Germany; ^bInstitute of Material Science, Univ. of Applied Sciences, Frankfurt/Main, Germany

9. Analysis of biomechanical properties of abdominal aorta and abdominal aortic aneurysm #7347

Magdalena Kobielarz^a, Romuald Będziński^a, Sylwia Szotek^a, Janusz Gnus^b, Willy Hauzer^b, Piotr Kuropka^c

^a Biomedical Engineering and Experimental Mechanics Division, Wrocław Univ. of Technology, Wrocław, Poland; ^b Regional Specialistic Hospital in Wrocław, Wrocław, Poland; ^c Dept. of Anatomy and Histology, Agricultural Univ. of Wrocław, Wrocław, Poland

10. Patient-specific analysis of flow and stress patterns in thoracoabdominal aneurysms #4522

Alessandro Borghi^a, Nigel B Wood^a, Raad H Mohiaddin^b, X. Yun Xu^a; ^a Dept. of Chemical Engineering, Imperial College London, London, UK; ^b Royal Brompton & Harefield NHS Trust, London, UK

11. Fluid Structure Interactions in Abdominal Aortic Aneurysms #6602

Katharine H. Fraser^a, Mingxiu Li^b, William J. Easson^b, Peter R. Hoskins^a
Medical Physics^a and School of Engineering and Electronics^b, The Univ. of Edinburgh, Edinburgh, UK

14.3. Hemodynamics and Vascular Biology I Posters

Session Organizers: John Lever, Niko Stergiopulo

12. Mathematical modelling of blood flow in curved arteries #5204

J. H. Siggers and S. L. Waters; School of Mathematical Sciences, Univ. of Nottingham, Nottingham, UK

13. A Bond Graph Approach to Analysis of Effects of Arteriosclerosis on Cardiovascular System's Performance #5359

Ali Asadi Nikooyan, Amir Abbas Zadpoor, Ahmad Reza Arshi; Biorobotics and Virtual Reality Research Laboratory, Dept. of Biomedical Engineering, Amirkabir Univ. of Technology, Hafez Ave., Tehran, Iran

14. Hemodynamic simulation of the effect of asymmetric entry velocity profile on wall shear stress in carotid bifurcation model #7097

Zurong Ding^a Shuo Yang^a, Xiaoli Zhu^b, Yong Wang^b; Dept. of Engineering Mechanics, Shanghai Jiaotong Univ., Shanghai, R.P.China; ^bImage Center, No.1 Hospital, Suzhou Univ., Suzhou, Jiangsu Province, R.P.China

15. Numerical investigation of variations in wall shear stress distributions at the diseased human carotid artery bifurcation #6830

Dr. M. NavidBaksh, Marzieh Zaker Bidhandi; Univ. of Science and Technology, Tehran, IRAN

16. On boundary conditions for carotid artery models: *In vivo* measured velocity distributions versus fully developed flow #4049

Amanda K. Wake^a, John Oshinski^{a, b}, Allen Tannenbaum^{a, c}, Don Giddens^a; ^aWallace H. Coulter Dept. of Biomedical Engineering; Georgia Institute of Technology and Emory Univ. School of Medicine, Atlanta, USA; ^bDept. of Radiology, Emory Univ., Atlanta, USA; ^cSchool of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, USA

17. Effects of reduced cyclic stretch on vascular endothelium cell function of pig carotids perfused *in vitro* #4971

Veronica Gambillara, Tyler Thacher, Rafaela da Silva, Paolo Silacci and Nikos Stergiopulos
Laboratory of Hemodynamics and Cardiovascular Technology, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

18. Optimizing surgical ventricular reconstruction for ischemic cardiomyopathy by modelling fluid dynamics #6369

T. Doenst^a, F. Beyersdorf^a, H. Oertel^b; ^aDept. of Cardiovascular Surgery, Univ. of Freiburg, Freiburg, Germany; ^bInstitute for Fluid Mechanics, Univ. of Karlsruhe, Germany

19. Assessment of Bio-heat distribution in the spherical tissue layers - - a Mathematical model to quantify the necrotic core temperature of the tumor using Series solution technique #7798

V K Katiyar^a, K S Basavarajappa^b, Nilam Rathi^c, G. Manjunath^d, K S Onkarappa^d, G N Krishnamurthy^b, C. Karibasappa^b, T.K. Krishna Kumar^b; ^aDept of Mathematics, Indian Institute of technology Roorkee, Roorkee, India; ^bDept of Mathematics, Bapuji Institute of Engineering and Technology, Davanagere, India; ^cDept of Mathematics, BITS Pilani, Rajasthan, India; ^dDept of Mathematics, G.M institute of Engineering and Technology, Davanagere, India

14.4. Heart-Arterial Interaction Posters

Session Organizers: Peter Hunter, Nico Westerhof

20. Ventricular-aortic energy transfer: simulation of poor matching conditions and suggestions for biomechanical intervention #5808

Romano Zannoli, Ivan Corazza, Laura Marras, Laura Fabbiani, Filippo Marangoni, Angelo Branzi.
Institute of Cardiology, Univ. of Bologna, Italy

21. A membrane model for wave flow in the blood vessels #4433

Hamadiche Mahmoud^a, Kizilova Natalya^b; ^aImfa, Ecole Centrale De Lyon, Ecully, France; ^bdepartment Of Theoretical Mechanics, Kharkov National University, Kharkov, Ukraine

14.5. Congenital cardiovascular disease applications Posters

22. Development of a Novel System to Predict Intimal Hyperplasia Development in an End-to-Side Distal Bypass Graft Junction #6495

S.M. O'Callaghan, T.M. McGloughlin; Centre for Biomedical Engineering Research Centre, M&AE and MSSl, Univ. of Limerick, Limerick, Ireland

23. Analysis of Radial Crushing Strength of Cardiovascular Stents Using Finite Element Method #7147

Jayavenkateshwaran K, Dr.J.Raamachandran; Solid Mechanics Group, Dept. of Applied Mechanics, Indian Institute of Technology Madras, Chennai, Tamilnadu, India

24. Pulse wave propagation in the intraorgan arterial beds and diagnostic analysis of pressure and flow curves #4164

Natalya Kizilova; Dept. of Theoretical Mechanics, Kharkov National Univ., Kharkov, Ukraine

25. Study of Effects of Balloon Dimensions and It's Property in Cardiovascular Stenting Using Finite Element Technique #7148

Jayavenkateshwaran K, Dr.J.Raamachandran; Solid Mechanics Group, Dept. of Applied Mechanics, Indian Institute of Technology Madras, Chennai, Tamilnadu, India

26. Study Of Prolong Arteriovenous (Av) Graft #7169

G. T. Carroll, M. Egan, F. Wallis, M T. Walsh, T. M. McGloughlin; Centre for Applied Biomedical Engineering Research, M&AE Dept., Univ. of Limerick, Ireland

14.6.1 Computational Modelling Posters

Session Organizers: David Steinmann, Karl Perktold

27. Computational modelling of in-vivo arterial graft flow #6734

Alberto Gambaruto, Denis Doorly, Joaquim Peiro; Dept. of Aeronautics, Imperial College, London, UK

28. Novel Matlab-based educational toolcode for general purpose hydrodynamics and its applications in biomechanics #6029

Tomasz Sołtysiński; Institute of Precision and Biomedical Engineering, Dept. of Mechatronics, Warsaw Univ. of Technology, Warsaw, Poland

29. Presentation of non invasive method for estimation arterial stiffness using modeling blood flow and arterial wall based on determination of elastic modulus of arterial wall #4288

Saeed Rahgozar^a, Mehdi Maerefat², Manijhe Mokhtari-Dizaji^c; ^a Mechanics Dept., Kashan Univ., Kashan, Iran; ^b Mechanics Dept., Tarbiat Modarres Univ., Tehran, Iran; ^c Medical Physics Dept., Tarbiat Modarres Univ., Tehran, Iran

30. Low Structure Stress Correlates Positively with Atherosclerotic Plaque Wall Thickness: In Vivo/Ex Vivo MRI-Based 3D FSI Models for Human Atherosclerotic Plaques #4044

Chun Yang,^a Dalin Tang,^b Vasily Yarnykh,^c Chun Yuan,^c Thomas S. Hatsukami,^d ; Baocheng Chu,^c Fei Liu,^c Jie Zheng,^c and Pamela K. Woodard^e; ^aMathematics Dept., Beijing Normal Univ., Beijing, China; ^bMathematical Sciences Dept., Worcester Polytechnic Institute, Worcester, USA; ^cDepartment of Radiology, Univ. of Washington, Seattle, USA; ^dDivision of Vascular Surgery, VA Puget Sound HCS and Univ. of Washington, Seattle, USA; ^eMallinckrodt Institute of Radiology, Washington Univ., St. Louis, USA

31. Dynamic Mesh Control for Cardiovascular Flows #4458

David Nordsletten, Peter Hunter, Nicolas Smith; Bioengineering Institute, Univ. of Auckland, NZ

32. Correlation of cortical thickness and interfragmentary compression in intramedullary osteosynthesis: an experimental study #7547

Oliver Gonschorek^a, Sebastian Katscher^b, Alexandra Misselwitz^b, Volker Bühren^a; ^aBG-Unfallklinik Murnau, Germany; ^bUniv. of Leipzig, Germany

33. Numerical Study of a Pulsatile Flow in the Abdominal Aorta Bifurcation #6674

Filipa Carneiro^a, Senhorinha Teixeira^b, José Teixeira^a; ^aUniv. of Minho, Dept. of Mechanical Engineering, Guimarães, Portugal; ^bUniv. of Minho, Dept. of Production and Systems, Guimarães, Portugal

34. Alteration of Reynolds number and flow partition modify wall shear stresses at arterial branches in a way that can explain age- and species-dependent patterns of arterial disease #4506

Asimina Kazakidi^{a,b}, Spencer J Sherwin^a, Peter D Weinberg^b; Dept.s of ^aAeronautics and ^bBioengineering, Imperial College London, UK

35. Quantitative Analysis of CT-scanned Images of Coronary Vasculatures of Porcine Hearts #6763

Thomas Wischgoll; Wright State Univ., Dayton, USA

36. Effects of implementing a viscoelastic arterial wall model for solving the one-dimensional equations of blood flow #5535

Rashmi Raghu^a, Irene E. Vignon-Clementel^a, C. Alberto Figueroa^a, Charles A. Taylor^{a,b,c}; ^aDept. of Mechanical Engineering, Stanford Univ., Stanford, CA, USA; ^bDept. of Bioengineering, Stanford Univ., Stanford, CA, USA; ^cDept. of Surgery, Stanford Univ., Stanford, CA, USA

37. Effect of Cardiac Motion on Haemodynamics in the Superior Mesenteric Artery (SMA) #4521

AD Jeays^a, PV Lawford^a, R Gillott^b, P Spencer^b, KD Bardhan^b, DR Hose^a; ^aDept. of Medical Physics, Univ. of Sheffield, Sheffield, England; ^bRotherham District General Hospital, Rotherham, England

38. Flow through a stented coronary artery: CFD prediction of restenosis regions #4524

Nicolas Bénard^a, Robert Perrault^a, Damien Coisne^{a,b}; ^a Laboratoire d'Etudes Aérodynamiques, Poitiers, France; ^bUniv. Hospital La milétrie, Cardiology unit, Poitiers, France

39. A novel way to build geometric models of wire stents #6915

Benedict Verhegghé^a, Matthieu De Beule^b, Rudy Van Impe^b, Pascal Verdonck^c

^a Dept. of Mechanical Construction and Production, GhentUniv., Belgium; ^b Laboratory for Research on Structural Models, GhentUniv., Belgium; ^c Cardiovascular Mechanics and Biofluid Dynamics research Unit, Institute Biomedical Technology, GhentUniv., Belgium

40. Mathematical Derivation for an Analytical Model of Saphenous Flow for a Leg-in-Motion Supported by an Elastic Stocking #4626

Khalil Khanafer^a, Joseph Bull^a, and Ramon Berguer^{a,b}; ^aDept. of Biomedical Engineering, ^bSection of Vascular Surgery, Univ. of Michigan, Ann Arbor, MI, USA

41. Improvement of accuracy of blood flow simulation by integrating measurement using ultrasonic Doppler method #6760

Kenichi Funamoto^a, Toshiyuki Hayase^a, Yoshifumi Saijo^b, Tomoyuki Yambe^b

^a Institute of Fluid Science, TohokuUniv., Sendai, Japan; ^b Institute of Development, Aging and Cancer, TohokuUniv., Sendai, Japan

14.7. Coronary Circulation Posters

Session Organizers: Shmuel Einav, Fumihiko Kajiya

42. Validation of the numerical coronary flow simulation through LDA-measurements #6855

L. Goubergrits¹, F.O. Bartz², Ch.N. Nayeri², C.O. Paschereit², U. Kertzscher¹, K. Affeld¹

¹biofluidmechanics Lab, Charité - Universitätsmedizin Berlin, Germany; ²hermann-Föttinger Institut, Tu Berlin, Germany

43. Wall shear stress profiling of the coronary flow: Choosing a parameter of flow characterization #6839

L. Goubergrits^a, E. Wellnhofer^b, U. Kertzscher^a, K. Affeld^a; ^aBiofluid Mechanics Laboratory, Charité-Universitätsmedizin Berlin, Germany; ^bGerman Heart Institute of Berlin, Berlin, Germany

44. Hemodynamic Effects of a Distal High-Grade Stenosis on a Vulnerable Plaque #6397

Ze'ev Aronis, Shmuel Einav; Biomedical Engineering Dept., Tel-AvivUniv., Tel Aviv, Israel

45. Pulse Wave Propagation In Blood Vessels: Theoretical Investigation And Clinical Applications #6850

^a I. Barbieri,^a G. Belmonte,^b L. Coli,^b G. Donati,^c G.L. Gardini,^a G. Pallotti,^a P. Pettazzoni,^c D. Salcito,^d I. Selezov,^c A. Tedesco,^e O. Zvonareva; ^a Faculty of Medicine and Surgery, Univ. of Bologna "Alma Mater Studiorum", Bologna, Italy; ^b Nephrology Dialysis and Renal Transplantation Unit, S.Orsola Hospital, Bologna, Italy; ^c Villa Torri Hospital, Bologna, Italy; ^dDept. of Wave Process, Institute of Hydrodynamics NASU, Kiev, Ukraine; ^e TransportUniv., Dnepropetrovsk, Ukraine

46. Comparison of flow and wall shear stress in normal and stenotic coronary arteries #4714

Ryo Torii^a, Andrew Dowsey^b, Nigel Wood^a, Guang-Zhong Yang^b, Alun Hughes^c, Andrew Wright^d, David Firmin^e, Simon Thom^c and Xiao Y Xu^a; Dept.s of ^aChemical Engineering; ^bComputing, ^cNHLI, International Centre for Circulatory Health, & ^dDept. of Radiology, St Mary's Hospital, ^eNational Heart and Lung Institute, CMR Unit, Royal Brompton Hospital, Imperial College London, UK

47. Analysis of Non-Newtonian blood flow in symmetric consecutive constriction artery #4564

Mehdi Navidbakhsh, Zahra Rahmdel, Morteza Khalilian; Biomech. Lab, Univ. of Science and Technology, Tehran, Iran

48. Coronary haemodynamics in humans using wave intensity analysis #5400

J Aguado-Sierra^a, JE Davies^b, DP Francis^b, ZI Whinnett^b, CH Manisty^b, K Willson^c, RA Foale^b, IS Malik^b, AD Hughes^{a,b}, J Mayet^b, KH Parker^a; ^a PFSG, Dept. of Bioengineering, ^b International Centre for Circulatory Health and St Mary's Hospital, ^c Clinical Engineering, Royal Brompton Hospital, Imperial College London, UK.

49. Anatomically-accurate modeling of coronary circulation with dual-scale numerical solution scheme #4460

Jack Lee, Nicolas Smith; Bioengineering Institute, TheUniv. of Auckland, Auckland, New Zealand

50. The role of wave speed in wavy intensity analysis: a sensitivity study in coronary arterial data #5405

J Aguado-Sierra^a, J Davies^b, J Mayet^b, D Francis^b, AD Hughes^{a,b}, KH Parker^a; ^a PFSG, Dept. of Bioengineering, ^b International Centre For Circulatory Health And St Mary's Hospital, Imperial College London, UK.

14.8 Flow Measurement and Imaging-In Vivo and In Vitro with Applications- Posters

Session Organizer: Peter Boesiger

51. Injection protocol effects on evaluation of flow characteristics in pseudo-3D videodensitometry #7050

Gustaf Mårtensson^a, Michael Söderman^b, Tommy Andersson^b, Arne Johansson^a; ^a Dept. of Neuroradiology, KarolinskaUniv. Hospital, ^b Dept. of Mechanics, Royal Institute of Technology (KTH), Stockholm, Sweden

52. Model studies on flow disturbance due to arterial stenosis #4897

Niranjan Talukder^a, Khalil Shujaee^b, Sadegh Mohammadi^b; ^a Dept. of Engineering, ^b Dept. of Computer and Information Science, Clark AtlantaUniv., Atlanta, Georgia, USA

53. Enhanced priors for Bayesian constrained spectral method for adaptive segmentation of noisy medical images and volumes #6010

Tomasz Soltysinski, Tadeusz Palko; Institute of Precision and Biomedical Engineering, Dept. of Mechatronics, Warsaw Univ. of Technology, Warsaw, Poland

54. Velocity profiles in the rat cerebral microvessels and its change following neural activation studied by optical coherence tomography #5480

Junji Seki^{a,b}, Yasuhiko Satomura^a, Yasuhiro Ooi^c, Toshio Yanagida^d, and Akitoshi Seiyama^{b,d}; ^aDept. of Biomedical Engineering, National Cardiovascular Center Research Institute, Osaka, Japan; ^bCREST, JST, Saitama, Japan; ^cDivision of Pathogenesis and Control of Oral Disease, Osaka Univ. Graduate School of Dentistry, Osaka, Japan; ^dDept. of Physiology and Biosignaling, Osaka Univ. Graduate School of Medicine, Osaka, Japan

55. Numerical assessment of the influence of a flow wire on its measured maximum velocity #6271

Wim Hillewaert^a, Piet Claus^b, Guy Mareels^a, Pascal Verdonck^a, Paul Devos^c, Patrick Segers^a
^aCardiovascular Mechanics and Biofluid Dynamics research unit, Institute Biomedical Technology, GentUniv., Belgium; ^bDept. of Cardiology, K.U. Leuven, Belgium; ^cDept. INWE, Hogeschool Gent, Belgium

56. Issues in 3D ultrasound scanning affecting arterial CFD simulation #6621

S. J. Hammer^a, T. J. MacGillivray^b, W. T. Lee^c, J. J. Beech-Brandt^c, W. J. Easson^c, P. R. Hoskins^a; ^aMedical Physics, The Univ. of Edinburgh, UK; ^bWellcome Trust Clinical Research Facility, Univ. of Edinburgh, Western General Hospital, Edinburgh, UK; ^cInstitute for Materials and Processes, School of Engineering and Electronics, The Univ. of Edinburgh, UK

57. Numerical and experimental study of influence of stenosis shape on flow pattern in distal end-to-side anastomosis #6854

Jan Matěcha^a, Hana Netřebská^a, Jan Tůma^a, Josef Adamec^a, Tomáš Grus^b, Jaroslav Lindner^b, Milan Krajiček^b
^aDept. of Fluid Dynamics and Power Engineering, Czech Technical Univ. in Prague, Prague, Czech Republic; ^bClinic of Cardiovascular surgery, General Univ. Hospital and First Medical Faculty in Prague, Prague, Czech Republic

58. Volumetric particle image velocimetry in the developing chicken heart #5789

Peter Vennemann^a, Ralph Lindken^a, Beerend P. Hierck^b, Jerry Westerweel^a; ^aLaboratory for Aero- and Hydrodynamics, Delft Technical Univ., Delft, The Netherlands; ^bDept. of Anatomy and Embryology, Leiden Univ. Medical Center, Leiden, The Netherlands

59. Study of Diabetes Mellitus under the administration of quantitative diet using Joslin's principle for various body frames –a Mathematical model #7797

V K Katiyar^a, K S Basavarajappa^b, Nilam Rathi^c, G. Manjunath^b, K S Onkarappa^b, G N Krishnamurthy^b, C. Karibasappa^b; ^aDept. of Mathematics, Indian institute of technology Roorkee, Roorkee, India; ^bDept. of Mathematics, Bapuji institute of Engineering and technology, Davanagere, India; ^cDept. of Mathematics, BITS Pilani, Rajasthan, India

60. An approach to study the flow field in a model of sequential stenosed human arteries #4211

A. Giannadakis^a, D. Mavrilas^a, E. Apostolakis^b, K. Perrakis^a; ^aDept. of Mech. Engineering & Aer/tics, ^bCardiothoracic Surgery Clinic, Univ. of Patras, Greece

61. Mathematical and experimental development of two types of stent models for fluid dynamical investigations #6135

Barbara Roehrbauer^a, Thomas Schratzenstaller^b, Erich Wintermantel^b, Rosaire Mongrain^a; ^aDept. of Mechanical Engineering, McGill Univ. Montreal, Canada; ^bChair of Medical Engineering, Technical Univ. Munich, Germany

62. Design of a test facility to replicate the transient flow in arterial systems #6676

Joao Fernandes^a, Ana Carneiro^a, Jose Teixeira^a, Senhorinha Teixeira^b, Eurico Seabra^a
^aUniv. of Minho, Dept. of Mechanical Engineering, Guimarães, Portugal; ^bUniv. of Minho, Dept. of Production Systems, Guimarães, Portugal

63 Combined experimental and computational determination of flow in coronary arteries #7560

K L Lee^a, D. J. Doorly^a, D. Firmin^b; ^aDept. of Aeronautics; ^bCardiovascular Magnetic Resonance, National Heart & Lung Institute, Imperial College London, London, UK

14.9. Heart Valves and Protheses Posters

Session Organizers: Kristen, Billiar, Ajit Yoganathan

64. Computer-aided engineering of a bioartificial aortic valve #7220

Michael C. Evans^a, Hari Radhakrishnan, Robert T. Tranquillo Victor H. Barocas; Dept of Materials Science, Univ. of Minnesota, Minneapolis, MN, USA; ^bDept of Biomedical Engineering, Univ. of Minnesota, Minneapolis, MN, USA

65. An Improved Transverse Isotropic Hyperelastic Material Model for Simulation of Mitral Valve Response #4719

Victorien PROT, Bjørn Skallerud; Faculty of Engineering Science and Technology, Department of Structural Engineering, NTNU Trondheim, Norway.

66. Structural and biaxial mechanical properties of decellularized aortic valve leaflets #7408

Erinn M. Joyce, Jun Liao, Michael S. Sacks; Engineered Tissue Mechanics Laboratory, Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, USA

67. Software simulation of edge-to-edge mitral valve repair technique #4471

Andrea Avanzini^a, Giorgio Donzella^a, Roberto Bussola^a, Carlo Fucci^b, Mechanical Engineering Department, University of Brescia, Italy; ^b Divisione Cardiochirurgia, Spedali Civili, Brescia, Italy

68. Influence of Valsalva sinus on flow field around the aortic valve and the valve characteristics

(Quantitative evaluation by experiments in vitro using a realistic model) #4225

Tsutomu TAJIKAWA^a, Kenkichi OHBA^a, Shin-ichi IIDA^b, Masataka YOSHIDA^c and Fuyo TSUKIYAMA^c

^aDept. of Mech. Systems Eng., Kansai Univ., Osaka, Japan; ^b Graduate school of Kansai Univ., Osaka, Japan; ^c Dept. of Thoracic & Cardiovascular Surgery, Osaka Medical College, Osaka, Japan

69. Withdrawn

70. Generalized criterion for in vitro testing of artificial heart valves #6298

Jozef Wojnarowski^a, Kryspin Mirotka^b, ^aSilesian University of Technology, Gliwice, Poland; ^bUniversity of Bielsko-Biala, Bielsko-Biala, Poland

71. Automatic heart valve qualification tester - new mechanical construction and control strategy based on artificial intelligence methods #6372

Paweł Kostka^{a,b}, Zbigniew Nawrat^{a,c}, Zbigniew Malota^a; ^a Foundation of Cardiac Surgery Development, Zabrze, Poland; ^b Silesian University of Technology, Gliwice, Poland; ^c Silesian Medical Academy, Zabrze, Poland

72. Mechanical testing of a new suture configuration for the replacement of chordae tendineae #5973

Simona Celi^a, Francesca Di Puccio^a, Pietro Bajona^b, Daniele Maselli^b; Department of Mechanical, Nuclear and Production Engineering, University of Pisa, Italy; ^b Department of Cardiac Surgery, Azienda Ospedaliera Universitaria Pisana, Pisa, Italy.

73. Flow-Induced Flutter of Prosthetic Heart Valves #5866

Kakani Katija^a, Morteza Gharib^b, John O. Dabiri^b; ^a Bioengineering, California Institute of Technology, Pasadena, CA, USA; ^b Graduate Aeronautical Laboratories (GALCIT) and Bioengineering, California Institute of Technology, Pasadena, CA, USA

74. Large-Eddy Simulations of Fluid-Structure Interactions in Prosthetic Heart Valves #6638

Antonio Cristallo^{a,b}, Elias Balaras^a, Roberto Verzicco^b and Ajit Yoganathan^c; ^aDepartment of Mechanical Engineering, University of Maryland, College Park, MD, USA; ^bDipartimento di Ingegneria Meccanica e Gestionale, Politecnico di Bari, Bari, Italy; ^cWallace H. Coulter School of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, USA

75. Non-invasive assessment of leaflet deformation in heart valve tissue engineering #5067

J. Kortsmit, M.C.M. Rutten, F.P.T. Baaijens; Eindhoven University of Technology, Department of Biomedical Engineering, Eindhoven, The Netherlands

14.10.1 Large Vessel Fluid Mechanics-Implants and Devices Posters

Session Organizers: Hans-Henning Eckstein, Dr. Berger

76. Investigation of the fluid dynamical properties of helical pipes from a mixing perspective #5986

Andrew Cookson, Denis Doorly, Spencer Sherwin; Department of Aeronautics, Imperial College, London, UK

14.11. Mechanobiology of Vascular Walls and Cells Posters

Session Organizers: Masaaki Sato, Mort Friedman

77. Shear stress protects against endothelial regulation of vascular smooth muscle cell migration in a co-culture system #5031

Zong-Lai Jiang, Han-Qin Wang, Lang-Xian Huang, Ming-Juan Qu, Zhi-Qiang Yan, Bo Liu, and Bao-Rong Shen Institute of Mechanobiology & Medical Engineering, School of Medicine, Shanghai Jiao Tong University, Shanghai, China

78. Measurement of dynamic deformability of erythrocyte with counter rotating rheoscope #4951

Shigehro Hashimoto^a, Takatugu Furukawa^a, Shuichi Mochizuki^a, Naoki Ogawa^a, Hajime Otani^b, Hiroji Imamura^b, Toshiji Iwasaka^b; Biomedical Eng, Osaka Inst Tech, Osaka, Japan; ^b Kansai Medical University, Moriguchi, Japan

79. Valvular interstitial cell mechanobiology: effects of substrate stiffness #6990

Angela Throm^{a,b}, Heather Hinds^c, Kristen Billiar^{a,d}; ^aDept of Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA, USA; ^bGraduate School of Biomedical Sciences, UMass Medical School, Worcester, MA, USA; ^cDept of Biology and Biotechnology, Worcester Polytechnic Institute, Worcester, MA, USA; ^dDept of Surgery, UMass Medical School, Worcester, MA, USA

80. K_{ATP} channels mediate the NO-buffering capacity on the low-frequency variability of arterial pressure via the baroreflex #7720

Noriko Iida; Department of Biomedical System Engineering, Graduate School of Information, Science and Technology, Hokkaido University, Sapporo, Japan

81. Fluid Motion in an Orbiting Culture Dish #6688

R. Eric Berson^a, Matthew R. Purcell^a, M. Keith Sharp^b; ^a Department of Chemical Engineering, ^b Biofluid Mechanics Laboratory, Department of Mechanical Engineering, University of Louisville, KY, USA

82. Effects of plane shock wave on the endothelial cells in vitro using shock tube #6759

Masaaki Tamagawa, Seiya Iwakura, Sirou Suetsugu, Ichiro Yamanoi; Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Kitakyushu, Japan

14.13. Vascular Wall Mechanics-Posters**Session Organizers: Gerhard Holzapfel, Takeo Matsumoto****83. Mechanical testing for the evaluation of arteries compressibility #5151**

Simona Celi, Francesca Di Puccio, Paola Forte; Department of Mechanical, Nuclear and Production Engineering, University of Pisa, Italy

84. Composite model of healthy arterial wall: material identification based on uniaxial traction tests and morphometric analysis #5375

Libuše Demjančuková^{a,b}, Eduard Rohan^a, Robert Cimrman^a, Jiří Polanský^b, Zbyněk Tonar^a, Olivier Boiron^b
^a Department of Mechanics, Faculty of Applied Sciences, University of West Bohemia, Pilsen, Czech Republic
^b Equipe de Biomécanique Cardiovasculaire, IRPHE, Marseille, France

85. The effect of SNP and Isoptin on viscoelastic characteristics of rat aorta in vitro #5310

Pavel Antonov^a, Mariya Antonova^b, Nadja Antonova^c, Lubomir Kasakov^b; ^a National Cardiology Hospital, Sofia, Bulgaria; ^b Institute of Physiology, Bulgarian Academy of Sciences, Sofia, Bulgaria; ^c Institute of Mechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria

86. Beat to beat assessment of common carotid artery stiffness by noninvasive measurement #7419

Tiina Lyyra-Laitinen, Joonas Vanninen, Tomi Laitinen; Department of Clinical Physiology and Nuclear Medicine, Kuopio University Hospital, Kuopio, Finland

87. Endocytosis and degradation of LDL-Cholesterol in human endothelial cells under shear stress: a Forster-type resonance energy transfer (FRET) study #7648

M. Traoré^a, A. Kadi^a, S. Fawzi-Grancher^a, D. Dumas^a, L. Marchal^a, R. Sun^b, J-F. Stoltz^a, S. Muller^a
^a Bioengineering, LEMTA-UMR 7563 CNRS, Faculté de Médecine, Vandoeuvre-lès-Nancy, France; ^b Research Institute of Clinical Medical Sciences, China-Japan Friendship Hospital, Beijing, China

15. Microcirculation Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Chairs: S. Wada, T. Secomb

15.1 Hemodynamics and Angiogenesis/Angioadaptation Posters**1. Mathematical models of capillary sprouts in developing microvascular networks #4632**

S. R. Pop^a, S. L. Waters^a, G. Richardson^a, L. Lucas^b, C. A. Mitchell^b & O. E. Jensen^a; ^a School of Mathematical Sciences, University of Nottingham, Nottingham, UK; ^b School of Biomedical Sciences, University of Ulster, Coleraine, UK

2. An Endothelial Mechanism for Control of Capillary Flow Speed #6502

Nicholas M. Scheidler^a, Samuel S. Shin^a, Christopher D. Bertram^b, Frank A. Delano^a, Geert W. Schmid-Schönbein^a; ^aDepartment of Bioengineering and The Whitaker Institute of Biomedical Engineering, University of California San Diego, La Jolla, USA; ^bGraduate School of Biomedical Engineering, The University of New South Wales, Sydney, Australia

3. Effect of hypoxia on micro-vessel formation in vitro #5600

Ikuko Yoneyama^a, Akinori Ueda^a, Hiroko Kajiwara^b, Masatoshi Tsuchiya^b, Kenichi Kokubo^c, Hirotsugu Kobayashi^c, Mariko Ikeda^a, Kazuo Tanishita^a; ^a Keio University, Kanagawa, Japan; ^b Yamato Scientific Co. Ltd., Tokyo, Japan; ^c Kitasato University, Kanagawa, Japan

4. Remodelling of the complete circle of Willis in male Wistar rats #5098

Marc Vorstenbosch, Annelieke Schepens-Franke, Berend Hillen, Jan Kooloos; Department of Anatomy, UMC St Radboud, Nijmegen, The Netherlands

15.3. Flow in Microchannels and Microvessel Networks Posters**5. Assessment of flow velocity and hematocrit distribution in a model of a fish gill #7215**

U. Kertzscher, L. Goubergrits, K. Affeld, and U. Doll; Biofluidmechanics Laboratory, Charité, Berlin, Germany

6. Modeling of Microcirculation and Thrombosis by Dissipative Particle Dynamics (DPD) #4843

Nenad Filipovic^{a,b}, Milos Kojic^{a,b}, Akira Tsuda^a; ^aHarvard School of Public Health, Boston MA, USA; ^bUniversity of Kragujevac, Serbia

7. High-speed videomicroscopic *in vivo* analysis of human capillary vessel loop #4706

Toshiyuki Sanada^a, Masao Watanabe^a, Yoshinori Sawae^b, Masutaka Furue^c; ^aDepartment of Mechanical Engineering Science, Kyushu University, Fukuoka, Japan; ^bDepartment of Intelligent Machinery and Systems, Kyushu University, Fukuoka, Japan; ^cDepartment of Dermatology, Kyushu University, Fukuoka, Japan

8. Identification of the wall material parameters of a bio-artificial capsule with the compression test and an inverse method #4832

Mohamed Rachik^a, Dominique Barthès-Biesel^b; ^aLaboratoire Roberval, Université de Technologie de Compiègne, Compiègne, France; ^bUMR CNRS 6600, Université de Technologie de Compiègne, Compiègne, France

9. Bioartificial capsule flowing out of a cylindrical pore #4339

Yannick Lefebvre, Dominique Barthès-Biesel; CNRS UMR 6600, Laboratoire de Biomécanique et Génie Biomédical, Université de Technologie de Compiègne, France

10. Experimental investigation of the behaviour of bioartificial capsules inside rectangular and cylindrical cross section microchannels #4735

Johann Walter^a, Eric Leclerc^a, Laurent Griscom^b, Florence Edwards Levy^c and Dominique Barthès-Biesel^a
^aCNRS UMR 6600, Laboratoire de Biomécanique et Génie Biomédical, Université de Technologie de Compiègne, France; ^bCNRS UMR 8029, BIOMIS, ENS Cachan, France; ^cCNRS FRE-2715, Laboratoire de Pharmacotechnie, Université de Reims, France

15.4 Microvascular Glycocalyx and Molecular Fluid Structure Interaction Posters

11. Using fluorescent micro-particle image velocimetry to interrogate the surface glycocalyx on cultured endothelial cells in collagen microchannels #7017

D. Potter, J. Tien, E.R. Damiano; Boston University, Boston, USA

12. Changes in glycocalyx affect shear rate and stress distribution on endothelial cells: a theoretical study #6863

Wen Wang; Medical Engineering Division, Department of Engineering, Queen Mary, University of London, London, UK

15.5 Lymphatic Biomechanics and Tissue Stresses Posters

13. Design and characterization of a fluid device for endothelial cell behaviour in 3D-fibrin-based matrices #5434

Martin Aicher^a and Heike Hall^b; ^aTechnical University of Munich, Munich, Germany; ^bCells and BioMaterials, Department of Materials, Swiss Federal Institute of Technology of Zurich, Switzerland

14. Modelling of the Rheological Behaviour of Human Blood By The Modified Model Of Rabinovich #7232

N. Antonova, L. Hadjnikov, I. Ivanov, Ya. Ivanov; Institute of Mechanics and Biomechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria

15. Development of fine alginate gel particles as model/artificial blood cells and measurement of its elastic characteristics #7359

Kenkichi Ohba, Atsushi Sakurai, Tsutomu Tajikawa, Kiyoshi Bando, Kenji Maeda and Noriyuki Yamakawa
Department of Mechanical and Systems Engineering, Kansai University, Suita, Japan

16. Diagnostic and therapeutic significance of blood and blood cells electric properties #6825

N. Antonova^a, P. Riha^b, I. Ivanov^a; ^aInstitute of Mechanics and Biomechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria; ^bInstitute of Hydrodynamics, Academy of Sciences of the Czech Republic, Prague, Czech Republic

17. Computational Fluid-Structure Interaction Analyses for Enhanced Microcantilever Detection within a Fluidic Cell #6689

Khalil Khanafer^a, Joseph Bull^a, Ramon Berguer^{a,b}, and Darline Elreda^c; ^aDepartment of Biomedical Engineering, University of Michigan, Ann Arbor, MI, USA; ^bSection of Vascular Surgery, University of Michigan, Ann Arbor, MI, USA; ^cMichigan Department of Community Health, Lansing, MI, USA

18. Reduced myocardial flow heterogeneity under exchange transfusion with liposomal hemoglobin explained by a branching tree model with effective blood viscosity and red cell distribution #6550

T. Matsumoto, K. Mano, S. Adachi, N. Hanafusa, H. Naito, M. Tanaka; Bioengineering Division, Osaka University Graduate School of Engineering Science, Toyonaka, Japan

19. Multiscale combination of microcontinual and microfluidic biorheological studies of blood with suspended microspheres #4058

E.Yu. Taran, Yu.V. Pridatchenko, V.A. Gryaznova; Faculty of Mechanics and Mathematics, Kyiv Taras Shevchenko National University, Kyiv, Ukraine.

20. Association and dissociation rates of adhesion for red blood cells in the presence of large polymers #5263

Bjoern Neu^a, Herbert J. Meiselman^b; ^aDivision of Bioengineering, Nanyang Technological University, Singapore; ^bDepartment of Physiology and Biophysics, University of Southern California, Los Angeles, USA

16. Reproductive Biomechanics Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: David Elad, Roger C Young

1. Finite element studies of the deformation of the pelvic floor #7810

J.A.C. Martins^a, M.P.M. Pato^b, E.B. Pires^a, R.M.N. Jorge^c, M. Parente^c, T. Mascarenhas^d; ^aI.S.T., ^bI.S.E.L., Lisbon, Portugal; ^cF.E.U.P., ^dF.M.U.P., Oporto, Portugal

2. About a medical device for non-invasive reversible vasectomy #6419

Carmen Tanase, Carine Gachon, Patrick Delassus; Department of Mechanical&Industrial Engineering, Galway Mayo Institute of Technology, Galway, Ireland

17.6 Biomechanics in Nature Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Tim Pedley, Johan van Leeuwen

1. A novel tool for visualisation and analysis of complex plant structures #7391

Emma Johnson, Viet Bui Xuan; School of Engineering and Computer Science and Mathematics, University of Exeter, Exeter, UK

2. The shark skin effect in wall bounded flows – How do we design passive flow control to save energy in technical applications? #6475

Bettina Frohnepfel^a, Peter Lammers^b, Jovan Jovanović^a, Franz Durst^a; ^aLSTM - Institute of Fluid Mechanics, Friedrich-Alexander-University Erlangen-Nuremberg, Germany; ^bHLRS - High Performance Computing Center Stuttgart, Germany

3. Effects of gradient of cytokine concentration on chemotaxis of suspended neutrophil in liquid #5463

Masaaki Tamagawa^a, Satoshi Harada^a, Kusuhiko Mukai^b, Yoshinori Furukawa^c; ^aGraduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Kitakyushu, Japan; Kurosaki Harima Co. Ltd, Kitakyushu, Japan; Institute of Low Temperature Science, Hokkaido University, Sapporo, Japan

4. Identification of new lift generation mechanism in flapping flight #6524

J V Shreyas and K R Sreenivas; Engineering Mechanics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India

5. Surface flow topology from tufts method in competitive swimming #6489

H. Zaïdi^a, R. Taïar^b, C. Popa^a, S. Fohanno^a, G. Polidori^a; ^aLaboratoire de Thermomécanique, UFR Sciences, Université de Reims, Reims, France; ^bLaboratoire d'Analyse des Contraintes Mécaniques, UFR STAPS, Université de Reims, Reims, France

6. New approach by infrared thermography to measure the skin temperature of a male competitive swimmer #6484

H. Zaïdi^a, R. Taïar^b, S. Fohanno^a, G. Polidori^a; ^aLaboratoire de Thermomécanique, UFR Sciences, Université de Reims, Reims, France; ^bLaboratoire d'Analyse des Contraintes Mécaniques, UFR STAPS, Université de Reims, Reims, France

7. Withdrawn

8. Investigations of a flapping wing model #5620

T. Hubel, C. Tropea, Chair of Fluid Mechanics and Aerodynamics, Technical University of Darmstadt, Germany

9. Investigation of oscillatory and undulatory fin-like motion by means of numerical simulation #4324

Wojciech Kowalczyk, Antonio Delgado; Lehrstuhl für Fluidmechanik und Prozessautomation, Technische Universität München, Germany

10. Flow generated during a dolphin kick. –A PIV-Analysis #5026

Reinhard Blickhan^a, Markus Buchner^b, Boris Chagnaud^c, Klaus Reischle^b; ^aDept. of Motion Science, Friedrich Schiller University, Jena, Germany; ^bInst. of Sport Science, University of Heidelberg, Heidelberg, Germany

^cInst. Of Zoology, University of Bonn, Bonn Germany

11. Biomechanical study of grasping among Primates: evolutionary perspectives #4086

Emmanuelle Pouydebat ^a, Philippe Gorce ^b, Vincent Bels ^a

^a MNHN, USM 302, Paris, France; ^b LESP, Université de Toulon et du Var, La Garde, France

12. Validation of a computer model of the equine frontlimb for simulating tendon strains in relation to bone and joint geometry #7407

Renate Weller^a, Glen Lichtwark^a, Rachel Payne^a, Thilo Pfau^a, Alan Wilson^{a,b}; ^aStructure and Motion Lab, The Royal Veterinary College, University of London, UK; ^bStructure and Motion Lab, University College London, The Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex, UK

13. Compliance in the hindlegs and individual joints of goats during extreme vertical jumping #7122

David V. Lee, Edwin Yoo, and Andrew A. Biewener; Concord Field Station, Harvard University, Cambridge, MA, USA

14. Statistical shape modelling of long bones for biomechanical analyses #6684

YHM Yang^{a,b}, AM Hill^a, AMJ Bull^a, D Rueckert^b; Departments of Bioengineering^a and Computing^b, Imperial College London, UK

15. Prediction of Ground Reaction Forces During Quadrupedal Animal Locomotion Using Accelerometers and Gyroscopes #6618

Lei Ren, Thilo Pfau, Kevin Parsons, Alan Wilson, John R. Hutchinson; The Royal Veterinary College, University of London, London, UK

16. A comparison between tendon and muscle fibre strain and strain rate in two ankle extensor muscles in the rat during treadmill locomotion #4593

E.F. Tole, J.M. Wakeling; The Structure and Motion Laboratory, The Royal Veterinary College, Hatfield, UK

17. The relation between running economy and kinematical variables: influence of body mass in competitive runners #6426

Leonardo Alexandre Peyré-Tartaruga, Maria Helimara de Medeiros, Marcelo Coertjens, Marcus Peikriszwili Tartaruga, Luiz Fernando Martins Kruei; Exercise Research Laboratory, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

18. The microstructure and mechanical properties of human fingernails #6219

Laura Farran^a, Stephen Eichhorn^b, Roland Ennos^c; ^{a, b} School of Materials, University of Manchester, Manchester, UK; ^c Faculty of Life Sciences, University of Manchester, Manchester, UK

18.8 Trends in Cranial and Spinal Biomechanics Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Hiroshi Ujiie, Hans-Jakob Steiger

1. Some mathematical models of reflex-metameric therapy #6383

I. Selezov^a, V. Bersenev^b; ^a Department of Wave Processes, Institute of Hydromechanics, Nat. Acad. Sci., Ukraine, Kiev; ^b Institute of Pain Problems, Kiev, Ukraine

2. Simulating Intra-ventricular drug delivery: An experimental investigation using a geometrically accurate, physical model of the Human Ventricular System #4335

L. Howden^a, D. Giddings^a, A. Aroussi^a, H. Power^a, M. Vloeberghs^b, D. Walker^b & M. Garnett^c

^a School of Mechanical, Materials and Manufacturing Engineering, University of Nottingham, UK; ^b School of Human Development, Faculty of Medicine and Health Sciences, University of Nottingham, UK; ^c School of Pharmacy, University of Nottingham, UK

3. The importance of sensomotorical systems in biomechanics and orthopaedics #7165

^aWolfgang Plitz, Gregor Pfaff; ^aLabor für Biomechanik und Experimentelle Orthopädie der Ludwig-Maximilians Universität München, Klinikum Großhadern, Munich, Germany

19.9 Biotransport Poster Session

Wednesdy, Aug 2 - Thursday, Aug. 3

16:00-17:30

Track Coordinators: John Tarbell, John Bischof

1. Mechanical analysis on the role of the endothelial surface glycocalyx in microvessel permeability #5274

Masako Sugihara-Seki, Takeshi Akinaga, Tomoaki Itano; Kansai University, Osaka, Japan

2. An electrostatic model for osmotic flow through charged pores #6653

Masako Sugihara-Seki, Takeshi Akinaga, Tomoaki Itano; Kansai University, Osaka, Japan

3. Phase Doubling During Liebau Pumping in the Pressure Mode #7614

David Auerbach^a, Maximilian Moser^{a,b,c}; ^aDepartment of Physiology, Karl-Franzens University, Graz, Austria; ^bHumanomed Centre Althofen, Althofen, Austria; ^cInstitute for Non-Invasive Diagnosis, Joanneum Research, Weiz, Austria

4. Mass transport across the arterial wall from drug eluting stents #6206

Rossella Balossino^a, Gabriele Dubini^a, Rodney Hose^b, Patricia Lawford^b, Andrew Narracott^b; ^aLaboratory of Biological Structure Mechanics, B Structural Engineering Department, Politecnico di Milano, Milan, Italy; ^bMedical Physics and Clinical Engineering, University of Sheffield, Royal Hallamshire Hospital, Glossop Road, Sheffield, United Kingdom

5. Measurement of the energy metabolism of HepG2 cells for designing engineering tissues allowing high density cultivation #5748

Ryo Shirakashi, Tomomi Yoshida, Christophe Provin, Kiyoshi Takano, Yasayuki Sakai, Teruo Fujii
Institute of Industrial Science, The University of Tokyo, Tokyo, Japan

6. Layer by layer adsorption of Trypsin onto Polyelectrolytemicrocapsules (PEMC) #7370

Hans Bäuml^a, E. Garbers^a, R. Georgieva^b; ^aInstitute of Transfusion Medicine, Charité - Universitätsmedizin Berlin, Germany; ^bMax Planck Institute of Colloids and Interfaces, Potsdam-Golm, Germany

7. Nutrient Transport And Consumption Under Intracorneal Lens Wear #5843

Xabier Larrea^a, Philippe Büchler^a, Sigbjørn Olsen^a; ^aMEM Research Center, University of Bern, Bern, Switzerland

8. Three Dimensional Infinite Element Model to Study Thermal Disturbances in Human Peripheral Region Duetto Tumor #4466

K.R.Pardasani, Madhvi Shakya; Department of Mathematics, Maulana Azad National Institute of Technology, Bhopal, INDIA

9. Transport-reaction processes in strongly inhomogeneous media. The multi-scale modeling #5306

G. Kolpakov; Siberian State University of Telecommunications and Informatics, Novosibirsk, Russia

20.7 Biomechanics of Organs Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Track Coordinators: Mark Johnson, Rich Hart

1. Biofluidmechanical simulation of the blood flow in retinal arteries influenced by microirregularities in longitudinal profiles of arterial walls 36853

K. E. Kotliar^a, R. Schilling^b, D. Anciger^b, J. Einzinger^b, I.M. Lanzl^a; ^aDepartment of Ophthalmology and ^bDepartment of Fluid Mechanics, Munich University of Technology, Munich, Germany

2. Biomechanical properties of retina #6744

Gregor Wollensak, Helmholtz-Research Institute for Eye Diseases, Moscow, Russia

3. A computational model of the microcirculation in the ocular lens #6428

Duane T K Malcolm, Peter J Hunter; Bioengineering Institute, The University of Auckland, Auckland, New Zealand

4. Biomechanical modeling of the pathogenesis of keratoconus #4378

Ran Shalom^a, Yossi Mandel^b, David Elad^a, Amit Gefen^a; ^aDepartment of Biomedical; Engineering, Tel Aviv University, Israel; ^bDepartment of Ophthalmology, Wolfson Medical Center, Holon, Israel

5. Variation in noise recorded distally to a urethral obstruction related to cross-sectional area and flow pattern #4499

Tim Idzenga, Johan JM Pel, Ron van Mastrigt; ErasmusMC, Dept. of Urology, Rotterdam, The Netherlands

6. Causes for increased residual urine after non-invasive urodynamics using the condom catheter method 4560

Sandra de Zeeuw, Ron van Mastrigt; Erasmus MC, Dept Urology, Sector Furore, Rotterdam, The Netherlands

7. Biofilm and encrustation development on stents and catheters #5209

J. H. Siggers, J. A. D. Wattis, L. J. Cummings and S. L. Waters; School of Mathematical Sciences, University of Nottingham, Nottingham, UK

8. Intravesical Bladder Volume Measurement: Device Design And Testing #4893

Paul C. Fletler^{a,b,c,d}, Bradley C. Gill^{a,b,c}, Paul Zaszczurynski^{a,b,c}, Alfred Perlin, Ph.D.^{c,d}, Daniel Yachia, M.D.^d, R. Sam Butler^a, M.S., Margot S. Damaser, Ph.D.^{a,b,c,e}; ^aCleveland Clinic Foundation, Cleveland, OH, USA; ^bResearch Service, Louis Stokes Cleveland VA Medical Center, Cleveland, OH, USA; ^cResearch Service, Hines VA Hospital, Hines, IL, USA; ^dDynaventions, Inc., Chicago, IL, USA; ^eCase Western Reserve University, Cleveland, OH, USA

9. Biomechanical description of the breast feeding #6371

V.M. Tverier^a, E.Y. Simanovskaya^b, Y.I. Nyashin^a, M.I. Shmurak^a, A.R. Podgaets^c; ^aPerm State Technical University, Perm, Russia; ^bPerm State Medical Academy, Perm, Russia; ^cDelft University of Technology, Delft, Netherlands

10. Application Of An Uncoupled Damage Model For Anisotropic Biological Soft Tissues #5213

Begoña Calvo, Estefanía Peña, Miguel Angel Martinez, Manuel Doblaré; Group of Structures and Materials Modelling (GEMM), Aragón Institute of Engineering Research (I3A), University of Zaragoza, Spain

11. Biomechanics of mammographic compression: analysis of contact theories and the choice of reference state #5452

J.H. Chung, V. Rajagopal, P.M.F. Nielsen, M.P. Nash; The University of Auckland, Bioengineering Institute, Auckland, New Zealand

12. withdrawn**13. Transverse Quasi-Linear Viscoelastic Modeling of Rat Sciatic Nerves and Its Applications #4550**

Rung-Jian Chen^a, Ming-Shaung Ju^a, Chou-Ching K. Lin^b; ^aDept. of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan; ^bDept. of Neurology, National Cheng Kung University Hospital, Tainan, Taiwan

14. Dynamic properties of a viscoelastic soft tissue layer contacting with a vibrating piston #4232

Victor T. Grinchenko, Valery N. Oliynik; Institute of Hydromechanics of NAS of Ukraine, Kyiv, Ukraine

15. Changes in structure and dynamic mechanical characteristics after glutaraldehyde treatment of bovine pericardium for use as biomaterial #4210

D. Mavrilas^a, E. A. Sinouris^b, N. Papageorgakopoulou^b; ^aDept. of Mech. Engineering & Aeronautics, ^bDept. of Chemistry, University of Patras, Greece.

16. Mechanical response of fingertip and nail to compressive force #4148

Naotaka Sakai, Satoshi Shimawaki; Biomechanics Laboratory, Utsunomiya University, Japan

17. The molecular conformations of fibrous elastin and other proteins # 5682

EM Green, RE Ellis and CP Winlove; University of Exeter, School of Physics, Exeter, UK

18. Modelling the Skin-Breast Tissue Interface #5667

Vijayaraghavan Rajagopal, Yme Kvistedal, Jae-Hoon Chung, Martyn P. Nash and Poul M.F. Nielsen
Bioengineering Institute, University of Auckland, Auckland, New Zealand

19. Computational model of the convection enhanced delivery of large molecules into the striatum of the adult brain #6673

David K. Stiles; Medtronic Neurological, Minneapolis, USA

20. Fat pad volume in the forefoot of diabetic patients with recurrent ulcers #7274

Azita Tajaddini, Heather Angel, Georgeanne Botek, Brian L. Davis; Dept. Biomedical Engineering (ND20), Orthopedic Research Center, Cleveland Clinic Foundation, Cleveland, Ohio, USA

21. The Internal Membranes Of The Human Head Protect The Brain During Impact #7463

Svein Kleiven; Ctv - Centre For Technology In Health, Royal Institute Of Technology, Novum Research Park, Huddinge, Sweden

22. Finite Element 2D Nonlinear Analysis of Human Fingertip under Static Loading to Asses a Model of Tactile Sensation #5548

Ali Asadi Nikooyan^a, Amir Abbas Zadpoor^a, Shervin Jannesar^b; ^aDepartment of Biomedical Engineering, Amirkabir University of Technology, Hafez Ave., Tehran, Iran; ^bDepartment of Mechanical Engineering, The University of Tehran, North Karegar Ave., Tehran, Iran

Thread 1: Computational Methods in Biomechanics and Mechanobiology**Poster Session**

Wednesdy, Aug 2 - Thursday, Aug. 3

16:00-17:30

Thread organizers: Gerhard A. Holzapfel, Prof. Tim David

1. A micromechanical model for cell deformation in shearing flows using Smoothed Particle Hydrodynamics #5732

Paul Cleary and Matt Sinnott; CSIRO Mathematical and Information Sciences, Melbourne, Australia

2. 3D motions of trunk and pelvis during transfemoral amputee gait #7268

Hélène Goujon^a, Emilie Sapin^a, Pascale Fodé^b, François Lavaste^a; ^aLaboratoire de Biomécanique, ENSAM-CNRS, Paris, France; ^bCentre d'Etudes et de Recherche sur l'Appareillage des Handicapés, Woippy, France

3. Geometric Changes In Heart Valve Interstitial Cell Nuclei With Transvalvular Pressure #7524

Hsiao-Ying Shadow Huang and 1Michael S. Sacks; Department of Bioengineering, University of Pittsburgh, USA

4. Matrix remodeling is essential for chondrocyte hypertrophy #4179

René C.C. van Donkelaar, Wouter Wilson; Dept Biomedical Engineering, Eindhoven University of Technology, Netherlands

5. Withdrawn**6. Risk stratification in carotid atheroma: Which is more important for patient selection, luminal stenosis or plaque morphology? #4635**

Zhi-Yong Li ^{a,b}, Jonathan H Gillard ^a; Departments of Radiology ^a and Engineering ^b, University of Cambridge, UK

7. Computational Analysis of drug-eluting Stents, from Deployment to Drug Delivery #6026

Dale Berry ^a, Vikram Dhurva ^b, Marc Horner ^c, Ralf Kroeger ^d, Subham Sett ^a, and Sandy Stewart ^e

^a Abaqus Inc., Providence, RI, USA; ^b Abaqus Central, West Lafayette, IN, USA; ^c Fluent Inc., Evanston, IL, USA ; ^d Fluent Deutschland, Darmstadt, Germany; ^e USFDA Center for Devices and Radiologic Health, Gaithersburg, MD, USA

8. A computational model of in-stent restenosis #5724

C. Lally^a, P.J. Prendergast^b; ^aSchool of Mechanical & Manufacturing Engineering, Dublin City University, Dublin, Ireland; ^bTrinity Centre for Bioengineering, Trinity College Dublin, Dublin, Ireland

9. Simulation of Congenital Cardiac Anomalies: Implications to the Coupling of the Left ventricle with the Systemic Circulation #4639

Zahra Asgharpour^a, Farivar Fazelpour^b, ^aBiomedical Engineering Dept. Azad University Science and Research Branch, Tehren, Iran ^bMechanical Engineering Dept., K.N. Toosi University of Technology, Tehran, Iran

10. Gradient decomposition method for the mechanical analysis of morphogenesis #5185

José Muñoz^a, Kathy Barrett^{b,c} and Mark Miodownik^d; ^aDept. of Appl. Mathematics III, Univ. Polit. Catalonia, Barcelona, Spain; ^bDept. of Anatomy and Developmental Biology. Univ. College London, London, UK; ^cDept. of Biochemistry and Molecular Biology. Univ. College London, London, UK; ^dDiv. Engineering. King's College, London, London, UK

11. Forced Vibration Analysis of Harmonically Excited Nonlinear Viscoelastic Biomaterials #7613

Amir Abbas Zadpoor, Ali Asadi Nikooyan; Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran

12. Investigation of Tactile Device Pin and Operator Fingertip Contact Interaction #4285

Vytautas Grigas, Rymantas Tadas Tolocka, Pranas Ziliukas; Department of Engineering Mechanics, Kaunas University of Technology, Kaunas, Lithuania

13. Anisotropic internal bone remodelling model based on the 3-D activity of BMUs #6084

J.M Reina ^a, J.M. García-Aznar ^b, J. Domínguez ^a, M. Doblaré ^b; ^a Department of Mechanical Engineering, University of Seville, Escuela Superior de Ingenieros, Sevilla, Spain; ^b Group of Structural Mechanics and Material Modelling, Aragon Institute of Engineering Research (I3A), University of Zaragoza, Zaragoza, Spain

14. The Early Bone epiphysis formation: a numerical simulation #4848

Garzón-Alvarado, D. A.^{a,b}; García-Aznar, J. M.^a; Doblaré, M.^a; ^aGroup of Structural Mechanics and Materials Modelling, Aragón Institute of Engineering Research (I3A), University of Zaragoza; ^b Department of Mechanical Engineering, National University of Colombia, Bogota, Colombia

15. Simulation of bone density remodelling for the assignment of material parameters to finite element models of periprosthetic bone #7045

Christian Voigt ^a, Matthias Ellguth ^b, Roger Scholz ^a, Carsten Klöhn ^b; ^a Department of Orthopaedic Surgery, University of Leipzig, Leipzig, Germany; ^b Department of Mechanical and Power Engineering, Leipzig University of Applied Sciences, Leipzig, Germany

16. Virtual mechanical loading model to elucidate mechanobiological modulation of endogenous tissue engineering strategies #7601

Steven M. Kreuzer ^a, Ulf Knothe ^b, Melissa Knothe Tate ^{a,c}; ^a Department of Mechanical and Aerospace Engineering, Case Western Reserve University, Cleveland, United States of America; ^b Department of Orthopaedic Surgery, Cleveland Clinic, USA; ^cDepartment of Biomedical Engineering, Case Western Reserve University, Cleveland, United States of America

17. Fracture Toughness of Biological Interfaces #6590

Mikhail Perelmuter; Institute for Problems in Mechanics of RAS, Moscow, Russia

18. Biomechanical study of brace design effectiveness in right thoracic idiopathic scoliosis #6301

Julien Clin ^{a,b}, Carl-Éric Aubin ^{a,b}, Janet Ronsky ^c, Hubert Labelle ^b; ^aÉcole Polytechnique de Montréal, Montréal, Canada ; ^bSainte-Justine University Hospital Center, Montréal, Canada; ^cUniversity of Calgary, Calgary, Canada

19. Finite element analysis of compression in the human spine #7467

Cyril Saury ^a, Jana Richterova ^b, Philippe Young ^c; ^a IST Midi-Pyrénées (Institut Supérieur de Technologie), Toulouse, France ; ^b Simpleware Ltd, Exeter, UK; ^c University of Exeter, Exeter, UK

20. A Validated And A Calibrated Finite Element Model Of A Functional Spinal Unit Compared On Defect Situations #5634

Hendrik Schmidt^a, Frank Heuer^a, Joerg Drumm^b, Zdenek Klezl^c, Lutz Claes^a, Hans-Joachim Wilke^a

^a Institute of Orthopaedic Research and Biomechanics, University of Ulm, Germany; ^b Department for Neurosurgery, University Hospital of Saarland, Homburg, Germany; ^c Department of Trauma and Orthopaedics, University Hospitals Coventry and Warwickshire, UK

21. Effect of Laminectomy on Stability of Lumbar Spine – FEM study #6468

Petr Tichý^a, Zdeněk Horák^a, Jana Koukalová^a, Jiří Michalec^b; ^aLaboratory of Biomechanics, CTU in Prague, Fac. of Mechanical Eng., Prague, Czech Republic; ^bDept. of Mechanics CTU in Prague, Fac. of Mechanical Eng., Prague, Czech Republic

22. A level-set based medical image segmentation tool for the creation of spinal finite element models #5107

Alison Jones^a, Derek Magee^b, Andrew Bulpitt^b and Ruth Wilcox^a; ^aSchool of Mechanical Engineering, University of Leeds, Leeds, UK; ^bSchool of Computing, University of Leeds, Leeds, UK

23. Optimisation of FE model generation methods for reliable vertebrae representation #5101

Alison Jones and Ruth Wilcox; School of Mechanical Engineering, University of Leeds, Leeds, UK.

24. Withdrawn**25. Estimation Of Forces In Lumbar Spine and Associated Guy Wires #4009**

James A. Hodgdon^a, Chandra S. Putchu^b; ^aNavy Health Research Center, San Diego, CA, U.S.A.; ^bDepartment of Civil and Environmental Engineering, California State University, Fullerton, U.S.A.

26. Compact and Cancellous Bone behave as a "bimaterial beam model" of constant strength #6544

Nečnad Sesic^{a,b}, Milan Opalic^b, Vasilije Nikolic^c; ^aGeneral Hospital Karlovac, Dpt. of Surgery, A, Karlovac, Croatia; ^bFaculty of Mechanical Engineering and Naval Architecture, Zagreb, Croatia; ^cDep. of Anatomy, Faculty of Medicine, Osijek, Croatia

27. A Human Body Model For Movement Analysis Using Optoelectronic System #4212

^aTomislav Pribanic, ^bPeter Sturm, ^cPetar Bacic; ^aFaculty of electrical engineering and computing, University of Zagreb, Zagreb, Croatia; ^bINRIA Rhône-Alpes, Montbonnot St Martin, France; ^cBiomechanic laboratory of Peharec Polyclinic, Pula, Croatia

28. Anthropometrical approach to estimate a human body volume #4069

A.Gerina-Berzina^a, G.Diksite^a, Yu. Dekhtyar^a, J.Vetra^b; ^aRiga Technical University, Latvia; ^bRiga Paula Stradins University, Latvia

29. Physiologically-relevant boundary conditions #7170

Speirs AD, Heller MO, Taylor WR, Duda GN; Center for Musculoskeletal Surgery, Charité - Universitätsmedizin Berlin, Germany

30. A Three-Dimensional, Image-Based Dynamic Model of the Human Hindfoot Explains the Contribution of the Material Properties of Ligaments and Cartilage to Joint Non-linearity and Hysteresis #7029

Carl W. Imhauser^a, Sorin Siegler^b; ^aHospital for Special Surgery, New York, NY, USA; ^bDrexel University, Philadelphia, PA, USA

31. Advanced on-line registration for subject-specific motion analysis #6867

Victor Sholukha^{a,b}, Serge Van Sint Jan^a, Patrick Salvia^a, Fedor Moiseev^{a,b}, Marcel Rooze^a
^aDepartment of Anatomy, Université Libre de Bruxelles, Brussels, Belgium; ^bDepartment of Applied Mathematics, Polytechnical University, Saint Petersburg, Russia

32. Complete Muscle - Model of the Femur: Numerical Simulation and Validation #5308

Helwig P^a, Faust G^b, Hindenlang U^c, Herzog S^b, Südkamp N^a, Kröplin B^b; ^aDepartment Orthopädie und Traumatologie, Albert Ludwigs University Freiburg, Germany; ^bInstitut für Statik und Dynamik der Luft- und Raumfahrtkonstruktionen University Stuttgart, Germany; ^cLASSO Leinfelden-Echterdingen, Germany

33. Changes In The Mechanical Strength Of A Reconstructed Femur During Follow-Up: A Subject-Specific Finite Element Study #6573

Fulvia Taddei^a, Saulo Martelli^a, Laura Montanari^a, Valentina Greco^a, Alberto Leardini^b, Marco Manfrini^c, Marco Viceconti^a; ^aLaboratorio di Tecnologia Medica, ^bMovement Analysis Lab, ^cSkeletal Oncology Department, Istituti Ortopedici Rizzoli, Bologna, Italy

34. Rigorous estimation of neuromuscular degrees of freedom requires both fractal dimension and principal component analyses: Demonstration using hand motions #4488

Robert H. Clewley^a, Francisco J. Valero-Cuevas^b, John M. Guckenheimer^a, Robert V. McNamara III^b, and Veronica J. Santos^b; ^aDepartment of Mathematics, Cornell University, Ithaca, USA; ^bNeuromuscular Biomechanics Laboratory, Cornell University, Ithaca, USA

35. Real-Time Patient-Specific Evaluation Of Deep Plantar Tissue Stresses In The Diabetic Foot By Integration Of Shoe Pressure Measurements With The Hertz Contact Theory #4746

Eran Atlas^A, Ziva Yizhar^B, Amit Gefen^a; Depts. Of ^Abiomedical Engineering And ^Bphysical Therapy, Tel Aviv University, Israel

36. Bioresorbable fixation plates as alternative in human mandibular surgery? #6224

Wolfgang Krach^a, Arne Wagner^b, Kaan Yeric^b; CAE Simulation & Solutions, Vienna, Austria; Department of Cranio-, Maxillofacial Surgery, AKH Vienna, Austria

37. Whole Body Moment of Inertia Estimation #4886

Mohsen Damavandi^a, Paul Allard^a, Mansour Eslami^a, Franck Barbier^b, Charles-Hilaire Rivard^a, Nader Farahpour^a; ^aLaboratoire d'Étude du Mouvement, Sainte-Justine Hospital, University of Montreal, Montreal, Canada; ^bUniversity of Valenciennes, Le Mont Houy, Valenciennes, France

38. Low Extremity Body Model for Large Scale Purposes #6134

^aPetar Bacic, ^aStanislav Peharec, ^bTomislav Pribanic; ^aLaboratory for Biomechanical Research – Polyclinic Peharec, Pula, Croatia; ^b Faculty of electrical engineering and computing, University of Zagreb, Croatia

39. Software environment for joint biomechanic analysis #4947

Sandra Martelli, Nicola Lopomo, Emil Ferretti; Rizzoli Institutes, Lab. Biomeccanica, Bologna, Italy

40. The Effect of Clinician-Applied Maneuvers on Delivery Force and Brachial Plexus Strain During Shoulder Dystocia Deliveries – Assessment through Mathematical Modeling #6183

Michele J. Grimm^a, Richard Costello^a, and Bernard Gonik^b; ^aDepartment of Biomedical Engineering and ^bDepartment of Obstetrics and Gynecology, Wayne State University, Detroit, MI, USA

41. Biomechanical modelling of colon tissues #5156

A.N. Natali^a, E.L. Carniel^a, P.G. Pavan^a, P.Dario^b, I.Izzo^b, A.Menciassi^b; ^a Centre of Mechanics of Biological Materials, University of Padova, Padova, Italy; ^b Center for Research in Microengineering, SSSA, Pisa, Italy

42. Computational Simulation of biomagnetic micropolar blood flow in Porous Media #7626

R. Bhargava^a, Sugandha^b, H. S. Takhar^c, O. Anwar Beg^d; ^a Mathematics Department IIT, Roorkee, India; ^b Cornell University, Cornell, USA; ^c MMU, Manchester, England, U.K.; ^d Leeds College, Metropolitan University, Leeds, England, UK

43. Effect of meteorological parameters on aerosol number density during pre-monsoon season over Roorkee (India) #7789

D. K. Sharma & Jagdish Rai; Department of Physics, Indian Institute of Technology, Roorkee, India

44. Multi-scale simulation of blood flow with the dynamical behavior of elastic Red Blood Cells #6803

Toshihiro Omori, Shigeo Wada, Ken-ichi Tsubota, Takami Yamaguchi

Department of Bioengineering and Robotics, Tohoku University, Sendai, Japan

45. Peristaltic Pumping of Micropolar Fluid in Porous Channel –Model for Stenoosed arteries #4090

R. Bhargava^a, S. Sharma^b, H. S. Takhar^c, Tasveer A. Bé^d, O. Anwar Bé^e and T. K. Hung^f

^aMathematics Department, IIT, Roorkee, India; ^bMathematics Department, IIT, Roorkee, India; ^cEngineering Department., MMU, Manchester, England, U.K.; ^dEarthquake Consultant, Manchester, UK; ^eLeeds Metropolitan University, Leeds, England, UK.; ^fNeurosurgery, Civil Department, University of Pittsburgh, USA.

Thread 2 Flow-Structure Interactions Poster Session

Monday, July 31-Tuesday, Aug. 1

16:00-17:30

Thread Organizers: Chris Bertram, Ross Ethier, Charlie Ellington

1. Use of Fluid-Structure Simulations to Determine Pulse Wave Velocity in the Human Aorta #4238

Nutan Sampat, Martin Gabi; Department of Fluid Machinery, Faculty Mechanical Engineering, University Karlsruhe, Germany

2. Numerical simulation of intimal thickening in a bifurcation artery #4790

Yubo Fan^{a, b}, Wentao Jiang^b, Yuanwen Zou^b, Junkai Chen^b; ^a Department of Bioengineering, Beihang University, Beijing, China; ^b Biomechanical Engineering Laboratory, Sichuan University, Chengdu, China

3. On the geometry of arterial bifurcation #6856

Shin-ichi Watanabe^a, Takashi Matsuo^a, Yoshimasa Yokoyama^b, and Keiji Yamamoto^a; ^aFaculty of Engineering, Kanagawa Institute of Technology, Kanagawa, Japan; ^bInstitute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Tokyo, Japan

4. Application of unsteady separation investigations to stenosis #7378

S. P. Das, J. H. Arakeri and U. Srinivasan; Indian Institute of Science, Bangalore, India

5. Prediction of elastic membrane moving pattern in sac-type ventricular assist device using numerical simulation #7517

Faramarz Firouzi, Nasser Fatouraee, Siamak Najarian; Biological Fluid Mechanics Laboratory, Biomedical Engineering Faculty, Amirkabir University of technology, Tehran, Iran

6. Towards Early Diagnosis Of Atherosclerosis – Role Of Shear Stress #7814

V. Kanyanta^{a, b}, Prof. A. Ivankovic^a; ^a Department of Mechanical Engineering, University College Dublin, Ireland; ^b Science Foundation Ireland, Dublin, Ireland

7. Coupled blood-wall modeling of steady flow in stenotic carotid arteries #4380

Ehsan Yakhshi Tafti^a, Mohammad Tafazzoli Shadpour^a; ^aFaculty of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnique), Iran

8. Investigations Of Human Voice Generation #5787

Stefan Becker^a, Stefan Kniesburges^a, Gerhard Link^b, Christian Hahn^b, Manfred Kaltenbacher^b; ^a Institute of Fluid Mechanics (LSTM), University Erlangen-Nuremberg, Erlangen, Germany; ^bDepartment of Sensor Technologies (LSE), University Erlangen-Nuremberg, Erlangen, Germany

Thread 4: Imaging Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Thread organizers: Ralph Müller, Peter Augat

1. Model studies on lumbar segmental movement using CT and a image analysis program for volume merging #4996

Per Svedmark^a, Henrik Olivecrona^b, Gunnar Nemeth^a, Lars Weidenhielm^a; Dept of Orthopedics Karolinska University Hospital, Stockholm, Sweden; Dept of Hand Surgery, Södersjukhuset, Stockholm, Sweden^b

2. Outcome after surgical therapy for type A aortic dissection - a Multi-Slice Spiral CT study #7618

Schiller W.^a, Kovacs A.^b, Gerhards M.^a, Muzdalo L.^a, Probst C.^a, Flacke S.^b, Welz A.^a; ^aKlinik und Poliklinik für Herzchirurgie, Universität Bonn, Germany; ^bRadiologische Universitätsklinik Bonn, Germany

3. A high-throughput method to quantify shape differences for three-dimensional imaging technologies #6440

Erika Kristensen^a, Trish E. Parsons^b, Benedikt Hallgrímsson^{b,c}, Steven Boyd^{a,d}; ^aDepartment of Mechanical and Manufacturing Engineering, ^bDepartment of Cell Biology & Anatomy, ^cJoint Injury and Arthritis Research Group, ^dFaculty of Kinesiology, University of Calgary, Calgary, Canada

4. Is Atrial Fibrillation Still a Contraindication for Coronary Imaging with MSCT?

- Comparison of a new MSCT Reconstruction Algorithms and Standard Invasive Angiography in Patients before Heart Surgery #6024

C. Probst^a, A. Kovacs^b, W. Schiller^a, C. Schmitz^a, H.H. Schild^b, A. Welz^a; ^a Department of Cardiac Surgery, Heart Center Bonn, University Bonn, Germany; ^b Department of Radiology, University of Bonn, Germany

5. Evaluation of displacement estimation method for elastography using Finite Element Analysis and physical tissue phantom #7400

Szymon Cygan, Krzysztof Kaluzynski, Beata Lesniak; Institute of Precision and Biomedical Engineering, Warsaw University of Technology, Warsaw, Poland

6. Variation of ultrasound speed in articular cartilage during mechanical compression #5692

Heikki J. Nieminen, Petro Julkunen, Juha Töyräs, Jukka S. Jurvelin; Department of Applied Physics, University of Kuopio, Kuopio, Finland

7. Ultrasound for identification of anatomical landmarks in stereophotogrammetry: a new method for the calibration of the probe #6457

Rita Stagni^a, Silvia Fantozzi^a, Angelo Cappello^a, Valentina Camomilla^b; ^a Department of Electronics, Informatics and Computer Systems, University of Bologna, Italy; ^bDepartment of Human Movement and Sport Sciences, Istituto Universitario di Scienze Motorie, Roma, Italy

8. Wavelets for automatic detection of muscle structures in dynamic ultrasound images #4484

Glen Lichtwark^a, Alan Wilson^{a,b}, James Wakeling^a; ^a Structure and Motion Laboratory, Royal Veterinary College, Hatfield, Hertfordshire, UK; ^b Structure and Motion Laboratory, Institute of Orthopaedics and Musculoskeletal Sciences, University College London, Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex, UK.

9. Model based segmentation of high resolution cortical bone images #5947

Helmut Schneider and Kay Raum; Q-BAM Group, Dept. of Orthopedics, Martin Luther University of Halle-Wittenberg, Halle, Germany

T5 Electro-Impedance Poster Session

Wednesday, Aug 2 - Thursday, Aug. 3

16:00-17:30

Session Organizer: Tadeusz Palko

1. The use of Tekscan sensor sheets to measure the retropatellar pressure - avoidable mistakes during the implantation and the effect of shear forces on the measuring exactness of the systems -#5418

Arne Wilharm^a, Taskin Dermitas^b, Christof Hurschler^b, Micheael Bohnsack^b; ^a Klinik für Unfall-, Hand- und Wiederherstellungschirurgie, Friedrich Schiller Universität, Jena, Germany; ^b Orthopädische Klinik der Medizinischen Hochschule Hannover, Germany

2. Measurements of total body water with a foot-to-foot impedance meter #4435

Michel Y. Jaffrin and Marie-Valérie Moreno; Dept of Biol. Engineering, Tech. University of Compiègne, France

3. Measurement of local mechatronic property of biological gel with micro-vibrating electrode #4949

Takatugu Furukawa^a, Shigehro Hashimoto^a, Shuichi Mochizuki^a, Hajime Otani^b, Hiroji Imamura^b, Toshiji Iwasaka^b; ^a Biomedical Eng, Osaka Inst Tech, Osaka, Japan; ^b Kansai Medical University, Moriguchi, Japan

4. Withdrawn

5. Growth related influence of leg geometry on foot loading and foot shape in children #4181

Kerstin Bosch, Dieter Rosenbaum; Movement Analysis Lab, Orthopaedic Dep., University Hospital Muenster, Germany