35th Congress of the Société de Biomécanique
25–27 August, 2010
Université du Maine
Le Mans – Sarthe – France

Schedule

Wednesday, August 25th

10:30–11:50 Registration – Posters installation
12:00–13:20 Lunch
13:30–13:50 Opening ceremony
13:50–14:35 Invited conference
   Jacques Duchateau, University of Bruxelles, Belgium
14:35–16:00 Oral session 1
   Muscle biomechanics
16:00–16:30 Coffee Break
16:30–18:10 Oral session 2
   Motion analysis and sport biomechanics 1
18:40–19:40 Organ concert at the Cathédrale Saint Julien
19:40 Reception at the Hôtel de Ville du Mans

Thursday, August 26th

08:00–09:40 Oral session 3
   Joint and bone biomechanics
09:40–10:00 Coffee Break
10:00–10:45 Invited conference
   Patrick Willems, Université de Leuven, Belgium
10:45–12:05 Oral session 4
   Locomotion biomechanics
12:15–13:50 Lunch
14:00–15:40 Oral session 5
   Rehabilitation and disability
15:40–17:00 Poster session – Coffee Break
17:00–19:00 Award Session
   Prix de la Société de Biomécanique
19:00–20:00 General Assembly and CA of the Société de Biomécanique
20:30 Congress Dinner
Friday, August 27th

08:00–09:40 Oral session 6
Motion analysis and sport biomechanics 2

09:40–10:00 Coffee Break

10:00–11:40 Oral session 7
Cardiovascular biomechanics

11:40–12:00 Poster award and congress closure

12:10–14:00 Lunch

Detailed schedule

Wednesday, August 25th

13:50–14:35 Invited conference

Motor control adjustments during fatigue
Professor Jacques Duchateau
Laboratoire de biologie appliquée; Université Libre de Bruxelles, Belgium
Institut des sciences de la motricité

14:35–16:00 Oral session 1: Muscle biomechanics

14:35 Variations of podal support influence on the cranio-facial muscular equilibrium
Bazert C., Mesnard M., Doualas N., Fabre M., Aoun M., Morlier J. and Boileau M.J.

14:55 Is the mechanical impact of the antagonist torque dependent of the angle joint, ageing and involved muscles?
Billot M., Simoneau E., Duclay J., Ballay Y. and Martin A.

15:15 Modelling of human muscle behaviour with a hyper-elastic constitutive law
Gras L.L., Mitton D., Viot P. and Laporte S.

15:35 Recognition of muscle functional organisation in rowing by synergy identification
Turpin N. A., Guével A., Dossat A., Durand S. and Hug F.

16:30–18:10 Oral session 2: Motion analysis and sport biomechanics 1

16:30 Arm movement coordination when rotating a spherical object
Lardy J., Wang X., Beurier G. and Robert T.

16:50 External mechanical work while jumping over an obstacle at different running speeds
Mauroy G., Schepens B. and Willems P.A.

17:10 Acceleration and gravity power: a concept for understanding total power output
Quievre J., Cronin J., Harris N. and Jidovtseff B.

17:30 The “power profile” to determine the physical capacities of the cyclist
Pinot J. and Grappe F.

17:50 A biomechanics comparison of grasping in locomotion and feeding with the mouse lemur
(Microcebus murinus, Primate): a study case
Reghem E., Pousdebat E., Gorce P. and Bels V.

Thursday, August 26th

08:00–09:40 Oral session 3: Joint and bone biomechanics

08:00 Decreasing of mechano transduction process with age
Crolet J-M., Stroe M.C. and Racila M.
| Time   | Session Title                                                                 | Authors                                                                                       |
|--------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 08:20  | A mechanobiological transduction model for bone remodelling                    | Rieger R., Hambli R. and Jennane R.                                                           |
| 08:40  | Quantification of the changes in contact surface of rat cartilage using MRI during ageing process | Pouletaut P., Goebel J-C., Pinzano A., Ho Ba Tho M-C. and Gillet P.                           |
| 09:00  | The influence of condylar geometry and positions of bone fixation screws on a TMJ implant | Ramos A., Mesnard M., Relvas C., Compte A., Ballu A., Morlier J. and Simões J.A.              |
| 09:20  | Pressure analysis of head impact with and without helmet                       | Young P.G., Pearce C.W., Walker B., Beldie L., Cotton R.T. and Bui Xuan V.                    |
| 10:10–10:45 | Invited conference                                                              | Running to and walking on Mars<br>Professor Patrick Willems<br>Unité de physiologie et de biomécanique de la locomotion; Université Catholique de Louvain, Belgium<br>Faculté des sciences et de la motricité – Institut de Neurosciences |
| 10:45–12:05 | Oral session 4: Locomotion biomechanics                                        |                                                                                               |
| 10:45  | Foot and ankle mechanisms are significant in reducing the energetic cost of normal human walking | Hayot C., Sakka S. and Lacouture P.                                                           |
| 11:05  | Consecutive Postural Adjustments (CPAs) in a single step                       | Memari S., Bousset S. and Le Bozec S.                                                         |
| 11:25  | Suitability of a dynamometric horseshoe for the recording of the ground reaction forces on ridden horses | Robin D., Chateau H., Jacobs F., Estoup P., Holden L., Falala S., Pourcelot P. and Crevier-Denoix N. |
| 11:45  | Measurement of cross-sectional area variations of five equine superficial digital flexor tendons during tension | Vergari C., Pourcelot P., Holden L., Ravary-Plumioën B., Laugier P., Mitton D. and Crevier-Denoix N. |
| 14:00–15:20 | Oral session 5: Rehabilitation and disability                                  |                                                                                               |
| 14:00  | Error estimations of wheelchair deceleration tests using a 3D accelerometer    | Bascou J., Sauret C., Pillet H., Lavaste F. and Vaslin P.                                     |
| 14:20  | Repeatability of wheelchair deceleration tests using a 3D accelerometer       | Sauret C., Bascou J., Pillet H., Lavaste F. and Vaslin P.                                     |
| 14:40  | Study of cerebral palsy jump gait with generic musculoskeletal modelling       | Rezgui T., Megrot F. and Marin F.                                                             |
| 15:00  | Prediction of polyethylene wear after total knee replacement                   | Terrier A., Ramondetti S., Jolles B.M. and Pioletti D.P.                                       |
| 15:20  | Morphometric analysis of vertebral deformities in a porcine scoliosis model    | Cachon T., Lafon Y., Dumas R., Odent T., Viguiet R. and Viguiet E.                              |
| 15:40–17:00 | Poster session                                                                 | See list below                                                                                |
| 17:00–19:00 | Award session: Prix de la Société de Biomécanique                             |                                                                                               |

Friday, August 27th

| Time   | Session Title                                                                 | Authors                                                                                       |
|--------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 08:00–09:40 | Oral session 6: Motion analysis and sport biomechanics 2                  |                                                                                               |
| 08:00  | Localisation of elbow joint kinematics in active motion                      | Bru B. and Pasqui V.                                                                         |
| 08:20  | Estimation of the 3D kinematics in kayak using an extended Kalman filter algorithm: a pilot study | Fohanno V., Colloud F., Begon M. and Lacouture P.                                             |
08:40 Manipulability of the upper limb during grasping
Jacquier-Bret J., Rezzoug N. and Gorce P.

09:00 Prediction of internal spine configuration from external measurements using a multi-body model of the spine
Koell P., Cheze L. and Dumas R.

09:20 Control of medio-lateral stability during rapid voluntary step initiation with preferred and non-preferred leg: is it symmetrical?
You E. and Do M.C.

10:00–11:40 Oral session 7: Cardiovascular biomechanics

10:00 Induced voltage by a conducting fluid flowing in a static magnetic field: an experimental study
Abi-Abdallah D., and Prel C.

10:20 Modelling of fluid structure interactions in stenosed arteries: effect of plaque deformability
Belzacq T., Avril S., Leriche E. and Delache A.

10:40 Vascular imaging modulography: an experimental in vitro study
Le Floc’h S., Cloutier G., Finet G., Tracqui P., Pettigrew R.I. and Ohayon J.

11:00 Intraplaque residual stress/strain distributions and biomechanical stability of mouse atherosclerotic aortic plaque
Mesnier N., Broissat A., Toczek J., Rieu L., Fagret D., Tracqui P. and Ohayon J.

11:20 Investigation of glue injection during portal embolisation
Sandulache M-C. and Salsac A.V.

Poster sessions 1 and 2

Cardiovascular biomechanics

New technique of flow rate and pressure separation within the arterial system Part I
Abdessalem K.B., Mansouri S., Salah R.B. and Abdessalem S.B.

New technique of flow rate and pressure separation within the arterial system Part II
Abdessalem K.B., Mansouri S., Salah R.B. and Abdessalem S.B.

Stokes flow model in fluid structure interaction. Application to skull-CSF-brain system under a shock
El Baroudi A., Razafimahery F. and Rakotomanana L.

Theoretical simulations of the influence of the stenoses severity and revascularisation status on the right territory perfusion in case of severe coronary disease and occlusion of the right artery
Maasrani M., Drochon A., Aboudiatim I., Corbineau H and, Verhoye J-P

Joint and bone biomechanics

2D-finite element models of the TMJ in three different mandible positions, simulation of clenching
Aoun M., Messard M., Ramos A., Morlier J., Puel F. and Cid M.

Macro and nano-tribological characterisation of a new HEMA hydrogel for articular cartilage replacement
Bostan L., Sfarghiu Trunfio A-M., Verestiuc L., Popa M.I., Munteanu F. and Berthier Y.

Designing a new scaffold for anterior cruciate ligament tissue engineering
Laurent C., Durville D., Wang X., Ganghoffer J.F. and Rahouadj R.

Locomotion biomechanics

Gait asymmetry analysis based on 3D volume reconstruction
Auvinet E., Multon F. and Meunier J.

Synchronisation between rider and horse centres of gravity: the comparison of valid and paraplegic riders’ movements
Biau S., Achard de Leluardiere F., Decatoire A. and Touzet A.

Sensitivity and specificity to determine lameness in dogs with a pressure walkway system
Comparison between accelerometer and kinematic techniques for the evaluation of hoof slip distance: A preliminary study

Holden L., Poucelot P., Peaucelle M., Falala S., Robin D., Crevier-Denoix N. and Chateau H.

A simple spring-mass model of running does not apply to elephants

Lambert A-S., Genin J. and Heglund N.C.

Mechanical actions in a two-segment foot model: comparison of two methods

Samson W., Van Hamme A., Dumas R. and Cheze L.

Motion analysis and sport biomechanics

Strategies and movements analysis with contortionists

Delpierre Y. and Ritz M.

Mechanical comparison of eight vertical jump exercises

Jidovtseff B., Cronin J., Harris N. and Quiévre J.

Estimation of the movements of the centre of gravity in sitting posture: application for testing lumbar belts

Munoz F. and Rougier P.

Dynamics and kinematics in tumble turn. An analysis of performance

Puel F., Morlier J., Mesnard M., Cid M. and Hellard P.

Use of heart rate variability analysis in the longitudinal follow-up of professional soccer players

Rave G., Beaune B., Courrière C. and Durand S.

Muscle biomechanics

Effects of plyometric training on plantar flexors mechanical properties

Fouré A., Nordez A. and Cornu C.

Influence of leg muscle activity and mechanical Achilles tendon properties in hopping musculoskeletal stiffness

Hoche V., Portero P., Couturier A. and Rabita G.

Rehabilitation and disability

Internal power assessment during trans-femoral amputee gait – Effect of walking speed

Bonnet X., Pillet H., Fode P., Skalli W. and Lavaste F.

Is hand-to-foot resistance preferable to foot-to-foot resistance for whole body fat-free mass measurement by impedance?

Bousbiat S., Dongmo E. and Jaffrin M.Y.

Spasticity, time-frequency analysis in cerebral palsy: pre-post-neurotomy

Delpierre Y., Vernet P., Messaoudene M. and Colin D.

Upper limb musculoskeletal disorder prevention during wheelchair propulsion: effect of wheelchair settings

Louis N. and Gorce P.

Kinematic and kinetic analysis of asymptomatic subjects walking on a sloped surface.

Pillet H., Bonnet X., Vogel C., Logut L., Fode P., Skalli W. and Lavaste F.

Validation of a prosimian model for the study of the grasping disorders in the Parkinson’s disease: a preliminary report

Pouydebat E., Reghem E., Mestre-Frances N. and Gorce P.