

# Claudio Vergari, PhD - Biomechanics

## Personal information

Born in Rome, Italy, 35 years old.

Resident in Paris, France

E-mail: [c.vergari@gmail.com](mailto:c.vergari@gmail.com)

Website: [claudiovergari.com](http://claudiovergari.com)

ORCID: <http://orcid.org/0000-0002-7049-2405>

Google: [Google Scholar profile](#)

## Research techniques and interests

- Mechanical characterization of soft tissues (experimental mechanics, material properties).
- Ultrasound propagation in soft tissues (axial ultrasound propagation, elastography, signal processing, interaction with the tissue).
- Biomechanical modeling (finite elements, clinical applications).

## Current position

01/2017 - present **Research fellow** at the *Institut de Biomécanique Himaine Georges Charpak*, Arts et Métiers ParisTech, Paris, France. Project funded by the BiomecAM chair on personalized musculoskeletal modeling.

Research topics:

- Non-invasive mechanical characterization of intervertebral disc by ShearWave elastography.
- Clinical and experimental characterization and finite element modeling for the early identification of progressive scoliosis and for the design of novel therapeutic means.

## Professional and research experience

04/2015 – 12/2016 **Research fellow** within the Biophysics group at the *University of Exeter*, Exeter, United Kingdom. **Needle Injury to the Annulus of the Intervertebral Disc: Mechanisms and Minimization**. Project funded by the Henry Smith Charity.

Research topics: Micromechanical characterization of intervertebral disc, Effects of needle puncture on the macro- and micro-mechanical behaviour of the disc.

05/2012 - 4/2015 **Postdoctoral fellow** at the *Laboratoire de Biomécanique*, Arts et Métiers Paristech, Paris, France. **Personalized biomechanical modeling of scoliotic spine**. Project funded by the BiomecAM chair program on subject-specific musculoskeletal modelling.

12/2011 - 4/2012 **Postdoctoral fellow** in the *Unité INRA-ENV A 957 Biomécanique et Pathologie Locomotrice du Cheval*, Ecole Nationale Vétérinaire d'Alfort, Maisons-Alfort, France. Project on the calibration of axial speed of sound measurements in human and equine tendons.

11/2008 - 11/2011 **PhD student** in biomechanics and ultrasound propagation in the *Unité INRA-ENV A 957 Biomécanique et Pathologie Locomotrice du Cheval* (Prof. Nathalie Crevier-Denoix), ENVA, Maisons-Alfort, France, in collaboration with IFFSTAR/INRETS (Prof. David Mitton) and Université Pierre et Marie Curie (Dr Pascal Laugier).

2007 Product specialist in electrosurgery at LED spa, Aprilia, Italy.

2005 Internship at the **Medical Engineering Service**, Tor Vergata General Hospital, Rome, Italy. Medical devices testing, security investigations, drafting of tenders' contracts, managing of devices' failure and maintenance.

2000-2008 Freelance IT technician and Web designer.

2000-2008 Private teacher for high school and university students (Math, Physics, Solid Mechanics).

2000 Internship at Casa Italia, Sydney, Australia. Assistant in organization of events, promotion, public relations and logistics during Olympic Games.

## Education and training

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2011 **PhD** awarded by the University of Caen with Distinction ("*Mention très honorable avec Félicitations du jury*"). Dissertation titled: "**In vivo measurement of tendon force by ultrasound: experimental and theoretical approach to acoustic propagation in tendon**".

2008 **Master's Degree in Medical Engineering**, University of Rome Tor Vergata. Final thesis: "Design of an anchorage device for wheelchairs" in collaboration with the Scientific Institute for Research, Hospitalization and Health Care Santa Lucia. The anchorage device was patented (#0001389034).

2005 Bachelor's Degree in **Medical Engineering**, University of Rome Tor Vergata. Final thesis: "*Report on the stage at the Medical Engineering Service of Tor Vergata General Hospital and investigation on **electrosurgery***".

2000 Scientific secondary school, final grade 97/100, Liceo Scientifico Statale "Farnesina" in Rome.

## Teaching

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2016 Demonstrator in Digital Image Processing [18 hours].

2015 Demonstrator in Physics 3<sup>rd</sup> year labs [30 hours].

2014-2015 Co-direction 30% of a PhD student in Biomechanics / Medical Imaging (Shahin Ebrahimi).

2013-2014 Co-Supervision of ten Master students' final projects (Master BME in Biomedical Engineering, engineers and clinicians).

## Grants, awards and distinctions

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**Chairman:** « soft tissue biomechanics » session at the European Society of Biomechanics congress 2016

**Travel grant** of the *Société de Biomécanique* / European Society of Biomechanics 2016 (400 €)

**Young Investigator Award** of the international francophone *Société de Biomécanique* 2014

Thesis award "*médaille d'argent*" of the *Académie d'Agriculture de France* in 2012.

Grant reviewer for the Polish National Science Centre.

Editor for Scientific Reports (Nature Publishing group, IF = 5.5)

Reviewer for:

Acta Biomaterialia (IF = 6.0)

European Radiology (IF = 4.338)

Journal of the Mechanical Behavior of Biomedical Materials (IF = 3.417)

Biomechanics and Modeling in Mechanobiology (IF = 3.251)

Journal of Biomechanics (IF = 2.72)

Annals of Biomedical Engineering (IF = 3.23)

Medical & Biol Eng & Comp (IF = 1.79)

European Spine Journal (IF = 2.47)

## Linguistic skills

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ITALIAN: native language.

ENGLISH: fluent spoken and written (8.0/9.0 IELTS).

FRENCH: fluent spoken and written.

## Memberships

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European Society of Biomechanics

Société de Biomécanique

Italian Engineering Council (chartered engineer).

## Computer skills

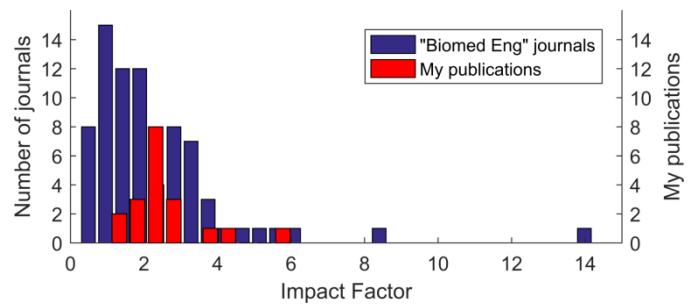
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Excellent knowledge of **Matlab**. Knowledge of Visual Basic. Basic knowledge of Python, C/C++.

Experienced in 3D CAD, simulation and FE analysis (Ansys, Solidworks), experienced in modelling and analysis of medical-physical problems with Comsol.

## Impact

- One patent.
- Twenty-one publications in international peer-reviewed journals, twelve as first author.
- H-index = 9 (source Google Scholar).
- Average impact factor = 2.6 (see figure).
- RG score = 27 (higher than 82% of all members, source ResearchGate).
- Eleven personal presentations at international meetings, 30+ communications.
- Young investigator award from the international francophone *Société de Biomécanique* (2014)
- PhD thesis award from the French Ministry of Agriculture (2012).



## Outreach and press

Introducing Year 12 Physics Progression students to research in the biophysics group (University of Exeter).

Participation in the documentary «winning back pain» («Vaincre le mal de dos»), directed by Sarah Carpentier for the French national channel France 5 (available on [YouTube](#)).

Article «[Scoliose : le corset du futur passe par la modélisation 3D de la colonne vertébrale](#)» published in the French scientific magazine «Science et Avenir», featuring part of my work at the Institut de Biomécanique Humaine Georges Charpak.

My work was featured in the 7 am radio program of France Inter about “better predicting progression of scoliosis” (“*Mieux prédire l'évolution des scolioses*”, available [on line](#)).

Participation at the “Open Days” of Arts et Métiers ParisTech 2012-2015.

Participation at the «Pass Pour l'Emploi 2014» fair organised by *Mission Handicap - Société Générale*, at the stand of the Institut de Biomécanique Humaine Georges Charpak.

## Publications and patents

### ePub ahead of print

**C. Vergari**, D. Chan, A. Clarke, J. Mansfield, J. R. Meakin, P.C. Winlove, In press. [Bovine and degenerated human annulus fibrosus: a microstructural and micromechanical comparison](#). [P21]  
Biomechanics and Modeling in Mechanobiology.

W. Skalli, **C. Vergari**, E. Ebermeyer, I. Courtois, X. Drevelle, R. Kohler, K. Abelin-Genevois, J. Dubousset, In Press. [Early Detection of Progressive Adolescent Idiopathic Scoliosis: A Severity Index](#). Spine. [P20]

### 2017

J. Rouissi, R. Arvieu, A. Dubory, **C. Vergari**, M. Bachy, R. Vialle, 2017. [Intra and inter-observer reliability of determining degree of pelvic obliquity in neuromuscular scoliosis using the EOS-CHAIR® protocol](#). Child's Nervous System 33(2):337-341. [P19]

### 2016

**C. Vergari**, I. Courtois, E. Ebermeyer, H. Bouloussa, R. Vialle, W. Skalli, 2016. [Experimental validation of a patient-specific model of orthotic action in adolescent idiopathic scoliosis](#). [P18]

European Spine Journal 25(10):3049-3055.

B.Moreau, **C.Vergari**, H.Gad, B.Sandoz, W.Skalli, S.Laporte, Accepted. [Non-invasive assessment of human multifidus muscle stiffness using ultrasound shear wave elastography: A feasibility study](#). Journal of Engineering in Medicine 230(8):809-814. [P17]

B.Aubert, **C.Vergari**, B.Ilharreborde, A.Courvoisier, W.Skalli, 2016. [3D reconstruction of ribcage geometry from biplanar radiographs using a statistical parametric model approach](#). Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization 4(5): 281-295. [P16]

**C.Vergari**, J. Mansfield, J. R. Meakin, P. C. Winlove, 2016. [Lamellar and fibre bundle mechanics of the annulus fibrosus in bovine intervertebral disc](#). Acta Biomaterialia 37, 14:20. [P15]

**C.Vergari**, G. Dubois, R. Vialle, J.-L. Gennisson, M. Tanter, J. Dubousset, P. Rouch, W. Skalli, 2016. [Lumbar annulus fibrosus biomechanical characterization in children by ultrasound shear wave elastography](#). European Radiology (26), 4:1213:1217. [P14]

## 2015

G.Dubois, W. Kheireddine, **C.Vergari**, D. Bonneau, P. Thoreux, P. Rouch, M. Tanter, J.L. Gennisson, W. Skalli, 2015. [A reliable protocol for shearwave elastography of lower limb muscles at rest and during passive stretching](#). Ultrasound in Medicine & Biology (41), 9:2284-2291. [P13]

**C. Vergari**, G. Ribes, B. Aubert, C. Adam, L. Miladi, B. Ilharreborde, K. Abelin-Genevois, P. Rouch, W. Skalli, 2015. [Evaluation of a patient-specific finite element model to simulate conservative treatment in adolescent idiopathic scoliosis](#). Spine Deformity (3), 1:4-11. [P12]

## 2014

**C. Vergari**, P.Rouch, G. Dubois, D. Bonneau, J. Dubousset, M. Tanter, J.L. Gennisson, W. Skalli (2014). [Non-invasive biomechanical characterization of intervertebral disc by shearwave ultrasound elastography: a feasibility study](#). European Radiology (24), 12:3210-3216. [P11]

**C. Vergari**, P.Rouch, G. Dubois, D. Bonneau, J. Dubousset, M. Tanter, J.L. Gennisson, W.Skalli, 2014. [Intervertebral disc characterization by shear wave elastography: an in-vitro preliminary study](#). Journal of Engineering in Medicine (228), 6:607-615. [P10]

## 2013

N. Crevier-Denoix, S. Falala, L. Holden-Douilly, M. Camus, J. Martino, B. Ravary-Plumioën, **C. Vergari**, L. Desquilbet, J.-M. Denoix, H. Chateau, P. Pourcelot, 2013. [Comparative kinematic analysis of the leading and trailing forelimbs of horses cantering on a turf and a synthetic surface](#). Equine Veterinary Journal (IF: 2.286) (45), S45: 54-61. [P9]

H. Chateau, M. Camus, L. Holden-Douilly, S. Falala, B. Ravary-Plumioën, **C. Vergari**, J. Lepley, J.M. Denoix, P. Pourcelot, N. Crevier-Denoix, 2013. [Kinetics of the forelimb in horses circling on different ground surfaces at the trot](#). The Veterinary Journal (IF: 2.424) (198), S1:e20–e26. [P8]

N. Crevier-Denoix, B. Ravary-Plumioën, **C. Vergari**, M. Camus, L. Holden-Douilly, S. Falala, H. Jerbi, L. Desquilbet, H. Chateau, J.M. Denoix and P. Pourcelot, 2013. [Comparison of superficial digital flexor tendon loading on asphalt and on sand in horses at the walk and trot](#). The Veterinary Journal (IF: 2.424) (198), S1: e130–e136. [P7]

N. Crevier-Denoix, P. Pourcelot, L. Holden-Douilly, M. Camus, S. Falala, B. Ravary-Plumioën, **C. Vergari**, L. Desquilbet and H. Chateau, 2013. [Discrimination of two equine racing surfaces based on forelimb dynamic and hoof kinematic variables at the canter](#). The Veterinary Journal (IF: 2.424) (198): e124-e129. [P6]

## 2012

**C. Vergari**, B. Ravary-Plumioën, D. Evrard, P. Laugier, D. Mitton, P. Pourcelot and N. Crevier-Denoix, 2012. [Axial Speed of Sound is Related to Tendon's Nonlinear Elasticity](#). Journal of Biomechanics (45), 2, 263-268. [P5]

**C. Vergari**, P. Pourcelot, B. Ravary-Plumioën, A.G. Dupays, J.M. Denoix, D. Mitton, P. Laugier and N. Crevier-Denoix, 2012. [First Application of Axial Speed of Sound to Follow up Injured Equine Tendons](#). Ultrasound in Medicine & Biology (38), 1, 162-167. [P4]

**C. Vergari**, P. Pourcelot, B. Ravary-Plumioën, A.G. Dupays, S. Jacquet, F. Audigié, J.M. Denoix, P. Laugier, D. Mitton, and N. Crevier-Denoix, 2012. [Axial speed of sound for the monitoring of injured equine tendons: a preliminary study](#). Journal of Biomechanics (45), 1, 53-58. [P3]

## 2011

**C. Vergari**, P. Pourcelot, Holden, L., B. Ravary-Plumioën, G. Gerard, P. Laugier, D. Mitton,, and N. Crevier-Denoix, 2011. [True Stress and Poisson's Ratio of Tendons during Loading](#). Journal of Biomechanics, (44), 719-724. [P2]

## 2010

**C. Vergari**, P. Pourcelot, Holden, L., B. Ravary-Plumioën, P. Laugier, D. Mitton, and N. Crevier-Denoix, 2010. [A Linear Laser Scanner to Measure Cross-Sectional Shape and Area of Biological Specimens During Mechanical Testing](#). Journal of Biomechanical Engineering, (132), 10, 105001-105007. [P1]

## 2009

Inventor of a patented anchorage device for wheelchairs (patent number: 0001389034).

## Presentations at international meetings (Twelve personal podium presentations)

### 2017

**C. Vergari**, D. Chan, A. Clarke, J. Mansfield, J.R. Meakin, C. P. Winlove. Micromechanical effects of needle injury o annulus fibrosus.. 23rd Congress of the European Society of Biomechanics, July 2 - 5, 2017, Seville, Spain. [podium communication]

**C. Vergari**, D. Chan, A. Clarke, J. Mansfield, J.R. Meakin, C. P. Winlove. Macro- and micromechanical properties of human and bovine annulus fibrosus. 23rd Congress of the European Society of Biomechanics, July 2 - 5, 2017, Seville, Spain. [podium communication]

S. Ghailane, H. Bouloussa, **C. Vergari**, S. Mazas, V. Challier, J-M. Vital, P. Coudert, O.Gille. Clinical Relevance of a New Classification System for Degenerative Spondylolisthesis of the Lumbar Spine. 24th International Meeting on Advanced Spine Techniques, July 12-15, 2017, Cape Town, South Africa.

A. Macron, P-Y Rohan, **C. Vergari**, A. Verney, H. Pillet. Sub-dermal tissue deformation assessed using ultrasound: methodology for validating Finite Element Models for pressure ulcer prevention. EUROMECH Colloquium 595 : Biomechanics and computer assisted surgery meets medical reality, 29-31 August 2017, Villeneuve d'Ascq, France.



## 2016

J. Rouissi, R. Arvieu, R. Laurent, **C. Vergari**, M. Bachy, R. Vialle. Assessment of pelvic obliquity in neuromuscular scoliosis using the EOS-CHAIR protocol. *British Scoliosis Society Annual Meeting*. 13-14/10 2016, Middlesbrough, UK.

R. Pietton, H. Bouloussa, R. Laurent, **C. Vergari**, R. Vialle. Stereoradiographic reconstruction of the rib cage predicts pulmonary function for preoperative assessment in adolescent idiopathic scoliosis. *British Scoliosis Society Annual Meeting*. 13-14/10 2016, Middlesbrough, UK.

S. Ghilane, V. Challier, H. Bouloussa, **C. Vergari**, G. Yoshida, J.-M. Vital, O. Gille. Clinical Relevance of a New Classification for Degenerative Spondylolisthesis of the Lumbar Spine. *37<sup>th</sup> Congress of the International Society of Orthopaedic Surgery and Traumatology*. 8<sup>th</sup> – 10<sup>th</sup> September 2016, Rome, Italy.

**C. Vergari**, J.C. Mansfield, J.R. Meakin, C.P. Winlove. An investigation on annulus fibrosus micromechanics with second harmonic generation microscopy. *22<sup>nd</sup> Congress of the European Society of Biomechanics (ESB)*. 10<sup>th</sup> – 13<sup>th</sup> July 2016, Lyon, France. [podium communication]

H. Bouloussa, **C. Vergari**, R. Vialle, W. Skalli. Preoperative Rib Cage Measurement Reproducibility using 3D Stereoradiographic Reconstructions in Adolescent Idiopathic Scoliosis. *31<sup>st</sup> Annual Meeting of the North American Spine Society (NASS)*. 26<sup>th</sup> – 29<sup>th</sup> October 2016, Boston, MA, USA. [ePoster] [\[PDF\]](#)

S. Ghilane, H. Bouloussa, **C. Vergari**, V. Challier, G. Yoshida, J.M. Vidal, O. Gille. New Classification for Degenerative Spondylolisthesis of the Lumbar Spine: a Reliability Study. *51<sup>st</sup> Annual Meeting of the Scoliosis Research Society*. 21<sup>st</sup> – 24<sup>th</sup> September 2016, Prague, Czech Republic. [podium communication] [\[PDF\]](#)

**C. Vergari**, J.C. Mansfield, J.R. Meakin, C.P. Winlove. Quantifying intervertebral disc inter-lamellar and inter-bundle mechanics. *SpineWeek*. 16<sup>th</sup> – 20<sup>th</sup> May 2016, Singapore. [special poster presentation] [\[PDF\]](#)

H. Bouloussa, R. Pietton, **C. Vergari**, W. Skalli, R. Vialle. Biplanar stereography predicts pulmonary function tests in adolescent idiopathic scoliosis. *SpineWeek*. 16<sup>th</sup> – 20<sup>th</sup> May 2016, Singapore. [podium communication]

R. Pietton, H. Bouloussa, **C. Vergari**, W. Skalli, R. Vialle. Rib cage measurement reproducibility using biplanar stereographic 3D reconstructions in severe adolescent idiopathic scoliosis. *SpineWeek*. 16<sup>th</sup> – 20<sup>th</sup> May 2016, Singapore. [podium communication]

H. Bouloussa, **C. Vergari**, R. Pietton, W. Skalli, R. Vialle. Comparison of the CTM Brace Against Nighttime Braces in Adolescent Idiopathic Scoliosis Using Biplanar Stereography and 3D Spinal Reconstructions. *SpineWeek*. 16<sup>th</sup> – 20<sup>th</sup> May 2016, Singapore. [poster communication]

H. Bouloussa, R. Pietton, T.X. Haen, **C. Vergari**, W. Skalli, R. Vialle. Biplanar X-rays with Chest Volumetry Predict Preoperative Pulmonary Function in Adolescent Idiopathic Scoliosis. *American Academy of Orthopaedic Surgeons Annual meeting*. 1<sup>st</sup> – 5<sup>th</sup> March 2016, Orlando (FL), USA. [poster communication]

## 2015

**C. Vergari**, I. Courtois, E. Ebermeyer, H. Bouloussa, R. Vialle and W. Skalli. Simulation of orthotic treatment in adolescent idiopathic scoliosis using a subject-specific finite element model. *40<sup>th</sup> Congress of the Société de Biomécanique*. 28<sup>th</sup> – 30<sup>th</sup> October, Paris, France. [podium communication]

T.X. Haen, A. Roux, C. Labruyere, **C. Vergari**, P. Rouch, O. Gagey, M. Soubeyrand and S. Laporte. Shear wear elastography of the human Achilles tendon: a cadaveric study of factors influencing the repeatability. *40<sup>th</sup> Congress of the Société de Biomécanique*. 28<sup>th</sup> – 30<sup>th</sup> October 2015, Paris, France. [podium communication]

**C. Vergari**, I. Courtois, E. Ebermeyer, H. Bouloussa, R. Vialle and W. Skalli. Extensive evaluation of brace simulation for adolescent idiopathic scoliosis using a subject-specific finite element model. *Computer Methods in Biomechanics and Biomedical Engineering 2015*. 1<sup>st</sup>-5<sup>th</sup> September, Montreal, Canada. [podium communication]

**C. Vergari**, P. Coloma, W. Skalli. Acoustic Shear Modulus of Cervical Intervertebral Disc is Related to the Functional Unit's Torsional Stiffness. *21<sup>st</sup> Congress of the European Society of Biomechanics*. 5 - 8<sup>th</sup> July 2015, Prague, Czech Republic.

**C. Vergari**, J. Mazué, K. Abelin-Genevois, C. Adam, W. Skalli. Personalization of spine and trunk models for the simulation of brace action in spinal deformity: an inverse approach. *World Congress of the International Society for Prosthetics and Orthotics (ISPO)*. 22-25<sup>th</sup> June 2015, Lyon, France.

D. Subit, B. Sandoz, J. Choisine, C. Amabile, **C. Vergari**, W. Skalli, S. Laporte. Age-induced variations in ribcage morphology from high-resolution X-ray images of volunteer subjects. *24<sup>th</sup> International Technical Conference on the Enhanced Safety of Vehicles*, 8-11 June 2015, Gothenburg, Sweden.

H.Gad, **C. Vergari**, B.Moreau, B.Sandoz, W.Skalli, S.Laporte. Reference values of the elastic modulus of lumbar multifidus muscle using ultrasound shear wave elastography. *19<sup>th</sup> ArgoSpine Symposium*, 29-30 January 2015, Paris, France. [poster]

## 2014

**C. Vergari**, K.Abelin-Genevois, X. Drevelle, N. Champain, E. Ebermeyer, I. Courtois, J. Dubousset, W. Skalli. A preliminary validation of a severity index for early detection of progressive adolescent idiopathic scoliosis. *49<sup>th</sup> Annual Meeting of the Scoliosis Research Society*, 10-13<sup>th</sup> September 2014, Anchorage, AK, USA. [podium communication]

**C. Vergari**, P.Rouch, D. Bonneau,G. Dubois, J. Dubousset, M. Tanter, J.L. Gennisson, W.Skalli. Shear wave elastography for cervical disc characterization: a feasibility study. *22<sup>nd</sup> annual meeting of the European Orthopaedic Research Society*, July 2-4 2014, Nantes, France. [podium communication]

**C. Vergari**, G. Ribes, B. Aubert, C. Adam, L. Miladi, B. Ilharreborde, K. Abelin-Genevois, P. Rouch, W. Skalli. A Method for Validation of Finite Element Models in Scoliosis Bracing Simulation. *7<sup>th</sup> World Congress of Biomechanics*, July 6-11 2014, Boston, MA, USA.

**C. Vergari**, P.Rouch, D. Bonneau,G. Dubois, J. Dubousset, M. Tanter, J.L. Gennisson, W.Skalli. In vivo mechanical characterization of cervical intervertebral disc by shear wave elastography: a preliminary study. *18<sup>th</sup> ArgoSpine Symposium*, 30-31 January 2013, Paris, France. [podium communication]

## 2013

**C. Vergari**, P.Rouch, G. Dubois, M. Tanter, J.L. Gennisson, W.Skalli. [Intervertebral disc characterization by elastography: a preliminary study](#). *38<sup>th</sup> Congress of the Société de Biomécanique*, September 3-6 2013, Marseille, France.

**C. Vergari**, P.Rouch, G. Dubois, M. Tanter, J.L. Gennisson, W.Skalli. In vitro evaluation of intervertebral disc elastic modulus by elastography. *9<sup>th</sup> Congress of the European Society of Biomechanics*, August 25-28 2013, Patras, Greece. [podium communication]

W. Skalli, **C. Vergari**, B. Aubert, A. Courvoisier, B. Ilharreborde, J. Dubousset. Clinical biomechanics of scoliosis. *Pan Arab Spine Society et Moroccan Spine Society*, June 29 2013, Marrakech, Morocco.

W. Skalli, A. Courvoisier, X. Drevelle, **C. Vergari**, P. Rouch and J. Dubousset. Advances in Subject Specific Modeling and Application to Scoliosis. *Computer Methods in Biomechanics and Biomedical Engineering*, 11<sup>th</sup> International Symposium, April 3-6 2013, Salt Lake City, Utah (USA).

## 2012

**C. Vergari**, P. Pourcelot, B. Ravary-Plumioën, M. Camus, L. Holden-Douilly, S. Falala, H. Chateau and N. Crevier-Denoix. [Equine Superficial Digital Flexor Tendon Force And Axial Speed of Sound: A Calibration Method Under Clinical Conditions](#). *XXXVII Congress of the Société de Biomécanique*, Octobre 16-19 2012, Toulouse (France). [podium communication]

**C. Vergari**, D. Pradon, B. Ravary-Plumioën, P. Pourcelot and N. Crevier-Denoix. [Achilles tendon force and axial speed of sound: a calibration method under clinical conditions](#). XXXVII Congress of the Société de Biomécanique, Octobre 16-19 2012, Toulouse (France).

B. Ravary-Plumioën, P. Pourcelot, **C. Vergari**, L. Desquilbet, N. Crevier-Denoix. [Effects of ground surface on the equine superficial digital flexor tendon loading at the walk and trot](#). XXXVII Congress of the Société de Biomécanique, Octobre 16-19 2012, Toulouse (France).

N. Crevier-Denoix, P. Pourcelot, M. Camus, L. Holden-Douilly, S. Falala, B. Ravary-Plumioën, D. Robin, J. Martino, **C. Vergari**, L. Desquilbet, J.M. Denoix and H. Chateau. [Effets biomécaniques des pistes équestres: Impact sur la sécurité et la performance du cheval](#). 12<sup>ème</sup> Congrès de médecine et Chirurgie Equine, December 11-13 2012, Genève, Switzerland.

N. Crevier-Denoix, P. Pourcelot, L. Holden-Douilly, M. Camus, S. Falala, B. Ravary-Plumioën, **C. Vergari**, L. Desquilbet and H. Chateau. Discrimination of two equine racing surfaces based on forelimb dynamic and kinematic variables at the canter. 7<sup>th</sup> International conference on Canine and Equine Locomotion, June 25-28 2012, Strömsholm (Sweden).

H. Chateau, M. Camus, L. Holden-Douilly, S. Falala, B. Ravary-Plumioën, **C. Vergari**, J.M. Denoix, P. Pourcelot and N. Crevier-Denoix. Ground reaction force and moments around the hoof axes during circling on different ground surfaces at the trot. 7<sup>th</sup> International conference on Canine and Equine Locomotion, June 25-28 2012, Strömsholm (Sweden).

N. Crevier-Denoix, B. Ravary-Plumioën, **C. Vergari**, M. Camus, L. Holden-Douilly, S. Falala, L. Desquilbet, H. Chateau, J.M. Denoix and P. Pourcelot. Comparison of superficial digital flexor tendon loading on asphalt and on deep sand in horses at the walk and trot. 7<sup>th</sup> International conference on Canine and Equine Locomotion, June 25-28 2012, Strömsholm (Sweden).

## 2011

**C. Vergari**, P. Pourcelot, B. Ravary-Plumioën, A.G. Dupays, S. Jacquet, J.M. Denoix, D. Mitton, P. Laugier, and N. Crevier-Denoix. [First application of an axial speed of sound measurement technique in the monitoring of tendon healing](#). XXXVI<sup>th</sup> Congress of the Société de Biomécanique, August 31-September 2 2011. Published in: Computer Methods in Biomechanics and Biomedical Engineering, (14), S1, 2011. [podium communication]

**C. Vergari**, P. Pourcelot, B. Ravary-Plumioën, A.G. Dupays, S. Jacquet, F. Audigé, J.M. Denoix, D. Mitton, P. Laugier, and N. Crevier-Denoix. Axial speed of sound in injured tendons: a preliminary study. XXIII<sup>rd</sup> Congress of the International society of Biomechanics, July 3-7 2011 [[pdf](#)] [[poster](#)].

## 2010

**C. Vergari**, P. Pourcelot, L. Holden, B. Ravary-Plumioën, P. Laugier, D. Mitton, and N. Crevier-Denoix. [Measurement of cross-sectional area variations of five equine superficial digital flexor tendons during tension](#). 35<sup>th</sup> Congress of the Société de Biomécanique, Le Mans, France, August 25-27 2010. Published in: Computer Methods in Biomechanics and Biomedical Engineering, (13), S1, September 2010. [podium communication]

## Invited conferences

Caractérisation des propriétés mécaniques du disque par élastographie. 2<sup>ème</sup> Journée SB-SOFAMEA (Société de Biomécanique - Société Francophone d'Analyse du Mouvement chez l'Enfant et l'Adulte): "Modélisation du rachis: quoi de neuf en 2014?". Ecole Nationale Supérieure des Arts et Métiers, Paris (France). 8<sup>th</sup> October 2014.

W. Skalli, **C. Vergari**, L. Venancio, P. Rouch, J. Choisine, C. Travert, J. Dubouset. Modélisation personnalisée de la colonne vertébrale, son intérêt pour le chirurgien. Académie Nationale de Chirurgie, 4<sup>th</sup> July 2014, Paris, France.



**C.Vergari**, P.Rouch, G.Dubois, J.Dubousset, D.Bonneau, M.Tanter, J.L.Gennisson, W.Skalli. Non-invasive characterization of intervertebral disc by shear wave elastography. *Journées scientifiques de la Fondation Cotrel*, 20-21st November 2013, Paris, France.

**C.Vergari**, P.Rouch, G.Dubois, J.Dubousset, D.Bonneau, M.Tanter, J.L.Gennisson, W.Skalli. Non-invasive characterization of intervertebral disc by shear wave elastography. *Journées scientifiques de la Fondation Cotrel*, 21-22<sup>nd</sup> November 2012, Paris, France.

## National congresses and meetings

A.Abdulmajeed, H. Bouloussa, G. Soufiane, **C. Vergari**, J.-M. Vital, G.Olivier. Is it Safe to Perform Lumbar Spine Surgery in Patients Older than 85 years old? A Retrospective Cohort of 54 Patients. Société Française de Chirurgie Rachidienne, 1-3 June 2017, Lille, France.

Z. Chen, **C. Vergari**, W. Skalli. Simulation en éléments finis de l'effet des corsets prenant en compte le réalignement postural. 48<sup>ème</sup> réunion du Groupe d'étude de la scoliose, 10-11 March 2017, Strasbourg, France.

T. Langlais, **C. Vergari**, R. Pietton, W. Skalli, R. Vialle. Evaluation non invasive de l'altération du disque intervertébral lombaire dans les scolioses idiopathiques de l'adolescent : Résultats préliminaires. 48<sup>ème</sup> réunion du Groupe d'étude de la scoliose, 10-11 March 2017, Strasbourg, France.

**C. Vergari**, J.C. Mansfield, J.R. Meakin, P.C. Winlove. Lamellar and fibre bundle mechanics of the annulus fibrosus. *Back2Back Meeting*. 16th March 2016, Cardiff, United Kingdom.

T.X. Haen, A. Roux, C. Labruyere, **C. Vergari**, P. Rouch, O. Gagey, S. Laporte, M. Soubeyrand. [Caractérisation Biomécanique Du Tendon D'Achille Par Elastographie Shear Waves : Validation Expérimentale](#). *SOFOT (Société Française de Chirurgie Orthopédique et Traumatologie)* 9<sup>th</sup> – 12<sup>th</sup> November 2015, Paris, France.

H. Bouloussa, **C. Vergari**, R. Pietton, T.X. Haen, W.Skalli, R. Vialle. [Prédiction des paramètres EFR par reconstructions 3D de radiographies biplanaires avec volumétrie de la cage thoracique dans la scoliose idiopathique de l'adolescent](#). *SOFOT (Société Française de Chirurgie Orthopédique et Traumatologie)* 9<sup>th</sup> – 12<sup>th</sup> November 2015, Paris, France.

**C.Vergari**, J. Mansfield, J. Meakin, P. Winlove. Investigating the mechanism of needle injury to the disc. *DISCs Meeting 2015*, 30 September 2015, London, UK.

H.Bouloussa, T.X. Haen, **C.Vergari**, R.Pietton, W.Skalli, R.Vialle. Corrélation du volume de la cage thoracique et des paramètres fonctionnels respiratoires chez les patients porteurs de scolioses idiopathiques : Apport de l'imagerie EOS. *Les journées de la Société Française d'Orthopédie Pédiatrique (SOFOP)*, 25-27 March 2015, Paris, France.

P. Lallemand-Dudek, G. Dubois, **C.Vergari**, V. Forin, R. Vialle, W. Skalli. Etude de reproductibilité de l'elastographie musculaire par ultrasons chez l'enfant. *Les journées de la Société Française d'Orthopédie Pédiatrique (SOFOP)*, 25-27 March 2015, Paris, France.

**C. Vergari**, G. Dubois R. Vialle, M. Tanter, D. Bonneau, J. Dubousset, Ph. Rouch, W. Skalli. Elastographie du disque intervertébral lombaire chez l'enfant. 46<sup>ème</sup> Réunion du Groupe d'Etude de la Scoliose (GES), 13-14 March 2015, Paris, France. [podium communication]

K. Abelin Genevois, **C. Vergari**, E. Ebermeyer, I. Courtois, R. Kohler, J.P. Pracros, W. Skalli. [Validation d'un indice de sévérité pour la détection précoce des scolioses idiopathiques de l'adolescent progressives](#). 89<sup>e</sup> Réunion annuelle de la SOFCOT, 9-12st November 2014, Paris, France. Published in: *Revue de Chirurgie Orthopédique et Traumatologique* (10), 7:S231.

W. Skalli, **C. Vergari**, B. Aubert, A. Courvoisier, B. Ilharreborde, J. Dubousset. Clinical biomechanics of scoliosis. *Pan Arab Spine Society et Moroccan Spine Society*, 29th June 2013, Marrakech, Morocco.

