

Olivier White

Civil Engineer in Computer Science
PhD in Computational Motor Control
« Habilitation à Diriger les Recherches »
Scientific Consultant

Université de Bourgogne
INSERM - U1093 Cognition, Action, and Sensorimotor Plasticity
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Born on August 5th 1977
Married, 2 children

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POSITIONS

- 2017 - Present** **Honorary Senior Lecturer in Motor Control and Learning**, University of East Anglia.
UK
- 2012 - Present** **Scientific Director** in Cognition and Movement Pole (uB-Filiale/Welience).
FR
- 2010 - Present** **Associate Professor** in Unit INSERM 1093 Cognition, Action, and Sensorimotor Plasticity, Université de Bourgogne. (Chaire d'excellence Fellow).
FR
- 2010 – Present** **Scientific consultant.** Provide advices to design International Peer Review activities. Coordination of review panels for the scientific assessment of 13,000+ proposals involving 50,000 peer reviewers (total budget around 1.5Md€).
FR, IT, PT
- 2009 - 2010** **Science Officer** in the Space Sciences Unit at the European Science Foundation (ESF).
FR
- 2007 - 2009** **Post doctoral fellow** at Bangor University. Host: J. Diedrichsen.
UK « *Responsibility Assignments in Redundant Systems* ».
- 2000 - 2002** **Research assistant at the Institute of Neuroscience**, UCL.
BE

PROFESSIONAL ACTIVITIES

- 2014 - Present** • New teaching activities (artificial neural netw, matlab) at Lille 3 and Paris Tech.
- 2011 - Present** • **External referee** for the National Research Council (CA) and FWO (NL).
• **Visiting UCLondon** (Host: J. Diedrichsen) to work on fMRI.
• Principal Investigator of the **ESA Topical Team: Motor Control in Uncertain Dynamics**.
• Co-Investigator of the **ESA Topical Team: Large Radius Centrifuge** (PI: J. Van Loon).
- 2010 - Present** • Development of a new fMRI platform and of a robotic virtual environment for research.
• Rapporteur of the *Integrated Systems Physiology* Cluster of THESEUS, member of the Expert Group *Neurophysiology*.
• Teaching computational motor control in Sport Science, Psychology and Engineering.
• Member: *Society for Neuroscience* (SfN), *Neural Control of Movement* (NCM), *European*

Low Gravity Research Association (ELGRA), American Psychological Association (APA).

- Panel member for the European Science Foundation (ESF).
- Reviewer for *Neuroscience, Experimental Brain Research, Journal of Neuroscience Methods, Human Movement Science, Journal of Neurophysiology, PLoS ONE, German-Israeli Foundation...*

2009 - 2010
(ESA Contract)

- Responsibility and management of the **scientific review** of 250 proposals submitted in response to Research Announcements in the areas of physical and biological sciences for experiments in the ISS (international partners were NASA, CSA, JAXA, ESA), parabolic flights and the Antarctic Concordia base. Organized the review panel structure (15 panels) and meeting with 265 experts.
- Coordinated the action **THESEUS** at a European level to enable human exploration (Mars, Moon). Publication of a European roadmap.
- Scientific support of a project identifying missing technologies to advance space research.
- Development of experiments in virtual environments to investigate bimanual control. Involved real-time programming (C++/OpenGL), robotic devices, force transducers and a stereoscopic 3D display and modeling (optimal feedback control).
- Taught a **matlab** class and exercises linked to a fMRI lecture.

2007 - 2009
(BBSRC funding)

2000 - 2002
(ESA funding)

- **Designed and implemented an experimental biomedical platform** for dedicated real-time data acquisition in altered gravity.
- Managed the 31st ESA **parabolic flight campaign** and controlled the experiment in-flight.
- Member of the **Topical Team** funded by ESA: *Dynamics of Prehension in Microgravity and its applications to Robotics and Prosthetics*.

EDUCATION

2002 - 2007
(ESA funding)

- PhD in the Louvain School of Engineering and in the Rehabilitation unit, Université catholique de Louvain (Belgium). Co-supervision: Profs P. Lefèvre (Louvain School of Engineering) and J.L. Thonnard (MD): *"The role of gravity in dexterous manipulation: a driving force rather than a perturbation"*.
- Supervised 6 master students preparing their thesis in the field of engineering and medicine and animated workshops in motor control.
- **Managed 6 ESA parabolic flight campaigns** (in the continuity of the 31st).
- **Scientific contribution to the development of a proposal in response to the 2004 International Life Science Research Announcement** selected for flight in the International Space Station (outstanding review score of 92 %).
- Participated in the specifications of a novel experimental life science platform for the International Space Station in collaboration with ESA and the spin-off company ARSALIS.

1995 - 2000

Master in Computer Engineering obtained with high honors (UCL).
Thesis: « *Impact of Java technology in embedded and real-time systems* ».

HOBBIES AND INTERESTS

Cycling

Total distance of about 4000 km covered every year. Rode across France (bicycle and tandem) and across the USA (6000 km from Washington DC to San Francisco CA in 47 days). Wrote and published the novel: *"L'Amérique à 12 vitesses"*.

Scouting

Member of a Boy Scout troop from 1990 to 1994 and cook during two camps.

Miscellaneous Space Exploration, mineralogy, chemistry, fundamental physics, first aid worker.

Social President of the “Association des Parents d’élèves” at the local school (2 years, 280 families).

PUBLICATIONS AND COMMUNICATIONS

Please visit <http://olivierwhite.weebly.com/publications.html> for further detail.

Published articles (only peer reviewed)

Aubert A, Larina I, Momken I, Blanc S, **White O**, Prisk K, Linnarsson D. (2016). Towards Human Exploration of Space: The THESEUS review series on cardiovascular, respiratory, and renal research priorities. *NPJ Microgravity* (in press).

Rousseau C, Papaxanthis C, Gaveau J, Pozzo T, **White O**. (2016). Initial information prior to movement onset influences kinematics of upward arm pointing movements. *J Neurophysiol* (in press).

White O, Clement G, Fortrat J-O, Pavy Le Traon A, Thonnard J-L, Blanc S, Wuyts F, Paloski W. (2016). Towards Human Exploration of Space: The THESEUS review series on neurophysiology research priorities. *NPJ Microgravity* (in press).

White O & French R. (2016) Pupil diameter may reflect motor control and learning. *J Mot. Behaviour* (in press).

Rousseau C, Fautrelle L, Papaxanthis C, Fadiga L, Pozzo T, **White O**. (2016). Direction-dependent activation of the insular cortex during vertical and horizontal hand movements. *Neuroscience* 325 10–19. [cover page].

White O. (2015). The brain adjusts grip forces differently according to gravity and inertia: a parabolic flight experiment. *Front. Integr. Neurosci.* 9:7 [PDF].

White O, Davare M, Andres M, Olivier E (2013). The Role of Left Supplementary Motor Area in Grip Force Scaling. *PLoS ONE* 8(12): e83812. doi:10.1371/journal.pone.0083812. [PDF]

White O & Diedrichsen J. (2013). Flexible switching of feedback control mechanisms allows for learning of different task dynamics. *PLoS ONE*. 8(2): e54771. doi:10.1371/journal.pone.0054771. [PDF]

Papaxanthis C, Paizis C, **White O**, Pozzo T, Stucchi N. (2012). The Relation between Geometry and Time in Mental Actions. *PLoS ONE*. 7(11):e51191. doi: 10.1371/journal.pone.0051191. [PDF]

White O, Lefèvre P, Wing AM, Bracewell RM, Thonnard JL. (2012) Active Collisions in Altered Gravity Reveal Eye-hand Coordination Strategies. *PLoS ONE*. 7(9): e44291. doi:10.1371/journal.pone.0044291. [PDF]

Papaxanthis C, Paizis C, Pozzo T, **White O**, Stucchi N. Mental Movement Simulation is Optimally Tuned to the Kinematic laws Characterizing Actions: Experimental Evidences from the $2/3$ power law. *Submitted*.

Dierick F, Laine G, Van Oystaeyen B, **White O**. Effect of volleyball training background and warm-up exercise on passive kinematics and musculo-articular impedance of the knee joint. *In press*. [Student undergrad work].

White O, Thonnard JL, Wing A, Bracewell M, Diedrichsen J, Lefevre P. Grip force regulates hand impedance to optimize object stability in high impact loads. *Neuroscience*. 189C:269-276. 2011.

White O & Diedrichsen J. Responsibility Assignment in Redundant Systems. *Curr Biol*. 20(14):1290-1295. 2010.

Diedrichsen J, **White O**, Newmann D, Lally N. Use-dependent and error-based learning of motor behaviors. [J Neurosci](#). 30 (15):5159-66. 2010.

White O, Dowling N, Bracewell M, Diedrichsen J. Rapid grip force adjustments interact between the hands independently of the manipulated object. [J Neurophysiol](#). 100:2738-2745, 2008.

White O, Bleyenheuft Y, Ronsse R, Smith A, Thonnard JL, Lefevre P. Altered gravity highlights Central Pattern Generators mechanisms. [J Neurophysiol](#). 100:2819-2824, 2008. **[Faculty of 1000]**.

White O, Diedrichsen J. Motor Control: from joints to objects and back. [Curr Biol](#). 18 (12):R532-3, 2008.

White O. The role of gravity in dexterous manipulation: a driving force rather than a perturbation. [PhD Thesis](#), Louvain-la-Neuve, Belgium, 2007.

White O, Penta M, Thonnard JL. A new device to measure the three dimensional forces and torques in precision grip tasks. [J Medical Eng & Tech](#). 2008.

Ronsse R, **White O**, Lefevre P. Computation of gaze orientation under unrestrained head movements. [J Neurosci Methods](#). 159, 158-169. 2007.

Thonnard JL, Smith A, Wing A, McIntyre J, Lefèvre P, **White O**, Augurelle AS, Langlais JS, Witney A, Blohm G, Penta M, Elmann-Larsen B. Eye-Hand Coordination : Dexterous object manipulation in new gravity fields. [ESA Publications](#). 1281, 148-163. 2005.

White O, Lefevre P, Thonnard JL. Eye-hand coordination in controlled collisions in altered gravity. [Comput Methods Biomech Biomed Engin Supp 1](#) : 281. 2005.

White O, McIntyre J, Augurelle AS, Thonnard JL. Do novel gravitational environments alter the grip-force/load-force coupling at the fingertips? [Exp Brain Res](#). 163(3), 324-34. 2005.

Augurelle AS, Penta M, **White O**, Thonnard JL. The effect of a change in gravity on the dynamics of prehension. [Exp Brain Res](#). 148, 533-540. 2003.

Selected communications

White O. (2016). Invited talk. The promise of basic motor control in rehabilitation. [University of East Anglia](#). Norwich, UK.

White O. (2016). Invited talk. Motor control in redundant systems. [KU Leuven](#). Leuven, BE.

Van Loon J, Wuyts F, Bravenboear N, **White O** et al. (2015). Moon as a stepping stone for Mars: centrifuges on Moon! [Moon 2020-2030](#). Noordwijk, NL.

Rousseau C, Fautrelle L, Papaxanthis C, Pozzo T, **White O**. (2015). The insular cortex integrates proprioceptive information sensitive to gravity. [ESMRMB](#). Edimburgh, UK.

White O, Lefèvre P, Van Loon J, Thonnard JL, Hermsdörfer J. (2014). Anticipatory grip force between 1 and 3g. The 40th [COSPAR Scientific Meeting](#). Moscow, RU.

White O, Lefèvre P, Thonnard JL, Hermsdörfer J. (2014). Anticipatory grip force between 1 and 3g. [Neural Control of Movement](#). Amsterdam, NL.

White O. (2013). The grip force controller differentiates the inertial and gravitational components of the load. [Human In Space symposium](#). Cologne, DE.

White O, French R. (2013). Effect of motor imagery on pupil dilation. [Neural Control of Movement](#). Puerto Rico.

White O and Blanc Stéphane. (2012). THESEUS: Cluster 1: Integrated Systems Physiology. [THESEUS Launch conference](#), CNES, Paris, France.

White O, Papaxanthis C, Pozzo T. (2011 & 2012). When a mechanical continuum requires a discrete control. [Society for Neuroscience 41st annual meeting](#). Washington DC, USA.

And

4th [France Israël Binational Neuroscience Conference](#), Aussois, France.

White O, Pozzo T, Paizis C, Papaxanthis C. (2011). Motor learning by mental training and observation. [Society for Neuroscience 41st annual meeting](#). Washington DC, USA.

Wing A, **White O,** Lefevre P, Thonnard JL. (2011). Predictive grip for high impact loads in altered gravity fields. [UK Space Agency](#). Harwell, Oxford, UK.

White O. (2010). La manipulation d'objets réels et virtuels: aspects théoriques, cliniques et technologiques. [Université de Bourgogne](#), Dijon, France.

Diedrichsen J & **White O.** (2009). Use-dependent and error-based learning of new motor behaviors. [Society for Neuroscience 39th annual meeting](#). Chicago, IL, USA.

White O & Diedrichsen J. (2008 and 2009). Responsibility assignments in redundant systems. [Workshop](#), Université catholique de Louvain, Belgium.

And

[Midlands and Wales Motor Meeting](#), University of Cambridge, UK.

White O, Dowling N, Bracewell M, Diedrichsen J. (2008). Rapid grip force adjustments interact between the hands during object manipulation. [Neural Control of Movement](#). Naples FL, USA. **NCM Scholarship Program Award.**

Le Seac'h A, **White O,** Lefèvre P, Thonnard JL, McIntyre J. (2007). Internal representations of vertical for the control of sensorimotor tasks. [Society for Neuroscience 37th annual meeting](#). San Diego, CA, USA.

White O, Bleyenheuft Y, Ronsse R, Smith A, Lefèvre P, Thonnard JL. (2007). Altered gravity highlights Central Pattern Generators mechanisms. 4th European Congress "[Medicine in Space and in Extreme Environments](#)", Berlin, Germany. And [Midlands and Wales Motor Meeting](#), School of Psychology, Bangor University, UK.

White O. (2007). Predictive grip for high impacts loads in altered gravity. Progress Report for the ISS experiment. [ESA \(ESTEC\)](#), Noordwijk, The Netherlands.

White O, Wing A, Lefevre P, Thonnard JL. (2006). Eye-hand coordination in predictive grip for high impacts loads in altered gravity fields. 9th [ESA Workshop](#) on Advanced Space Technologies for Robotics and Automation. Noordwijk, The Netherlands.

White O, Wing A, Lefevre P, Thonnard JL. (2006). Predictive grip for high impact loads in altered gravity fields. [Society for Neuroscience 36th annual meeting](#). Atlanta GA, USA.

White O, Lefevre P, Ykman N, Wing A, Thonnard JL. (2005). Controlled collisions in altered gravitational fields. 26th [ESA International Society of Gravitational Physiology \(ISGP\)](#). Cologne, Germany. **Young Researchers Best Presentation Award.**

White O, Lefevre P, Ykman N, Wing A, Thonnard JL. (2005). Controlled collisions in altered gravitational fields. [Neural Control of Movement](#). Key Biscayne FL, USA.

White O, Blohm G, Thonnard JL, Lefevre P. (2004). Accurate visual feedback enhances learning of manipulation in altered gravity. [Society for Neuroscience](#) 34th annual meeting. San Diego CA, USA.