



Michel LACOUR

Professor

PhD in Neurosciences - Master in Psychology

Director of Research (CNRS)

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Current Position:

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CURRICULUM VITAE

Diploma and Qualifications

1970: Master in Psychology

1971: Master in Neurosciences

1972: PhD in Neurosciences

1981: Doctorat ès-sciences

1972-1984: Assistant Professor

1985-1990: Dir. Research (CNRS)

1990-2012: Dir. Res. 1st Class, Pr

2012- : Expert Opinion/Consulting

Scientific Directions / Academic Honors

1996-2007: Head of Research Unit UMR 6149

« Integrative and Adaptive Neurobiol »

1994-2010: Scientific Committee of the University

2002-2008: Administ Committee of the University

2005-2008: Head of the BBC Institute

2002-2006: Provence Economic Committee

1996-2012: Member of Neurocognitive Federation

2001: Chevalier des Palmes Académiques

2010: Officier des Palmes Académiques

Scientific Activity and Publications

*Leader in "Vestibular Compensation"
"Vestibular Rehab" and Posture/Fall

Conferences, Editor Activity, Expert Opinion

*200 Invited Lectures in Europa, Asia, Russia, USA
Central and Latina America

- *250 papers in International Journals
- *50 Chapters in International Books
- *Organization of 12 Int. Congresses
- *Expert/Referee for 15 Int. Journals
- *400 participations in Int. Congresses
- *65 Public and Private Grants

- * Edition of 12 Books
- * Creation of Collection “Posture and Equilibrium” Solal (Marseille) / De Boeck (Brussels) Editors
- * Scientific Advisory Board of Internat. Journals
- * Board of the Scientific and Technology Festival (Marseille)

Valorisation/Technology Transfert

- *Pharmaceutical Laboratories (Abbott, IPSEN, IRPF, Grünenthal, UCB Pha)
- *Translational Force Plate (Synapsys)
- *Software for Posture Analysis (Framiral)
- *Consulting Activity (Compensation, Rehabilitation, Posture, Pharmacology)
- *Antivertigo Drugs and New Molecules

Teaching Activity

- * Development / Plasticity (Master Neurosciences)
- * Postlesional Plasticity (Master Neurosciences)
- * Clinical Posturology (University Diploma)
- * Rehabilitation Procedures (Master Handicap)
- * Scientific Direction (45 Docts and Postdocts)
- * Management of Vertigo (Masterclasses in France, Europe, Asia and North Africa)

International Expertise

Michel LACOUR, PhD in Neurosciences and Master in Psychology, works at the Aix-Marseille University, France. One major characteristic of Michel Lacour’s profile is his internationally recognized expertise in both Basic Research and Clinical Investigations.

His well-known works in animal models are focused on CNS plasticity and recovery mechanisms after vestibular lesions. He proposed a conceptual model based on the re-expression of developmental mechanisms in the vestibular nuclei and related nervous structures, responsible for full recovery of the static vestibular functions. Michel was the first to demonstrate that post-lesion plasticity depended on both vestibular etiology and post-lesion sensorimotor activity. He clearly demonstrated that optimal recovery of the vestibular functions was better with active and early training. Recovery of the dynamic vestibular functions was explained by a second heuristic model based on different sensory substitution processes and different behavioral strategies elaborated by the whole brain, that differed from one patient to another (vicarious idiosyncratic mechanisms).

Michel Lacour has developed strong collaborations with ENTs and Physiotherapists to investigate posture control, gaze stability and cognitive functions in patients with unilateral and bilateral vestibular loss. His translational approach investigated the efficacy of different rehabilitation therapies applied at various time periods after symptoms onset. He highlighted the crucial role of early rehab and degree of vestibular loss in vestibular function recovery, he explained and improved existing rehabilitation programs by incorporation of new concepts (critical period: earlier is better), and he

developed new paradigms and tools for rehab (dual task, dynamic subjective visual vertical, translational platform).

Michel Lacour has also strong involvement in pharmacological researches (testing of different molecules to treat vertigo and dizziness) and transfer of advanced technology, including new devices (dynamic platform: Synapsys) and new softwares (PosturoPro, Framiral) to investigate posture and balance recovery.

Michel Lacour is the author of 250 publications in international referred journals and has more than 100 Masterclasses in Europe, Russia, Asia, Middle East, North Africa, and USA. He provides his expert opinion for many international journals and scientific societies, and is unpaid consultant to several companies (pharmacology, physiotherapy).

MAJOR SCIENTIFIC PUBLICATIONS IN THE LAST TWO DECADES

H index: 49.70; 8500 citations

1. Borel L, Harlay F, Magnan J, **Lacour M** (2002) Deficits and recovery of head and trunk orientation and stabilization after unilateral vestibular loss. *Brain* 125, 880-894.
2. Tighilet B, Trottier S, Mourre C, Chotard C, **Lacour M** (2002) Betahistine dihydrochloride interaction with the histaminergic system in the cat: neurochemical and molecular mechanisms. *Eur J Pharmacol* 446, 63-73.
3. Picquet F, Bouët V, Canu MH, Stevens L, **Lacour M**, Falempin M (2002) Contractile properties and myosine expression in rats born and raised in hypergravity. *Am J Physiol (Reg Integr Comp Physiol)* 282, 1687-1695.
4. Bouët V, Gahéry Y, **Lacour M** (2003) Behavioural changes induced by early and long-term gravito-inertial force modification in the rat. *Beh Brain Res* 139, 97-104.
5. Bouët V, Borel L, Harlay F, Gahéry Y, **Lacour M** (2004) Kinematics of treadmill locomotion in rats conceived, born and raised in a hypergravity (2g) field and adaptation to 1g. *Beh Brain Res* 150, 207-216.
6. Borel L, Harlay F, Lopez C, Magnan J, Chays A, **Lacour M** (2004) Walking performance of vestibular defective patients before and after unilateral vestibular neurotomy. *Beh Brain Res* 150, 191-200.
7. Bozzo C, Stevens L, Bouët V, Montel V, Piquet F, Falempin M, **Lacour M**, Mounier Y (2004) Hypergravity from conception to adult age: effects on contractile properties and skeletal muscle phenotype. *J Exp Biol* 207, 2793-2802.

8. Ghulyan V, Paolino M, Lopez C, Dumitrescu M, **Lacour M** (2005) A new translational platform for evaluating aging and pathology-related postural disorders. *Acta Otolaryngol (Stockh)* 125, 607-617.
9. Péruch P, Borel L, Magnan J, **Lacour M** (2005) Direction and distance deficits in path integration after unilateral vestibular loss depend on task complexity. *Cog Brain Res* 25, 862-872.
10. Tighilet B, Trottier S, **Lacour M** (2005) Dose- and duration-dependent effects of betahistine dihydrochloride treatment on histamine turnover in the cat. *Eur J Pharmacol* 523, 54-63.
11. Lopez C, Borel L, Magnan J, **Lacour M** (2005) Torsional optokinetic nystagmus after unilateral vestibular loss : asymmetrical changes and compensation. *Brain* 128, 1511-1524.
12. Picquet F, Bouët V, Cochon L, **Lacour M**, Falempin M (2005) Changes in rat soleus muscle phenotype consecutive to a growth in hypergravity followed by normogravity. *Am J Physiol (Reg Integr Comp Physiol)* 289, 217-224.
13. Lopez C, **Lacour M**, Ballester M, Dumitrescu M, Anton J, Nazarian B, Borel L (2005) Brain activation during subjective visual vertical judgement. A functional magnetic resonance imaging study. *Gait & Posture* 21, 49-
14. Tighilet B, Trottier S, Mourre C, **Lacour M** (2006) Changes in the histaminergic system during vestibular compensation in the cat. *J Physiol (Lond)* 573, 723-739.
15. Lopez C, **Lacour M**, Magnan J, Borel L (2006) Visual-field dependence-independence before and after unilateral vestibular loss. *Neuroreport* 17, 797-803.
16. **Lacour M** (2006) Restoration of vestibular function: basic aspects and practical advances for rehabilitation. *Current Med Res & Opinion* 22, 1651-1659.
17. Tighilet B, Brezun JM, Gustave Dit Duflo S, Gaubert C, **Lacour M** (2007) New neurons in the vestibular nuclei complex after unilateral vestibular neurectomy in the adult cat. *Eur J Neurosci* 25, 47-58.
18. Lopez C, **Lacour M**, Ahmadi AE, Magnan J, Borel L (2007) Changes of visual vertical perception: a long-term sign of unilateral and bilateral vestibular loss. *Neuropsychologia* 45, 2025-2037.
19. Tighilet B, Mourre C, Trottier S, **Lacour M** (2007) Histaminergic ligands improve vestibular compensation in the cat: behavioural, neurochemical and molecular evidence. *Eur J Pharmacol* 568, 149-163.
20. **Lacour M**, Van De Heining PH, Novotny M, Tighilet B (2007) Betahistine in the treatment of Menière's disease. *Neuropsych Dis Treat* 3, 429-440.
21. **Lacour M** (2007) Bases neurobiologiques de l'habituation: applications en rééducation des vertiges? *Rapport Société Française ORL*. Chapitre VIII, pp 81-94.

22. Lopez C, **Lacour M**, Léonard J, Magnan J, Borel L (2008) How body position changes visual vertical perception after unilateral vestibular loss. *Neuropsychologia* 46, 2435-2440.
23. Borel L, Lopez C, Péruch P, **Lacour M** (2008) Vestibular syndrome : a change in internal spatial representation. *Neurophysiol Clin Clin Neurophysiol* 38, 375-389.
24. **Lacour M**, Bernard-Demanze L, Dumitrescu M (2008) Posture control, aging, and attention resources: models and posture analysis models. *Neurophysiol Clin Clin Neurophysiol* 38, 411-421.
25. **Lacour M**, Dutheil S, Lopez C, Tighilet B, Borel L (2009) Tell me your vestibular deficit, and I'll tell you how you'll compensate. *Ann N Y Acad Sci* 1164, 268-278.
26. Bernard L, Dumitrescu M, Jimeno P, **Lacour M** (2009) Age-related differences in human posture control are differentially affected by postural and cognitive tasks complexity. *Curr Aging Sci* 2, 135-149.
27. Tighilet B, Manrique C, **Lacour M** (2009) Stress axis plasticity during vestibular compensation in the adult cat. *Neurosci* 160, 716-730.
28. Dutheil S, Brezun JM, Léonard J, **Lacour M**, Tighilet B (2009) Neurogenesis and astrogenesis contribution to recovery of vestibular functions in the adult cat following unilateral vestibular neurectomy: cellular and behavioural evidence. *Neurosci* 164, 1444-1456.
29. **Lacour M**, Tighilet B (2010) Plastic events in the vestibular nuclei during vestibular compensation: the brain orchestration of a deafferentation code. *Rest Neurol Neurosci* 28, 19-35.
30. Liberge M, Manrique C, Bernard-Demanze L, **Lacour M** (2010) Changes in TNF α , NF κ B and MnSOD protein in the vestibular nuclei after unilateral vestibular deafferentation. *J Neuroinflammation* 7, 91-107.
31. Redon C, Lopez C, Bernard-Demanze L, Dumitrescu M, Magnan J, **Lacour M**, Borel L (2011) Betahistine treatment improves the recovery of static symptoms in patients with unilateral vestibular loss. *J Clin Pharmacol* 51, 438-448.
32. Dutheil S, **Lacour M**, Tighilet B (2011) The neurogenetic potential of the vestibular nuclei and the recovery time course in the adult cat are governed by different mechanisms depending on the nature of the vestibular damage. *Plos One* 6(8), e22262.
33. Dutheil S, **Lacour M**, Tighilet B (2011) Discovering a new functional neurogenic zone: the vestibular nuclei of the brainstem. *Med Sci* 27 (6-7), 605-613.
34. Ulmer E, Bernard-Demanze L, **Lacour M** (2011) Statistical study of normal canal deficit variation range : measurement using the Head Impulse Test video system. *Eur Ann ORL, Head & Neck diseases* 128, 278-282.

35. Young LR, Bernard-Demanze L, Dumitrescu M, Magnan J, Borel L, **Lacour M** (2012) Postural performance of vestibular loss patients under increased postural threat. *J Vest Res* 22, 129-138.
36. Bernard-Demanze L, Léonard J, Dumitrescu M, Jimeno P, Deveze A, Lavieille JP, **Lacour M** (2012) Prédiction de chutes : proposition d'un test clinique comme outil de détection. Part I. *ProfessionKiné* 37, 20-24.
37. Bernard-Demanze L, Léonard J, Dumitrescu M, Jimeno P, Deveze A, Lavieille JP, **Lacour M** (2013) Prédiction de chutes : proposition d'un test clinique comme outil de détection. Part II. *ProfessionKiné* 38, 19-24.
38. **Lacour M** (2013) Betahistine treatment in managing vertigo and improving vestibular compensation: clarification. *J Vest Res* 23, 139-151.
39. **Lacour M** (2013) Physiologie de l'équilibre: des modèles génétiques aux conceptions cognitivistes. *Encyclopédie Médico-Chirurgicale Podologie* 9(1), 1-7.
40. Tighilet B, Mourre C, **Lacour M** (2013) Plasticity of the histamine H3 receptors after acute vestibular lesion in adult cat. *Front Int Neurosci* 7, 87. Doi.10.3389/fnint.2013.00087
41. Bernard-Demanze L, Léonard J, Dumitrescu M, Meller M, Magnan J, **Lacour M** (2014) Static and dynamic posture control in postlingual cochlear implanted patients: effects of dual-tasking, visual and auditory inputs suppression. *Front Int Neurosci* 7, 111. Doi.10.3389/fnint.2013.00111
42. **Lacour M**, Bernard-Demanze L (2014) Interaction between vestibular compensation mechanisms and vestibular rehabilitation therapy. 10 recommendations for optimal functional recovery. *Front Neurol* 5, 285. Doi.3389/fneur.2014.00285
43. Deveze A, Montava M, Lopez C, **Lacour M**, Magnan J, Borel L (2015) Vestibular compensation following vestibular neurotomy. *Eur Ann Otolaryngol Head Neck Surg* 132, 197-203
44. **Lacour M** (2015) Vieillesse du contrôle postural et de l'équilibre. *Encyclopédie Médico-Chirurgicale Podologie* 11(4), 1-8
45. Tighilet B, Léonard J, Bernard-Demanze L, **Lacour M** (2015) Comparative analysis of pharmacological treatments with acetyl-DL-leucine (Tanganil) and its two isomers (acetyl-D-leucine and acetyl-L-leucine) on vestibular compensation: behavioral investigation in the cat. *Eur J Pharmacol*. Doi.org/10.1016/j.ejphar.2015.11.041
46. **Lacour M**, Helmchen C, Vidal PP (2015) Vestibular compensation: the neuro-otologist's best friend. *J Neurol*. Doi: 10.1007/s00415-015-7903-4
47. **Lacour M**, Bernard-Demanze L (2016) Menière's disease patients in the rehabilitative stage. In: M Barbara (Ed) *Menière's disease and inner ear disorders: update 2015*. Kugler Publications, Amsterdam, The Netherlands, pp 289-294

48. **Lacour M**, Bernard-Demanze L (2016) La rééducation vestibulaire pour les nuls. *Cahiers Audition* 29 (2), 24-29
49. Bernard-Demanze L, **Lacour M** (2017) The fall in older adults: physical and cognitive problems. *Current Aging Sciences* 10 (3), 185-200
50. **Lacour M** (2017) Rééducation de la posture et de l'équilibre. *Encyclopédie Médico-Chirurgicale Podologie* 27-128-A, 1-8
51. Bernard-Demanze L, Montava M, Mattei A, Lavieille JP, **Lacour M** (2017) Effects of vestibular rehabilitation therapy on postural control and quality of life in patients after a surgical microvascular decompression of the cochleo-vestibular nerve. *Otolaryngol (Sunnyvale)* 7. 318: doi:10.4172/2161-119X.1000318
52. Tighilet B, Léonard J, Pages K, Watabe I, Bernard-Demanze L, **Lacour M** (2018) Betahistine treatment in a cat model of vestibular pathology: Pharmacokinetic and pharmacodynamic approaches. *Front. Neurol.* 9:431. doi:10.3389/fneur.2018.00431
53. **Lacour M**, Yavo Dusso N, Thiry A, Heulschen S, Van Nechel C, Toupet M (2018) How eye movements stabilize posture in patients with bilateral vestibular hypofunction. *Frontiers in Neurology* 9: 744. Doi.org/103389/fneur.2018.00744
54. Magnan J, Nuri Özgirgin O, Trablzini F, **Lacour M**, Lopez Escamez A, Magnusson M, Alpin Güneri E, Guyot JP, Nuti D, Mandelà M (2018) European position statement on diagnosis, and treatment of Menière's disease. *J Int Adv Otol* 14: 317-321. Doi: 10.5152/Iao.2018.140818
55. Casani AP, Navari E, Guidetti G, **Lacour M** (2018) Good clinical approach: a Delphi consensus for the use of betahistine in Menière's disease. *Int J Otorhinolaryngol* 2018: 1-12. Doi.org/10.1155/2018/5359208
56. **Lacour M**, Tardivet L, Thiry A (2019) Recovery of dynamic visual acuity in acute unilateral peripheral vestibulopathy: earlier is better. *Europ Arch Otorhinolaryngol.* 277 (1) 103-113. Doi. 10.1007/s00405-019-05690-4
57. **Lacour M**, Tardivet L, Thiry A (2020a) A critical period for rehabilitation of unilateral vestibular hypofunction patients with the unidirectional rotation paradigm. *J Rehab Therapy* 2(1): 16-23.
58. Toupet M, **Lacour M**, Lopez C, Van Nechel C (2020) Dictionnaire expliqué des vertiges. Framiral (Ed), 230 pp.
59. **Lacour M**, Tardivet L, Thiry A (2020b) Rehabilitation of balance control in unilateral vestibular hypofunction patients depends on vestibular rehabilitation onset and postural task difficulty. *J Rehab Therapy* 2(2): 13-26.
60. **Lacour M**, Tardivet L, Thiry A (2021) Two conditions to fully recover dynamic canal function in unilateral peripheral vestibular hypofunction patients. *J Vest Res* 31: 407-421. Doi: 10.3233/VES-201557.

61. **Lacour M** (2021) Compensation Vestibulaire et Vieillessement. In *Le vieillissement cochléo-vestibulaire*, JP Lavieille et A Bozorg Grayeli (Eds), Rapport à la Société Française d'ORL, Elsevier Masson, pp 128-136.
62. **Lacour M**, Tardivet L, Thiry A (2022) Posture deficits and recovery after unilateral vestibular loss: early rehab and degree of vestibular hypofunction matter. *Front Hum Neurosci* 15: 776970. Doi: 10.3389/fnhum.2021.776970.
63. **Lacour M** (2022) Rééducation Vestibulaire: des origines aux fondements neuro-physiologiques. *Kinésithér Scient* 641 : 29-41.
64. **Lacour M**, Lopez C, Thiry A, Tardivet L (2023) Vestibular Rehabilitation Improves Spontaneous Nystagmus Normalization in Patients with Acute Unilateral Vestibulopathy *Front Rehab Sci.* 4:1122301. Doi: 10.3389/fresc.2023.1122301
65. Haijoub S, **Lacour M** (2023) Asymmetry of the subjective visual vertical in patients with unilateral peripheral vestibular deficits. *J Audiol Otol* 28 (2): 1-8. Doi : 10.7874/jao.2023.00346.
66. Ozgirgin ON, Kingma H, Manzari L, **Lacour M** (2024) Residual dizziness after BPPV management : exploring pathophysiology and treatment beyond canalith repositioning maneuvers. *Front Neurol* 15 :1382196. Doi :10.3389/fneur.2024.1382196
67. **Lacour M**, Haijoub S (2024) Vestibular rehabilitation normalizes the impaired vestibular functions. *Int J Phys Med Rehab* 12 : 738. Doi : 10.35248/2329-9096.24.12.738.
68. Haijoub S, Hautefort C, Toupet M, **Lacour M** (2024) Asymmetry and rehabilitation of the subjective visual vertical in unilateral vestibular hypofunction patients. *Front Neurosci Syst* .Doi : 10.3389/fnsys.2024.14514637.
69. Tramontano M, Haijoub S, Lacour M, Manzano L (2024) Updated view on physical vestibular therapy for patients with vestibular deficits *Healthcare (in press)*