

Claudio Luis Ferre, PhD

635 Commonwealth Ave., Boston University

Boston, MA 02215

clferre@bu.edu | [DEMR Lab](#)

EDUCATION AND TRAINING

- 2015-2019 Postdoctoral Research Fellow, Burke Neurological Institute, Weill Cornell Medicine, White Plains, NY
- 2015 PhD, Kinesiology, Columbia University, New York, NY
- 2008 MA, Developmental Psychology, UNC-Greensboro, Greensboro, NC
- 2005 BS, Psychology, DePaul University, Chicago, IL,

ACADEMIC APPOINTMENTS

- 2019 - current Assistant Professor, Dept. of Occupational Therapy, College of Health & Rehabilitation Sciences: Sargent College, Boston University, Boston, MA
- 2019 - current Faculty, Neurophotonics Center, Boston University, Boston, MA
- 2018-2019 TL1 Postdoctoral Fellow, Weill Cornell Medicine, New York, NY
- 2017-2019 Adjunct Instructor, Dept. of Physical Therapy, New York University, New York, NY

SPECIAL POSITIONS, HONORS, AND AWARDS

- 2019-2021 NIH Pediatric Loan Repayment Program Award
- 2018 Training in Grantsmanship for Rehabilitation Research, Medical Uni. of South Carolina
- 2017 Diversity Travel Award, American Society for Neurorehabilitation
- 2015 Finalist, Gayle Arnold Award, American Academy of Cerebral Palsy and Developmental Medicine
- 2013 Student Scholarship, American Academy of Cerebral Palsy and Developmental Medicine
- 2013 Teachers College, Columbia University Minority Scholarship
- 2009 Office of Policy and Research Fellowship, Teachers College, Columbia University
- 2008 NIH/Sackler Institute Travel Award
- 2007 NIH/Sackler Institute Travel Award

RESEARCH FUNDING

Active

NIH NINDS K01NS117659

2021 – 2026

Faculty Development Award to Promote Diversity in Neuroscience

Title: Codevelopment of Sensory and Motor Function in Infants At-risk for Cerebral Palsy

Role: PI

\$978,327 (anticipated) direct + \$78,266 indirect = \$1,056,593

Completed

NIH/NCATS TL1-TR-002386

2018 - 2019

Clinical & Translational Science Postdoctoral Training Award,

Title: Combined tDCS and Bimanual Therapy in Children with Cerebral Palsy

Role: Principal Investigator/Trainee

Children's Hemiplegic and Stroke Association 2014 - 2015
Title: Comparison of Home-based bimanual training and Lower-Limb Functional Training Using Caregivers as Interventionists
Role: Co-Principal Investigator

Teachers College, Columbia University 2014
 Doctoral Dissertation Grant
Title: Caregivers as Interventionists: A randomized-control study of intensive home-based bimanual training for children with hemiplegic cerebral palsy
Role: Principal Investigator

Teachers College, Columbia University 2012-2013
 Vice President's Grant for Student Research in Diversity,
Title: Feasibility of a Home-based Intensive Therapy for Young Children with Hemiplegic Cerebral Palsy
Role: Principal Investigator

PUBLICATIONS

Peer Reviewed Articles:

1. Friel, K.M., **Ferre, C.L.**, Brandão, M.B., Kuo, H-S, Chin, K.Y., Hung, Y-C, Robert, M.T., Flamand, V., Smorenburg, A., Bleyenheuft, Y., Carmel, J.B., Campos, T., Gordon, A.M. (In press). Improvements in upper extremity function following intensive training are independent of corticospinal tract organization in children with unilateral spastic cerebral palsy. *Frontiers in Neurology*.
2. Robert, M.T., Gutterman, J., **Ferre, C.L.**, Chin, K.Y., Brandão, M., Gordon, A.M., Friel, K.M. (In press). Corpus callosum integrity relates to improvement of upper extremity function following intensive rehabilitation in children with unilateral spastic cerebral palsy. *Neurorehabilitation and Neural Repair*.
3. Robert, M.T., **Ferre, C.L.**, Chin, K.Y., Brandão, M.B., Carmel, J.C., Araneda. R., Bleyenheuft, Y., Friel, K.M., Gordon, A.M., (In Press). Intensive bimanual intervention for children who have undergone hemispherectomy surgery: A pilot study. *Pediatric Physical Therapy*.
4. Figueiredo, P., Mancini, M.C. **Ferre, C.L.**, Gordon, A.G., Brandão, M. (2020). Effectiveness of hand-arm bimanual training in children with bilateral cerebral palsy: a randomized trial. *Developmental Medicine and Child Neurology*, 62(11), 1274-1282.
5. Dekkers, K.J., Rameckers, E.A, Smeets, R.J., Gordon, A.M., Speth, L.A., **Ferre, C.L.**, Janssen-Potten, Y. (2020). Upper extremity muscle strength in children with unilateral spastic cerebral palsy: A bimanual problem? *Physical Therapy*, 100(12), 2205-2216. DOI: 10.1903/ptj/pzaa155.
6. **Ferre, C.L.**, Babik, I., Michel, G.F. (2020). A perspective on the development of hemispheric specialization, infant handedness, and cerebral palsy. *Cortex*, 127, 208-220. doi: 10.1016/j.cortex.2020.02.017.
7. **Ferre, C.L.**, Flamand, V. Carmel, J.B., Friel, K.M. Gordon, A.M. (2020). Anatomical and functional characterization in children with unilateral cerebral palsy: An atlas-based analysis. *Neurorehabilitation and Neural Repair*. 34(2):148-158. doi: 10.1177/1545968319899916.

8. Surana, B., **Ferre, C.L.**, Brandao, M., Dew, A.P., Moreau, N.G., Gordon, A.M. (2019). Effectiveness of lower extremity functional training (LIFT) in young children with unilateral spastic cerebral palsy: a randomized trial. *Neurorehabilitation and Neural Repair*. doi: 10.1177/1545968319868719
9. Brandao, M.B., Mancini, M.C., **Ferre, C.L.**, Figueiredo, P., Oliveira, R.H., Goncalves, S.C., Dias, M.C., & Gordon, A.M. (2018). Does dosage matter? A feasibility study of Hand-arm Bimanual Intensive Training dose and dosing schedule in children with unilateral cerebral palsy. *Physical and Occupational Therapy in Pediatrics*. 38(3), 227-242.
10. Marneweck, M., Kuo, H-C., Smorenburg, A., **Ferre, C.L.**, Flamand, V.H., Gupta, D., Carmel, J.B., Bleyenheuft, Y., Gordon, A.M., & Friel, K.M. (2018). The relationship between hand function and overlapping motor representations of the hands in the contralesional hemisphere in unilateral spastic cerebral palsy. *Neurorehabilitation and Neural Repair*, 32(1), 62-72.
11. Gupta, D., Barachant, A., Gordon, A.M., **Ferre, C.L.**, Kuo, H-C., Carmel, J.B., & Friel, K.M. (2017). Effect of sensory and motor connectivity on hand function in pediatric hemiplegia. *Annals of Neurology*, 82(5), 766-780.
12. **Ferre, C.L.** & Gordon, A.M. (2017). Coaction of Individual and Environmental Factors: A Review of Intensive Therapy Paradigms for Children with Unilateral Spastic Cerebral Palsy. *Developmental Medicine and Child Neurology*, 59(11), 1139-1145.
13. Hung, Y.C., **Ferre, C.L.**, & Gordon, A.M. (2017). Improvements in kinematic performance after home-based bimanual training for children with unilateral cerebral palsy. *Physical and Occupational Therapy in Pediatrics*, doi: 10.1080/01942638.2017.1337663.
14. **Ferre, C.L.**, Brandao, M., Surana, B., Dew, A.P., Moreau, N.G., Gordon, A.M. (2017). Caregiver-directed home-based bimanual training in young children with unilateral spastic cerebral palsy: a randomized trial. *Developmental Medicine and Child Neurology*, 59(5), 497-504.
15. Kuo, H.C., **Ferre C.L.**, Carmel, J.B., Gowatsky, J.L., Stanford, A.D., Rowny, S.B., Lisanby, S.H., Gordon, A.M., & Friel, K.M. (2017). Using diffusion tensor imaging to identify corticospinal tract projection patterns in children with unilateral spastic cerebral palsy. *Developmental Medicine and Child Neurology*, 59(1), 65-71.
16. Smorenburg, A.R., Gordon, A.M., Kuo, H.C., **Ferre, C.L.**, Brandão, M., et. al. (2017). Does corticospinal tract connectivity influence the response to intensive bimanual therapy in children with unilateral cerebral palsy? *Neurorehabilitation and Neural Repair*, 31(3), 250-260.
17. Friel, K.M., Kuo, H.C., Fuller, J., **Ferre, C.L.**, Brandão, M., Carmel, J.B., & Gordon, A.M. (2016). Skilled bimanual training drives motor cortex plasticity in children with unilateral cerebral palsy. *Neurorehabilitation and Neural Repair*, 30(9). 834-844.
18. **Ferre, C.L.**, Brandão, M., Hung, Y.C., Carmel, J.B., Gordon A.M. (2015). Feasibility of caregiver-directed home-based hand-arm bimanual intensive training: A brief report. *Developmental Neurorehabilitation*, 18(1), 69-74.
19. Gelkop, N., Burshtein, D.G., Lahav, A., Brezne, A., Al-Oraibi, S., **Ferre C.L.**, et al. (2015). Efficacy of constraint-induced movement therapy and bimanual training in children with hemiplegic cerebral palsy in an educational setting. *Physical and Occupational Therapy in Pediatrics*, 35(1),24-39.

20. Brandão, M., **Ferre, C.L.**, Kuo, H-C., Rameckers, E.A., Bleyenheuft, Y., Hung, Y-C., Friel, K., & Gordon, A.M. (2014). Comparison of structured skill and unstructured practice during intensive bimanual training in children with unilateral spastic cerebral palsy. *Neurorehabilitation and Neural Repair*, 28, 452-61.
21. Gordon, A.M., Hung, Y.C., Brandão, M., **Ferre, C.L.**, Kuo, H.C., Friel, K., Petra, E., Chinnan, A., & Charles, J.R. (2011). Bimanual training and constraint-induced movement therapy in children with hemiplegic cerebral palsy: a randomized trial. *Neurorehabilitation and Neural Repair*, 25, 692-702.
22. **Ferre, C.L.**, Babik, I. & Michel, G.F. (2010). Development of infant prehension handedness: A longitudinal analysis during the 6- to 14-month age period. *Infant Behavior and Development*, 33, 492-502.
23. Kimmerle, M., **Ferre, C.L.**, Kotwica, K.A., & Michel, G.F. (2010). Development of role-differentiated bimanual manipulation during the infant's first year. *Developmental Psychobiology*, 52(2), 168-180.
24. Kotwica, K.A., **Ferre, C.L.**, & Michel, G.F. (2008). Relation of stable hand-use preferences to the development of skill for managing multiple objects from 7- to 13-months of age. *Developmental Psychobiology*, 50(5), 519-529.
25. Michel, G.F., Sheu, C.F., Tyler, A.N., & **Ferre, C.L.** (2006). The manifestation of infant hand-use preferences when reaching for objects during the seven- to thirteen-month age period. *Developmental Psychobiology*, 48,436-443.

Under Review:

- Kuo, H.S., **Ferre, C.L.**, Friel, K.M. Gordon, A.M. Strong mirror movements may suggest a preserved ipsilateral corticospinal tract in children with unilateral spastic cerebral palsy.

In Preparation:

- **Ferre, C.L.**, Gordon, A.M, Friel, K.M. Relationship between sensorimotor tracts and sensorimotor function in children with unilateral spastic cerebral palsy.

Book Chapters:

1. Friel, K.M., **Ferre, C.L.**, Gordon, A.M. (2020). Diagnosis and Management of Cerebral Palsy and Other Types of Pediatric Brain Injury. In *APA Handbook of Intellectual and Developmental Disabilities (Vol. 2)*. American Psychological Association.

PROFESSIONAL PRESENTATIONS

Peer Reviewed:

Nemanich, S.T., **Ferre, C.L.**, Papadelis, C., (2020). Progress in Multimodal Brain Imaging for Neurorehabilitation Research in Children with Cerebral Palsy: Towards Reproducible and Open Science. 74th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, New Orleans, LA. (Virtual Meeting due to COVID-19).

Ferre, C.L., Brandao, M.B., Chin, K., Flamand, V.H., Bonouvrie-Smorenburg, A., Campos, T.C., Robert, M., Bleyenheuft, Y., Carmel, J.B., Gordon, A.M., Friel, K.M., Kuo, H-S. (2020). Improvements in Hand Function After Unimanual or Bimanual Training Are Independent of Corticospinal Tract Laterality. 74th Annual Meeting of the

American Academy for Cerebral Palsy and Developmental Medicine, New Orleans, LA. (Virtual Meeting due to COVID-19).

Ferre, C.L., & Friel, K.M. (2019). Brain Anatomy and Hand Function in Children with Unilateral Cerebral Palsy. Combined Meeting of American Academy of Cerebral Palsy and Developmental Medicine and International Alliances of Academies of Childhood Disability, Anaheim, CA, Sept 18-21.

Ferre, C.L., & Friel, K.M. (2019). Brain Wiring and Hand Function in Children with Unilateral CP: Is there a connection? Combined Meeting of American Academy of Cerebral Palsy and Developmental Medicine and International Alliances of Academies of Childhood Disability, Anaheim, CA, Sept 18-21.

Ferre, C.L., Chin, K.Y., Gordon, A.M., & Friel, K.M. (2019). Bilateral Connectivity in Children with Unilateral Brain Injury: Implications for Upper-extremity Function. Combined Meeting of American Academy of Cerebral Palsy and Developmental Medicine and International Alliances of Academies of Childhood Disability, Anaheim, CA, Sept 18-21.

Robert, M.T., **Ferre, C.L.**, Chin, K.Y., Brandao, M., Carmel, J.B., Araneda, R., Bleyenheuft, Y., Friel, K.F., Gordon, A.M. (2019). Hand-Arm Bimanual Intensive Training in Children following Hemispherectomy Surgery. Pediatric Epilepsy Surgery Conference, Cleveland, OH, July 20.

Ferre, C.L., Soles, L.V., Gordon, A.M., & Friel, K.M. (2018). Relationship between sensorimotor tracts and sensorimotor function in children with unilateral spastic cerebral palsy. 72nd Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, Cincinnati, Oct. 09-13.

Robert, M.T., **Ferre, C.L.**, Chin, K., Brandao, M., Gordon, A.M. & Friel, K.M. (2018). Feasibility of delivering an intensive bimanual intervention to children who have undergone hemispherectomy. 72nd Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, Cincinnati, Oct. 09-13.

Robert, M.T., Gutterman, J., **Ferre, C.L.**, Gordon, A.M., & Friel, K.M. (2018). Improvement in upper extremity function in children with unilateral spastic cerebral palsy after intensive training correlates with interhemispheric connectivity. 72nd Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, Cincinnati, Oct. 09-13.

Ferre, C.L., Carmel, J.B., Gordon, A.M., & Friel, K.M. (2018). Anatomical and Functional Characterization of brain injury subtypes in children with unilateral spastic cerebral palsy: An atlas-based analysis. Progress in Clinical Motor Control I: Neurorehabilitation, University Park, PA. Jul. 23-25.

Ferre, C.L., Gordon, A.M., & Friel, K.M. (2017). Quantitative diffusion tensor tractography of motor and sensory pathways in children with unilateral spastic cerebral palsy and its relation to sensorimotor function. American Society of Neurorehabilitation Annual Meeting, Baltimore, MD. Nov 9-10.

Kuo, H-C, Marneweck, M., **Ferre, C.L.**, Flamand, V., Bleyenheuft, Y., Gordon, A.M., & Friel, K.M. (2017). Neurophysiological correlate of mirror movements in children with unilateral spastic cerebral palsy. 71st Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, Montreal, Quebec, Canada. Sep. 13-16.

Marneweck, M., Kuo, H.C., Smorenburg, A., Flamand, V., **Ferre, C.L.**, Bleyenheuft, Y., Gordon, A., & Friel, K.M. (2016). Searching for the neural correlates of hand function in unilateral spastic cerebral palsy: Does size and location of movement representations matter? 70th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine Hollywood, FL. Sep. 20-24.

Kuo, H.C., **Ferre, C.L.**, Friel, K.M., Gordon, A.M. (2016). The relationship between mirror movements and corticospinal tract connectivity in children with unilateral spastic cerebral palsy. 70th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine Hollywood, FL. Sep. 20-24.

Flamand, V.H., Smorenburg, A., Kuo, H.S., Marneweck, M., **Ferre, C.L.**, Bleyenheuft, Y., et al., (2016). Underpinnings of Intracortical motor circuits physiology in children with unilateral cerebral palsy. 70th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine Hollywood, FL. Sep. 20-24.

Ferre, C.L., Brandao, M., Surana, B., Dew, A.P., Moreau, N.G., Gordon, A.M. (2015). Caregivers as Interventionist: A randomized trial of home-based intensive bimanual training in young children with hemiplegia. 69th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, Austin TX. Oct 21-24.

Surana, B., Moreau, N.G., Dew, A.P., **Ferre, C.L.**, Brandao, M., Gordon, A.M. (2015). Effectiveness of lower extremity intensive functional training (LIFT) in young children with hemiplegia delivered in the home setting: a randomized control trial. 69th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine, Austin TX. Oct 21-24.

Smorenburg, A., Kuo, H.C., **Ferre, C.L.**, Brandão, M., Bleyenheuft, Y., Carmel, J.B., & Gordon, A.M., & Friel, K.M. (2014). Wired for recovery? How corticospinal tract connectivity influences the efficacy of intensive bimanual therapy in children with unilateral cerebral palsy. 68th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. San Diego, CA, Sep. 9-13.

Ferre, C.L., Brandão, M., Hung, L. Carmel, J., Gordon, A.M. (2013). Home-based Bimanual Training for Young Children with Hemiplegia: Is it Feasible to Train Caregivers as Interventionists? 67th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. Milwaukee, WI, Oct. 16-19.

Friel, K., Kuo, H-S., Gowatsky, J., **Ferre, C.L.**, Fuller, J., Carmel, J., Stanford, A., Lisanby, S., Bleyenheuft, Y., Gordon, A.M. (2013). Effects of structured vs. unstructured intensive bimanual training on hand function and plasticity in motor cortex. 67th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. Milwaukee, WI, Oct. 16-19.

Gelkop, N., Gol, D.B., Lahav, A., Brezner, A., Oraibi, S., **Ferre, C.L.**, Gordon, A.M. (2013). Constraint-induced movement therapy and bimanual training in children with hemiplegic cerebral palsy provided in a special education preschool and kindergarten setting. 67th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. Milwaukee, WI, Oct. 16-19.

Ferre, C.L., Brandão, M., Hung, Y.C., Carmel, J.B., & Gordon, A.M. (2012). Caregivers as interventionists: A feasible home-based bimanual therapy for children with hemiplegia. Poster session presented at the 4th Meeting of the International Cerebral Palsy Conference, Pisa, Italy, Oct 11-14th.

Friel K.M., Kuo H.-C., Bassi B., Murphy D.L.K., Lubner B.L., Carmel J.B., Gowatsky J.L., **Ferre C.L.**, Stanford A.D., Rowny S.B., Lisanby S.H., Gordon A.M. (2012). Motor cortex representations expand after bimanual training in children with hemiplegia. 4th Meeting of the International Cerebral Palsy Conference, Pisa, Italy, Oct 11-14th.

Kuo H.-C., **Ferre C.L.**, Carmel J.B., Gowatsky J.L., Stanford A.D., Rowny S.D., Lisanby S.H., Gordon A.M., Friel K.M. (2012). Using diffusion tensor imaging to visualize physiologically responsive motor pathways in children with hemiplegia. Fourth International Cerebral Palsy Conference.

Friel K.M., Kuo H.-C., Bassi B., Murphy D.L.K., Lubner B.L., Carmel J.B., Gowatsky J.L., **Ferre C.L.**, Stanford A.D., Rowny S.B., Lisanby S.H., Gordon A.M. (2012). Changes in the organization and excitability of the

corticospinal system associated with intensive bimanual training in children with hemiplegic cerebral palsy. 66th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. Toronto, ON, Canada.

Ferre, C.L., Hung, Y.C., Carmel, J.B., & Gordon, A.M. (2011). A home-based hand-arm bimanual intensive training for young children. Poster session presented at the 65th Annual Meeting of the American Academy of Cerebral Palsy and Developmental Medicine, Las Vegas, NV, Oct 12-15.

Ferre, C.L., Babik, I., & Michel, GF. (2008). A multilevel model comparison of infant prehension handedness using varying sampling intervals. Poster session presented at the 41st Annual Meeting of the International Society for Developmental Psychobiology, Washington, DC, Nov 12-15.

Ferre, C.L. & Michel, GF. (2007). A mixed models analysis of the developmental relations among infant prehension handedness and handedness for role-differentiated bimanual manipulation. Poster session presented at the 40th Annual Meeting of the International Society for Developmental Psychobiology, San Diego, CA, Oct 31-Nov 3.

Invited Lectures:

Cerebral palsy neurorehabilitation: Forty years of overcoming challenges. The Fletcher McDowell Inaugural Symposium, Burke Neurological Institute, Weill Cornell Medicine. White Plains, NY. (May 2018).

A home-based model of skill training in children with cerebral palsy: Application to (caregiver) teaching. Ann Gentile Memorial Conference, TC Columbia University, (Nov. 2016).

The Way Forward: Interventions to Promote Motor Skill Learning, Teachers College, Columbia University Academic Festival, (Apr. 2014).

Constraint-induced Therapy and Bimanual Training for Children with Hemiplegic Cerebral Palsy, Occupational Therapy Department, Columbia University, (Dec. 2012).

MENTORING

Undergraduate Advisees:

Manuel Sobol*, Boston University

Vien Tran*, Boston University

*Undergraduate Research Opportunities Program (UROP) Awardee

Dissertation/Comprehensive Examination Committees:

Maria Ayoub

PhD Program in Rehabilitation Science, Boston University

TEACHING

Department of Occupational Therapy, Boston University

OT526: Functional Movement Analysis and Assessment (*Fall 2109, Fall 2020*)

PhD Program in Rehabilitation Sciences, Boston University

RS 750: Research Design OT (*Spring 2021*)

PhD Program in Physical Therapy, New York University
Theories of Motor Control (*Fall 2019*)

Biobehavioral Sciences, Teachers College, Columbia University
Brain and Behavior, T.A., (*Spring 2010 - Spring 2011*)

PROFESSIONAL SERVICE

Internal

2021 Member, Search Committee, Endowed Chair of Pediatric Rehabilitation. Dept. of Physical Therapy, Boston University.

2020 OTD Student Advisor

2020 Member, Search Committee, Program Director for Entry-level OTD, Dept. of Occupational Therapy, Boston University.

External

Journal Manuscript Ad-hoc Reviewer

2020 Nature Scientific Reports

2020 Brain Topography

2019 Transactions on Neural Systems & Rehabilitation Engineering

2019 - 2020 Frontiers in Neuroscience

2018 Developmental Neurorehabilitation

2018 Neural Plasticity

2018 Developmental Psychobiology

2015 Neurorehabilitation and Neural Repair

2015 Transactions on Neural Systems & Rehabilitation Engineering

2014 Child Development

2014 Developmental Medicine and Child Neurology

Grant Review

2020 National Science Foundation

2016 Swiss National Science Foundation, Rehabilitation, Neurophysiology and Brain Research

PROFESSIONAL MEMBERSHIPS

2017- Member, American Society for Neurorehabilitation

2008- Member, American Academy of Cerebral Palsy and Developmental Medicine

2005-2008 Member, International Society of Developmental Psychobiology