**Supplemental Table 2. Neurosynth Search Results Reveal Associations with Motor Function for Highly Connected ROIs in Walking Analyses**

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| --- | --- | --- | --- | --- | --- |
| ROI Talaraich Coordinates (study label) | ROI Location | Network Block | Posterior Probability for Motor-Related Terms | Motor-related Functions | References |
| **Temporal Default Mode Network** | |  |  |  |  |
| -41, 9, -30 (19) | BA 21: Middle Temporal Gyrus, Temporal Pole | tDMN-tDMN | Cortical motor 0.79 Motor premotor 0.78 Premotor cortex 0.58 Motor task 0.55 | Motor Learning | \*Lungu, O., Monchi, O., Albouy, G., Jubault, T., Ballarin, E., Burnod, Y. & Doyon, J. 2014. Striatal and hippocampal involvement in motor sequence chunking depends on the learning strategy. *Plos One,* 9**,** e103885. |
| -53, -15, -9 (21) | BA 21: Middle Temporal Gyrus | tDMN-tDMN | Cortical motor 0.59 Premotor cortex 0.58 | Motor Performance | \*Beudel, M. & de Jong, B. M. 2009. Overlap and segregation in predorsal premotor cortex activations related to free selection of self-referenced and target-based finger movements. *Cereb Cortex,* 19**,** 2361-71. |
| -55, -31, -4 (22) | BA 21: Middle Temporal Gyrus | tDMN-SMN tDMN-SMN2 | Cortical motor 0.59 Ventral premotor 0.59 Premotor cortex 0.58 | Biological Motion Detection | \*Vaina, L. M., Solomon, J., Chowdhury, S., Sinha, P. & Belliveau, J. W. 2001. Functional neuroanatomy of biological motion perception in humans. *Proc Natl Acad Sci U S A,* 98**,** 11656-61. |
| -47, -43, 0 (23) | BA 21: Middle Temporal Gyrus | tDMN-SMN | Motor pre 0.65 Motor premotor 0.63 Premotor cortices 0.57 Motor performance 0.56 | Somato-motor Inhibition | \*Nakata, H., Sakamoto, K., Ferretti, A., Gianni Perrucci, M., del Gratta, C., Kakigi, R. & Luca Romani, G. 2008. Somato-motor inhibitory processing in humans: an event-related functional mri study. *Neuroimage,* 39**,** 1858-66. |
| Sensorimotor Timing | \*Valera, E. M., Spencer, R. M., Zeffiro, T. A., Makris, N., Spencer, T. J., Faraone, S. V., Biederman, J. & Seidman, L. J. 2010. Neural substrates of impaired sensorimotor timing in adult attention-deficit/hyperactivity disorder. *Biol Psychiatry,* 68**,** 359-67. |
| Action Observation | \*Olsson, C. J. & Lundstrom, P. 2013. Using action observation to study superior motor performance: a pilot fmri study. *Front Hum Neurosci,* 7**,** 819. |
| Biological Motion Detection | \*Jung, W. H., Gu, B. M., Kang, D. H., Park, J. Y., Yoo, S. Y., Choi, C. H., Lee, J. M. & Kwon, J. S. 2009. Bold response during visual perception of biological motion in obsessive-compulsive disorder : an fmri study using the dynamic point-light animation paradigm. *Eur Arch Psychiatry Clin Neurosci*, 259, 46-54. \*Pelphrey, K. A., Morris, J. P., Michelich, C. R., Allison, T. & Mccarthy, G. 2005. Functional anatomy of biological motion perception in posterior temporal cortex: an fmri study of eye, mouth and hand movements. *Cereb Cortex,* 15**,** 1866-76. |
| -53, -41,12 (26) | BA 22: Superior Temporal Gyrus | tDMN-SMN2 | Motor premotor 0.7 Premotor cortices 0.67 Sensorimotor cortex 0.66 Motor performance 0.66 Motor response 0.63 | Motor Imagery | \*Taube, W., Mouthon, M., Leukel, C., Hoogewoud, H. M., Annoni, J. M. & Keller, M. 2015. Brain activity during observation and motor imagery of different balance tasks: an fMRI study. *Cortex*, 64, 102-14. |
| Motor Execution | \*Fink, G. R., Frackowiak, R. S., Pietrzyk, U. & Passingham, R. E. 1997. Multiple nonprimary motor areas in the human cortex. *J Neurophysiol*, 77, 2164-74. \*Zapparoli, L., Invernizzi, P., Gandola, M., Verardi, M., Berlingeri, M., Sberna, M., de Santis, A., Zerbi, A., Banfi, G., Bottini, G. & Paulesu, E. 2013. Mental images across the adult lifespan: a behavioural and fmri investigation of motor execution and motor imagery. *Exp Brain Res*, 224, 519-40. |
| Motor Control | \*Lissek, S., Hausmann, M., Knossalla, F., Peters, S., Nicolas, V., Gunturkun, O. & Tegenthoff, M. 2007. Sex differences in cortical and subcortical recruitment during simple and complex motor control: an fmri study. *Neuroimage,* 37**,** 912-26. |
| Motor Inhibition | \*Cai, W., Cannistraci, C. J., Gore, J. C. & Leung, H. C. 2014. Sensorimotor-independent prefrontal activity during response inhibition. *Hum Brain Mapp,* 35**,** 2119-36. |
| Movement Timing | \*Toma, K., Ozawa, M., Matsuo, K., Nakai, T., Fukuyama, H. & Sato, S. 2003. The role of the human supplementary motor area in reactive motor operation. *Neurosci Lett,* 344**,** 177-80. |
| 47, -6, -33 (28) | BA 20: Inferior Temporal Gyrus | tDMN-tDMN, tDMN-SMN2 | Motor network 0.75 Motor pre 0.75 Cortical motor 0.75 Motor imagery 0.7 Motor response 0.67 Motor control 0.52 | Motor Imagery | \*van der Meulen, M., Allali, G., Rieger, S. W., Assal, F. & Vuilleumier, P. 2014. The influence of individual motor imagery ability on cerebral recruitment during gait imagery. *Hum Brain Mapp*, 35, 455-70. |
|
| 62, -15, -15 (31) | BA 21: Middle Temporal Gyrus, Inferior Temporal Gyrus | tDMN-tDMN, tDMN-SMN, tDMN-SMN2 | Cortical motor 0.7 Motor network 0.78 Visuomotor 0.54 | Somato-motor Inhibition | \*Nakata, H., Sakamoto, K., Ferretti, A., Gianni Perrucci, M., del Gratta, C., Kakigi, R. & Luca Romani, G. 2009. Negative bold effect on somato-motor inhibitory processing: an fmri study. *Neurosci Lett,* 462**,** 101-4. |
| 50, -6, -12 (32) | BA 21: Medial Temporal Gyrus | tDMN-SMN | Sensory motor 0.56 Dorsal premotor 0.54 Premotor cortices 0.52 Motor performance 0.51 | Motor Inhibition | \*Cai, W., Cannistraci, C. J., Gore, J. C. & Leung, H. C. 2014. Sensorimotor-independent prefrontal activity during response inhibition. *Hum Brain Mapp,* 35**,** 2119-36. |
| Biological Motion Detection: Walking | \*Bidet-Caulet, A., Voisin, J., Bertrand, O. & Fonlupt, P. 2005. Listening to a walking human activates the temporal biological motion area. *Neuroimage*, 28, 132-9. |
| 56, -8, -2 (34) | BA 22: Superior Temporal Gyrus | tDMN-tDMN, tDMN-SMN2 | Cortical motor 0.67 | Motor Learning | \*Lungu, O., Monchi, O., Albouy, G., Jubault, T., Ballarin, E., Burnod, Y. & Doyon, J. 2014. Striatal and hippocampal involvement in motor sequence chunking depends on the learning strategy. *PLoS One,* 9**,** e103885. |
| 49, -35, 9 (35) | BA 22: Superior Temporal Gyrus | tDMN-tDMN, tDMN-SMN, tDMN-SMN2 | Motor performance 0.69 Sensory motor 0.68 | Action Observation | \*Pierno, A. C., Becchio, C., Wall, M. B., Smith, A. T. & Castiello, U. 2006. Transfer of interfered motor patterns to self from others. *Eur J Neurosci*, 23, 1949-55. |
| Biological Motion Detection | \*Mar, R. A., Kelley, W. M., Heatherton, T. F. & Macrae, C. N. 2007. Detecting agency from the biological motion of veridical vs animated agents. *Soc Cogn Affect Neurosci,* 2**,** 199-205. \*Pelphrey, K. A., Morris, J. P., Michelich, C. R., Allison, T. & Mccarthy, G. 2005. Functional anatomy of biological motion perception in posterior temporal cortex: an fmri study of eye, mouth and hand movements. *Cereb Cortex*, 15, 1866-76. \*Grossman, E. D. & Blake, R. 2002. Brain areas active during visual perception of biological motion. *Neuron*, 35, 1167-75. |
| Sensorimotor Coordination | \*Jantzen, K. J., Steinberg, R. L., & Kelso, J. A. S. Practice-dependent modulation of neural activity during human sensorimotor coordination: a functional magnetic resonance imaging study. 2002. *Neuro Letters*, 332, 25-209. |
| Motor Imagery | \*Zapparoli, L., Invernizzi, P., Gandola, M., Verardi, M., Berlingeri, M., Sberna, M., de Santis, A., Zerbi, A., Banfi, G., Bottini, G. & Paulesu, E. 2013. Mental images across the adult lifespan: a behavioural and fmri investigation of motor execution and motor imagery. *Exp Brain Res,* 224**,** 519-40. |
| **Somatomotor Network** | | | | | |
| -21, -34, 58 (87) | BA 2: Post-Central Gyrus | tDMN-SMN | Motor premotor 0.85 Sensorimotor 0.83 Motor Imagery 0.86 | Locomotor Performance | \*Billington, J., Wilkie, R. M. & Wann, J. P. 2013. Obstacle avoidance and smooth trajectory control: neural areas highlighted during improved locomotor performance. *Front Behav Neurosci*, 7, 9. |
| Motor Imagery | \*Szameitat, A., Shen, S. & Sterr, A. 2007b. Motor imagery of complex everyday movements. An fmri study. *Neuroimage,* 34**,** 702-13 |
| -20, -22, 64 (90) | n/a | tDMN-SMN | Motor premotor 0.86 Sensorimotor cortex 0.83 Cortical motor 0.81 Motor imagery 0.83 Motor control 0.7 Motor performance 0.69 | Motor Imagery | \*Ferraye, M. U., Debu, B., Heil, l., Carpenter, M., Bloem, B. R. & Toni, I. 2014. Using motor imagery to study the neural substrates of dynamic balance. *PLoS One,* 9**,** e91183. |
| Biological Motion Detection | \*Freitag, C. M., Konrad, C., Haberlen, M., Kleser, C., von Gontard, A., Reith, W., Troje, N. F. & Krick, C. 2008. Perception of biological motion in autism spectrum disorders. *Neuropsychologia*, 46, 1480-94. |
| 8, -6, 45 (93) | BA 24: Paracentral/Cingulate | tDMN-SMN | Primary sensorimotor 0.82 Primary motor 0.8 Sensory motor 0.8 Motor imagery 0.84 Motor performance 0.84 Motor task 0.77 | Motor Execution: Ankle | \*Gandolla, M., Ferrante, S., Molteni, F., Guanziroli, E., Frattini, T., Martegani, A., Ferrigno, G., Friston, K., Pedrocchi, A. & Ward, N. S. 2014. Re-thinking the role of motor cortex: context-sensitive motor outputs? *Neuroimage,* 91**,** 366-74 \*Newton, J. M., Dong, Y., Hidler, J., Plummer-d'Amato, P., Marehbian, J., Albistegui-Dubois, R. M., Woods, R. P. & Dobkin, B. H. 2008. Reliable assessment of lower limb motor representations with fmri: use of a novel mr compatible device for real-time monitoring of ankle, knee and hip torques. *Neuroimage*, 43, 136-46. |
| Motor Imagery: Gait | \*van der Meulen, M., Allali, G., Rieger, S. W., Assal, F. & Vuilleumier, P. 2014. The influence of individual motor imagery ability on cerebral recruitment during gait imagery. *Hum Brain Mapp,* 35**,** 455-70. |
| Motor Imagery | \*Lacourse, M. G., Orr, E. L., Cramer, S. C. & Cohen, M. J. 2005. Brain activation during execution and motor imagery of novel and skilled sequential hand movements. *Neuroimage*, 27, 505-19. \*Szameitat, A. J., Shen, S. & Sterr, A. 2007a. Effector-dependent activity in the left dorsal premotor cortex in motor imagery. *Eur J Neurosci*, 26, 3303-8. |
| Motor Performance | \*Amiez, C. & Petrides, M. 2014. Neuroimaging evidence of the anatomo-functional organization of the human cingulate motor areas. *Cereb Cortex,* 24**,** 563-78. |
| Action Observation: Lower Limb | \*Villiger, M., Estevez, N., Hepp-Reymond, M. C., Kiper, D., Kollias, S. S., Eng, K. & Hotz-Boendermaker, S. 2013. Enhanced activation of motor execution networks using action observation combined with imagination of lower limb movements. *PLoS One,* 8**,** e72403. |
| Kinaesthesia | \*Romaiguere, P., Anton, J.L., Roth, M., Casini, L., & Roll, J.P. 2003. Motor and parietal cortical areas both underlie kinaesthesia. *Cognitive Brain Research*, 16, 74-82. |
| Motor Coordination | \*Debaere, F., Wenderoth, N., Sunaert, S., van Hecke, P. & Swinnen, S. P. 2004. Cerebellar and premotor function in bimanual coordination: parametric neural responses to spatiotemporal complexity and cycling frequency. *Neuroimage,* 21**,** 1416-27. |
| 18, -32, 58 (99) | BA 2: Postcentral Gyrus, Precentral Gyrus | tDMN-SMN | Premotor cortices 0.84 Motor premotor 0.82 Primary motor 0.78 | Motor execution: Foot | \*Sahyoun, C., Floyer-Lea, A., Johansen-Berg, H. & Matthews, P. M. 2004. Towards an understanding of gait control: brain activation during the anticipation, preparation and execution of foot movements. *Neuroimage,* 21**,** 568-75. |
| Locomotor Performance | \*Billington, J., Wilkie, R. M. & Wann, J. P. 2013. Obstacle avoidance and smooth trajectory control: neural areas highlighted during improved locomotor performance. *Front Behav Neurosci,* 7**,** 9. |
| Motor Imagery: Walking | \*Deutschlander, A., Stephan, T., Hufner, K, Wagner, J., Wiesmann, M., Strupp, M., Brandt, T. & Jahn, K. 2009. Imagined locomotion in the blind: an fmri study. *Neuroimage*, 45, 122-8. |
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| 17, -12, 63 (100) | BA 6: Superior Frontal Cortex, Superior Frontal Gyrus | tDMN-SMN | Motor network 0.89 Primary motor 0.84 Primary sensorimotor 0.84 Motor imagery 0.79 Motor performance 0.77 Motor task 0.76 | Motor Execution | \*Koski, L., Wohlschlager, A., Bekkering, H., Woods, R. P., Dubeau, M. C., Mazziotta, J. C. & Iacoboni, M. 2002. Modulation of motor and premotor activity during imitation of target-directed actions. *Cereb Cortex,* 12**,** 847-55. |
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| Motor Coordination | \*Wenderoth, N., Debaere, F., Sunaert, S. & Swinnen, S. P. 2005. The role of anterior cingulate cortex and precuneus in the coordination of motor behaviour. *Eur j neurosci*, 22, 235-46. \*Christensen, M. S., Ehrsson, H. H. & Nielsen, J. B. 2013. Seeing or moving in parallel: the premotor cortex does both during bimanual coordination, while the cerebellum monitors the behavioral instability of symmetric movements. *Exp Brain Res,* 230**,** 101-15. |
| Action Observation: Gait | \*Iseki, K., Hanakawa, T., Shinozaki, J., Nankaku, M. & Fukuyama, H. 2008. Neural mechanisms involved in mental imagery and observation of gait. *Neuroimage,* 41**,** 1021-31. |
| Sensorimotor Processing | \*Kipping, J. A., Grodd, W., Kumar, V., Taubert, M., Villringer, A. & Margulies, D. S. 2013. Overlapping and parallel cerebello-cerebral networks contributing to sensorimotor control: an intrinsic functional connectivity study. *Neuroimage,* 83**,** 837-48. |
| -51, -24, 22 (103) | BA 40: Posterior Insula, Postcentral Gyrus, Central Operculum | tDMN-SMN2 | Motor premotor 0.83 Motor network 0.81 Ventral premotor 0.78 Motor task 0.77 Motor performance 0.7 Motor response 0.66 | Motor Execution: Ankle | \*Gandolla, M., Ferrante, S., Molteni, F., Guanziroli, E., Frattini, T., Martegani, A., Ferrigno, G., Friston, K., Pedrocchi, A. & Ward, N. S. 2014. Re-thinking the role of motor cortex: context-sensitive motor outputs? *Neuroimage*, 91, 366-74. \*Ciccarelli, O., Toosy, A. T., Marsden, J. F., Wheeler-Kingshott, C. M., Sahyoun, C., Matthews, P. M., miller, D. H. & Thompson, A. J. 2005. Identifying brain regions for integrative sensorimotor processing with ankle movements. *Exp Brain Res*, 166, 31-42. |
| Motor Execution | \*Fink, G. R., Frackowiak, R. S., Pietrzyk, U. & Passingham, R. E. 1997. Multiple nonprimary motor areas in the human cortex. *J Neurophysiol*, 77, 2164-74. |
| Motor Control | \*Lehericy, S., Bardinet, E., Tremblay, l., van de Moortele, P. F., Pochon, J. B., Dormont, D., Kim, D. S., Yelnik, J. & Ugurbil, K. 2006. Motor control in basal ganglia circuits using fmri and brain atlas approaches. *Cereb Cortex,* 16**,** 149-61. \*Lissek, S., Hausmann, M., Knossalla, F., Peters, S., Nicolas, V., Gunturkun, O. & Tegenthoff, M. 2007. Sex differences in cortical and subcortical recruitment during simple and complex motor control: an fmri study. *Neuroimage*, 37, 912-26. |
| Sensorimotor Timing | \*Valera, E. M., Spencer, R. M., Zeffiro, T. A., Makris, N., Spencer, T. J., Faraone, S. V., Biederman, J. & Seidman, L. J. 2010. Neural substrates of impaired sensorimotor timing in adult attention-deficit/hyperactivity disorder. *Biol Psychiatry,* 68**,** 359-67. |
| Motor Learning: Ankle | \*Sacco, K., Cauda, F., d'Agata, F., Mate, D., Duca, S. & Geminiani, G. 2009. Reorganization and enhanced functional connectivity of motor areas in repetitive ankle movements after training in locomotor attention. *Brain Res,* 1297**,** 124-34. |
| Motor Learning | \*Muller, R A., Kleinhans, N., Pierce, K., Kemmotsu, N. & Courchesne, E. 2002. Functional mri of motor sequence acquisition: effects of learning stage and performance. *Brain Res Cogn Brain Res,* 14**,** 277-93. \*Wymbs, N. F. & Grafton, S. T. 2015. The human motor system supports sequence-specific representations over multiple training-dependent timescales. *Cereb Cortex*, 25, 4213-25. |
| Motor imagery | \*Mizuguchi, N., Nakata, H. & Kanosue, K. 2014. Effector-independent brain activity during motor imagery of the upper and lower limbs: an fmri study. *Neurosci Lett,* 581**,** 69-74. |
| Facial Imitation | \*Leslie, K. R., Johnson-Frey, S. H. & Grafton, S. T. 2004. Functional imaging of face and hand imitation: towards a motor theory of empathy. *Neuroimage,* 21**,** 601-7. |
| 51, -31, 34 (111) | BA 40: Inferior Parietal, Superior Medial Gyrus | tDMN-SMN2 | Cortical motor 0.77 Dorsal premotor 0.75 Ventral premotor 0.75 Motor imagery 0.84 Motor task 0.73 Motor response 0.62 | Motor Control | \*Cunningham, D. A., Machado, A., Yue, G. H., Carey, J. R. & Plow, E. B. 2013. Functional somatotopy revealed across multiple cortical regions using a model of complex motor task. *Brain Res,* 1531**,** 25-36. |
| Motor Inhibition | \*Berkman, E. T., Burklund, L. & Lieberman, M. D. 2009. Inhibitory spillover: intentional motor inhibition produces incidental limbic inhibition via right inferior frontal cortex. *Neuroimage,* 47**,** 705-12. |
| Sensorimotor Coordination | \*Oullier, O., Jantzen, K. J., Steinberg, F. L. & Kelso, J. A. 2005. Neural substrates of real and imagined sensorimotor coordination. *Cereb Cortex,* 15**,** 975-85. |
| Sensorimotor Processing | \*Kipping, J. A., Grodd, W., Kumar, V., Taubert, M., Villringer, A. & Margulies, D. S. 2013. Overlapping and parallel cerebello-cerebral networks contributing to sensorimotor control: an intrinsic functional connectivity study. *Neuroimage,* 83**,** 837-48. |
| Motor Learning: Ankle | \*Sacco, K., Cauda, F., d'Agata, F., Mate, D., Duca, S. & Geminiani, G. 2009. Reorganization and enhanced functional connectivity of motor areas in repetitive ankle movements after training in locomotor attention. *Brain Res,* 1297**,** 124-34. |
| Motor Learning | \*Reithler, J., van Mier, H. I. & Goebel, R. 2010. Continuous motor sequence learning: cortical efficiency gains accompanied by striatal functional reorganization. *Neuroimage,* 52**,** 263-76. |
| Motor Imagery | \*Lacourse, M. G., Orr, E. L., Cramer, S. C. & Cohen, M. J. 2005. Brain activation during execution and motor imagery of novel and skilled sequential hand movements. *Neuroimage,* 27**,** 505-19. \*Lorey, B., Naumann, T., Pilgramm, S., Petermann, C., Bischoff, M., Zentgraf, K., Stark, R., Vaitl, D. & Munzert, J. 2014. Neural simulation of actions: effector- versus action-specific motor maps within the human premotor and posterior parietal area? *Hum Brain Mapp*, 35, 1212-25. \*Szameitat, A. J., Shen, S. & Sterr, A. 2007a. Effector-dependent activity in the left dorsal premotor cortex in motor imagery. *Eur J Neurosci*, 26, 3303-8. |
| Action Observation | \*Cross, E. S., Hamilton, A. F. & Grafton, S. T. 2006. Building a motor simulation de novo: observation of dance by dancers. *Neuroimage,* 31**,** 1257-67. |
| 26, -9, 54 (115) | BA 6: Precentral Gyrus | tDMN-SMN2 | Dorsal premotor 0.79 Visuomotor 0.78 Premotor cortex 0.75 Motor imagery 0.79 Motor task 0.75 | Action Observation | \*Manthey, S., Schubotz, R. I., & von Cramon, D. Y. 2003. Premotor cortex in observing erroneous action: an fMRI study. *Cognitive Brain Research,* 15**,** 296-307. |
| Somato-motor Inhibition | \*Nakata, H., Sakamoto, K., Ferretti, A., Gianni Perrucci, M., del Gratta, C., Kakigi, R. & Luca Romani, G. 2008. Somato-motor inhibitory processing in humans: an event-related functional mri study. *Neuroimage,* 39**,** 1858-66. |
| Motor Learning | \*Coynel, D., Marrelec, G., Perlbarg, V., Pelegrini-Issac, M., Van de Moortele, P. F., Ugurbil, K., Doyon, J., Benali, H. & Lehericy, S. 2010. Dynamics of motor-related functional integration during motor sequence learning. *Neuroimage,* 49**,** 759-66. |
| Motor Imagery: Walking | \*Wagner, J., Stephan, T., Kalla, R., Bruckmann, H., Strupp, M., Brandt, T. & Jahn, K. 2008. Mind the bend: cerebral activations associated with mental imagery of walking along a curved path. *Exp Brain Res,* 191**,** 247-55. |
| Motor Imagery | \*Guillot, A., Collet, C., Nguyen, V. A., Malouin, F., Richards, C. & Doyon, J. 2008. Functional neuroanatomical networks associated with expertise in motor imagery. *Neuroimage,* 41**,** 1471-83. \*Sharma, N. & Baron, J. C. 2014. Effects of healthy ageing on activation pattern within the primary motor cortex during movement and motor imagery: an fmri study. *PLoS One*, 9, e88443. \*Ferri, F., Frassinetti, F., Ardizzi, M., Costantini, M. & Gallese, V. 2012. A sensorimotor network for the bodily self. *J Cogn Neurosci*, 24, 1584-95. |
| **Dorsal Attention Network** | | | | | |
| -44, -75, -12 (124) | BA 18: Inferior Occipital Gyrus, Inferior Occipital Cortex | DAN-pCO | Motor pre 0.77 Visuomotor 0.63 Ventral premotor 0.57 Motor response 0.69 Motor control 0.58 | Motor Imagery | \*Zapparoli, L., Invernizzi, P., Gandola, M., Verardi, M., Berlingeri, M., Sberna, M., de Santis, A., Zerbi, A., Banfi, G., Bottini, G. & Paulesu, E. 2013. Mental images across the adult lifespan: a behavioural and fmri investigation of motor execution and motor imagery. *Exp Brain Res,* 224**,** 519-40. |
| Visuomotor Learning | \*Grafton, S. T.,Schmitt, P., van Horn, J. & Diedrichsen, J. 2008. Neural substrates of visuomotor learning based on improved feedback control and prediction. *Neuroimage,* 39**,** 1383-95. |
| Visuomotor Adaptation | \*Langan, J. & Seidler, R. D. 2011. Age differences in spatial working memory contributions to visuomotor adaptation and transfer. *Behav Brain Res*, 225, 160-8. |
|
| -38, -87, -9 (126) | BA 18: Inferior Occipital Gyrus, Lateral Occipital Cortex | DAN-pCO | Motor pre 0.82 Ventral premotor 0.65 Motor imagery 0.74 | Motor Inhibition | \*Cai, W., Cannistraci, C. J., Gore, J. C. & Leung, H. C. 2014. Sensorimotor-independent prefrontal activity during response inhibition. *Hum Brain Mapp,* 35**,** 2119-36. |
| 17, -90, -15 (142) | BA 18: Occipital Cortex, Inferior Occipital Pole | DAN-pCO | Motor premotor 0.74 Primary sensorimotor 0.71 Ventral premotor 0.63 Motor responses 0.66 Motor control 0.54 | Sensorimotor Integration | \*Meehan, S. K. & Staines, W. R. 2009. Task-relevance and temporal synchrony between tactile and visual stimuli modulates cortical activity and motor performance during sensory-guided movement. *Hum Brain Mapp,* 30**,** 484-96. |
| Motor Learning | \*Muller, R A., Kleinhans, N., Pierce, K., Kemmotsu, N. & Courchesne, E. 2002. Functional mri of motor sequence acquisition: effects of learning stage and performance. *Brain Res Cogn Brain Res,* 14**,** 277-93. \*Fernandez-Seara, M. A., Aznarez-Sanado, M., Mengual, E., Loayza, F. R. & Pastor, M. A. 2009. Continuous performance of a novel motor sequence leads to highly correlated striatal and hippocampal perfusion increases. *Neuroimage*, 47, 1797-808. |
| Motor Imagery: Standing | \*Zwergal, A., Linn, J., Xiong, G., Brandt, T., Strupp, M. & Jahn, K. 2012. Aging of human supraspinal locomotor and postural control in fmri. *Neurobiol Aging,* 33**,** 1073-84. |
| 41, -78, -12 (144) | BA 18: Inferior Occipital Gyrus, Inferior Occipital Cortex | DAN-pCO | Motor network 0.63 Motor task 0.6 Motor performance 0.55 | Action Observation | \*Piefke, M., Kramer, K., Korte, M., Schulte-Ruther, M., Korte, J. M., Wohlschlager, A. M., Weber, J., Shah, N. J., Huber, W. & Fink, .G R. 2009. Neurofunctional modulation of brain regions by distinct forms of motor cognition and movement features. *Hum Brain Mapp,* 30**,** 432-51. |
| 19, -85, -4 (149) | BA 18: Inferior Occipital Gyrus, Occipital Cortex, Fusiform | DAN-pCO | Motor pre 0.63 Sensory motor 0.6 Visuomotor 0.57 Motor performance 0.65 Motor task 0.53 | Visuomotor Transformation | \*Callan, D. E., Gamez, M., Cassel, D. B., Terzibas, C., Callan, A., Kawato, M. & Sato, M. A. 2012. Dynamic visuomotor transformation involved with remote flying of a plane utilizes the 'mirror neuron' system. *PLoS One,* 7**,** e33873. |
| 35, -81, 0 (150) | BA 18: Inferior Occipital Gyrus, Lateral Occipital Cortex | DAN-pCO | Motor pre 0.71 Premotor cortices 0.64 Visuomotor 0.63 | Motor Control | \*Misra, G. & Coombes, S. A. 2015. Neuroimaging evidence of motor control and pain processing in the human midcingulate cortex. *Cereb Cortex,* 25**,** 1906-19. |
| Motor Learning | \*Muller, R A., Kleinhans, N., Pierce, K., Kemmotsu, N. & Courchesne, E. 2002. Functional mri of motor sequence acquisition: effects of learning stage and performance. *Brain Res Cogn Brain Res,* 14**,** 277-93. |
| Visuomotor Integration | \*Martuzzi, R., Murray, M. M., Maeder, P. P., Fornari, E., Thiran, J., Clarke, S., Michel, C. M. & Meuli, R. A. 2006. Visuo-motor pathways in humans revealed by event-related fmri. *Exp Brain Res,* 170**,** 472-87. |
| 20, -66, 45 (155) | BA 7: Inferior Parietal Cortex, Superior Parietal Lobule | DAN-pCO | Motor pre 0.69 Dorsal premotor 0.64 Visuomotor 0.64 Motor imagery 0.63 Motor task 0.6 | Motor Control | \*Lehericy, S., Bardinet, E., Tremblay, l., van de Moortele, P. F., Pochon, J. B., Dormont, D., Kim, D. S., Yelnik, J. & Ugurbil, K. 2006. Motor control in basal ganglia circuits using fmri and brain atlas approaches. *Cereb Cortex,* 16**,** 149-61. \*Barber, A. D., Caffo, B. S., Pekar, J. J. & Mostofsky, S. H. 2013. Effects of working memory demand on neural mechanisms of motor response selection and control. *J Cogn Neurosci*, 25, 1235-48. |
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| Visuomotor Integration | \*Iacoboni, M. & Zaidel, E. 2004. Interhemispheric visuo-motor integration in humans: the role of the superior parietal cortex. *Neuropsychologia,* 42**,** 419-25. |
| Motor Learning | \*Jueptner, M., Stephan, K. M., Frith, C. D., Brooks, D. J., Frackowiak, R. S. & Passingham, R. E. 1997. Anatomy of motor learning. I. Frontal cortex and attention to action. *J Neurophysiol,* 77**,** 1313-24. \*Lungu, O., Monchi, O., Albouy, G., Jubault, T., Ballarin, E., Burnod, Y. & Doyon, J. 2014. Striatal and hippocampal involvement in motor sequence chunking depends on the learning strategy. *PLoS One*, 9, e103885. \*Parsons, M. W., Harrington, D. L. & Rao, S. M. 2005. Distinct neural systems underlie learning visuomotor and spatial representations of motor skills. *Hum Brain Mapp*, 24, 229-47. |
| Motor Imagery: Gait | \*Cremers, J., Dessoullieres, A. & Garraux, G. 2012. Hemispheric specialization during mental imagery of brisk walking. *Hum Brain Mapp,* 33**,** 873-82. \*de Lange, F. P., Helmich, R. C. & Toni, I. 2006. Posture influences motor imagery: an fmri study. *Neuroimage*, 33, 609-17. |
| Action Observation: Gait | \*Wang, C., Wai, Y., Weng, Y., Yu, J. & Wang, J. 2008. The cortical modulation from the external cues during gait observation and imagination. *Neurosci Lett,* 443**,** 232-5. |
| Biological Motion Perception | \*Wheaton, K. J., Thompson, J. C., Syngeniotis, A., Abbott, D. F. & Puce, A. 2004. Viewing the motion of human body parts activates different regions of premotor, temporal, and parietal cortex. *Neuroimage,* 22**,** 277-88. |
| **Posterior Cingulo-Opercular** | | | | | |
| -37,- 35, 16 (221) | BA 42: Posterior Cingulate, Superior Temporal Gyrus, Planum Temporale | DAN-pCO | Motor network 0.73 Primary motor 0.72 Premotor cortices 0.7 Motor imagery 0.74 Motor response 0.59 Motor task 0.59 | Motor Imagery | \*Taube, W., Mouthon, M., Leukel, C., Hoogewoud, H. M., Annoni, J. M. & Keller, M. 2015. Brain activity during observation and motor imagery of different balance tasks: an fmri study. *Cortex,* 64**,** 102-14. |
| Action Observation | \*Taube, W., Mouthon, M., Leukel, C., Hoogewoud, H. M., Annoni, J. M. & Keller, M. 2015. Brain activity during observation and motor imagery of different balance tasks: an fmri study. *Cortex*, 64, 102-14. |
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| -48,- 36, 24 (222) | BA 40: Inferior Parietal, Parietal Operculum, Superior Medial Gyrus | DAN-pCO | Sensorimotor cortex 0.73 Sensory motor 0.7 Primary motor 0.69 Motor control 0.7 Motor response 0.61 | Motor Execution: Leg | \*Fink, G. R., Frackowiak, R. S., Pietrzyk, U. & Passingham, R. E. 1997. Multiple nonprimary motor areas in the human cortex. *J Neurophysiol*, 77, 2164-74. |
| Sensorimotor Coordination | \*Jantzen, K. J., Steinberg, R. L., & Kelso, J. A. S. Practice-dependent modulation of neural activity during human sensorimotor coordination: a functional magnetic resonance imaging study. 2002. *Neuro Letters*, 332, 25-209. |

The Neurosynth database (Yarkoni et al., 2011) was used to identify motor-related functions associated with highly connected ROIs identified in enrichment analysis for fc-walking relationships. Highly connected ROIs were defined as those in the top 25% for numbers of connections contributing to enrichment of a given network block (e.g., tDMN-tDMN). Neurosynth results reflect two search types: 1) search for a posterior probability ≥ 0.5 for the association between a given ROI and the presence of the term “motor” in published manuscripts in the database and 2) search for specific articles containing motor-related search terms (i.e., motor, walk, gait, biological motion) which also report activation of a given ROI. For fc-walking results, networks involved in enrichment included tDMN, SMN, SMN2, pCO, and DAN. Note that motor-related terms do not necessarily refer to the localization of a given ROI in traditionally-defined motor cortex. Findings for ROIs generally were based on studies in adults, as these were the primary source of available information.