Supplementary Document for *A Calcium-Dependent Computational Model for Exploring the Dose-Dependency of Theta-Burst Transcranial Magnetic Stimulation*

Ke Ma[a], Sung Wook Chung[b,c], Masashi Hamada[d], and Stephan M. Goetz[a,*]

[a] *Department of Engineering, School of Technology, University of Cambridge, Cambridge, United Kingdom*

[b] *Bionics Institute, 384-388 Albert St, East Melbourne VIC 3002, Australia*

[c] *Department of Medical Bionics, University of Melbourne, Parkville, VIC 3010, Australia*

[d] *Department of Neurology, The University of Tokyo, Tokyo, Japan*

[*] *Corresponding author email: smg84@cam.ac.uk*

Database paper list

Table S1: Summary of the collected studies for calibration of model parameters.

Study	Sample Size	Gender ratio	Mean age ± SD (age range)	TBS Protocol	Pulse Strength	Pulse Number	Target Muscle
Antal et al. (2010)	10	7 F:3 M	$(21-32)$	iTBS	80 % AMT	600	Right FDI
	5	3 F:2 M	$(20-29)$	iTBS	80 % AMT	600	Right FDI
Belvisi et al. (2013)	14	3 F:11 M	41.9 ± 11.36 $(23-60)$	iTBS	80 % AMT	600	Right FDI
Brownjohn et al. (2014)	10	1 F:9 M	26.9 ± 4.7 $(22-37)$	iTBS	80 % AMT	600	Right FDI
	10	1 F:9 M	26.9 ± 4.7 $(22-37)$	cTBS	80 % AMT	600	Right FDI
Cheeran et al. (2008)	9	3 F:6 M	29.3 ± 3	iTBS	80 % AMT	600	Right FDI
	9	3 F:6 M	28.7 ± 3	iTBS	80 % AMT	600	Right FDI
	9	5 F:4 M	26.45 ± 5	cTBS	80 % AMT	300	Right FDI
	9	5 F:4 M	26.45 ± 5	cTBS	80 % AMT	300	Right FDI
Chuang et al. (2014)	18	11 F:7 M	48.6 ± 12.8	cTBS	80 % AMT	600	Right FDI
Conte et al. (2012)	15	-	68.1 ± 10.2	iTBS	80 % AMT	600	Right FDI
	7	-	65.3 ± 12.1	cTBS	80 % AMT	600	Right FDI
Di Lazzaro et al. (2008)	12	-	63.2 ± 5.3	iTBS	80 % AMT	600	Right FDI
	12	-	63.2 ± 5.3	cTBS	80 % AMT	600	Right FDI
Di Lazzaro et al. (2011)	10	-	26.6 ± 4.1	iTBS	80 % AMT	600	Left FDI
	10	-	26.6 ± 4.1	cTBS	80 % AMT	600	Left FDI
Di Lorenzo et al. (2020)	12	-	71.1 ± 5.9	iTBS	80 % AMT	600	Right FDI
	12	-	71.1 ± 5.9	cTBS	80 % AMT	600	Right FDI
Doeltgen and Ridding (2011)	14	10 F:4 M	24.5 ± 3.1	iTBS	80 % AMT	600	Right FDI
	9	6 F:3 M	23.2 ± 3.7	iTBS	80 % AMT	600	Right FDI
	14	10 F:4 M	24.5 ± 3.1	cTBS	80 % AMT	600	Right FDI
	9	6 F:3 M	23.2 ± 3.7	cTBS	80 % AMT	600	Right FDI
Doeltgen et al. (2012)	17	10 F:7 M	23.1 ± 5.1	cTBS	80 % AMT	600	Right FDI
Edwards et al. (2006)	10	3 F:7 M	$(26-69)$	cTBS	80 % AMT	300	Right FDI
Fang et al. (2014)	9	4 F:5 M	24.2 ± 2.0	cTBS	80 % AMT	300	Right FDI
Gamboa et al. (2010)	14	7 F:7 M	$(21-27)$	iTBS	80 % AMT	600	Right FDI
	14	7 F:7 M	$(21-27)$	iTBS	80 % AMT	1200	Right FDI
	14	7 F:7 M	$(21-27)$	cTBS	80 % AMT	600	Right FDI
	14	7 F:7 M	$(21-27)$	cTBS	80 % AMT	1200	Right FDI
Gamboa et al. (2011)	16	6 F:10 M	$(21-27)$	iTBS	80 % AMT	600	Right FDI
	16	6 F:10 M	$(21-27)$	cTBS	80 % AMT	600	Right FDI
Goldsworthy et al. (2012a)	12	6 F:6 M	23.7 ± 8.1	cTBS	80 % AMT	600	Right FDI
Goldsworthy et al. (2012b)	12	7 F:5 M	26.3 ± 2.3	cTBS	80 % AMT	600	Right FDI
Guerra et al. (2019)	18	6 F:12 M	26.1 ± 1.9	cTBS	80 % AMT	600	Right FDI
Hamada et al. (2013)	56	24 F:32 M	30.3 ± 7.4 $(18-52)$	iTBS	80 % AMT	600	Right FDI
	56	24 F:32 M	30.3 ± 7.4 $(18-52)$	cTBS	80 % AMT	600	Right FDI
Hasan et al. (2012)	9	2 F:7 M	30.3 ± 1.5	iTBS	80 % AMT	600	Right FDI
	9	2 F:7 M	30.3 ± 1.5	cTBS	80 % AMT	600	Right FDI
He et al. (2021)	18	-	-	iTBS	80 % AMT	600	Left FDI
Hinder et al. (2014)	30	19 F:11 M	25.3 ± 8.7	iTBS	80 % AMT	600	Right FDI
Huang et al. (2005)	9	-	33.6 ± 7.8 $(23-52)$	iTBS	80 % AMT	600	Right FDI
	9	-	33.6 ± 7.8 $(23-52)$	cTBS	80 % AMT	300	Right FDI
	9	-	33.6 ± 7.8 $(23-52)$	cTBS	80 % AMT	600	Right FDI
Huang et al. (2007)	6	5 F:1 M	26 ± 9	iTBS	80 % AMT	600	Right FDI
	6	5 F:1 M	26 ± 9	cTBS	80 % AMT	300	Right FDI

Table S1: Summary of the collected studies for calibration of model parameters.

Study	Sample Size	Gender ratio	Mean age $\pm$ SD (age range)	TBS Protocol	Pulse Strength	Pulse Number	Target Muscle
Huang et al. (2009)	8	5 F:3 M	35 ± 14	cTBS	80 % AMT	300	Right FDI
Huang et al. (2010a)	8	7 F:1 M	33.3 ± 10.3	iTBS	80 % AMT	600	Right FDI
	7	3 F:4 M	28.7 ± 3.6	cTBS	80 % AMT	600	Right FDI
Huang et al. (2010b)	9	5 F:4 M	42.7 ± 12.1	cTBS	80 % AMT	300	Right FDI
	9	5 F:4 M	42.7 ± 12.1	cTBS	80 % AMT	600	Right FDI
Iezzi et al. (2011)	10	4 F:6 M	32 ± 5.03	iTBS	80 % AMT	600	Right FDI
	10	4 F:6 M	32 ± 5.03	cTBS	80 % AMT	600	Right FDI
Ishikawa et al. (2007)	10	1 F:9 M	42.3 ± 6.9	cTBS	80 % AMT	600	Right FDI
Kimura et al. (2022)	18	5 F:13 M	21.7 ± 1.0	iTBS	80 % AMT	600	Right FDI
Kishore et al. (2012)	10	-	45.6 ± 7.8	iTBS	80 % AMT	600	Right FDI
	10	-	45.6 ± 7.8	cTBS	80 % AMT	600	Right FDI
Koch et al. (2012)	14	-	-	iTBS	80 % AMT	600	Right FDI
	14	-	-	cTBS	80 % AMT	600	Right FDI
Koch et al. (2014)	10	6 F:4 M	68.3 ± 5.6	iTBS	80 % AMT	600	Right FDI
	10	6 F:4 M	68.3 ± 5.6	cTBS	80 % AMT	600	Right FDI
Li Voti et al. (2011)	21	-	-	iTBS	80 % AMT	600	Right FDI
Mastroeni et al. (2013)	29	29 M	26.0 ± 3.2	iTBS	80 % AMT	600	Right FDI
	29	29 M	26.0 ± 3.2	cTBS	80 % AMT	600	Right FDI
McAllister et al. (2011)	23	13 F:10 M	27.9 ± 8.3	cTBS	80 % AMT	600	Right FDI
McAllister et al. (2013)	16	9 F:7 M	$(19 - 44)$	cTBS	80 % AMT	600	Right FDI
McCalley et al. (2021)	30	20 F:10 M	24.4 ± 3.7	iTBS	80 % AMT	600	Right APB
	30	20 F:10 M	24.4 ± 3.7	iTBS	80 % AMT	1200	Right APB
	30	20 F:10 M	24.4 ± 3.7	iTBS	80 % AMT	1800	Right APB
	30	18 F:12 M	25.0 ± 3.4	cTBS	80 % AMT	600	Right APB
	30	18 F:12 M	25.0 ± 3.4	cTBS	80 % AMT	1200	Right APB
	30	18 F:12 M	25.0 ± 3.4	cTBS	80 % AMT	1800	Right APB
Moliadze et al. (2014)	12	-	25.7 ± 4.1	iTBS	80 % AMT	600	Right FDI
Monte-Silva et al. (2011)	12	6 F:6 M	25.75 ± 5.11	iTBS	80 % AMT	600	Right FDI
	12	6 F:6 M	25.75 ± 5.11	cTBS	80 % AMT	600	Right FDI
Mori et al. (2012)	77	46 F:31 M	38.3 ± 10.2	iTBS	80 % AMT	600	Right FDI
	77	46 F:31 M	38.3 ± 10.2	cTBS	80 % AMT	600	Right FDI
Mori et al. (2013)	13	5 F:8 M	35.5 ± 9.2	iTBS	80 % AMT	600	Right FDI
	13	5 F:8 M	35.5 ± 9.2	cTBS	80 % AMT	600	Right FDI
Murakami et al. (2008)	6	-	-	iTBS	80 % AMT	600	Right FDI
	6	-	-	cTBS	80 % AMT	600	Right FDI
Oberman et al. (2012)	20	4 F:16 M	34.9 ± 16.2	iTBS	80 % AMT	600	Right FDI
	20	4 F:16 M	34.9 ± 16.2	cTBS	80 % AMT	600	Right FDI
Opie et al. (2013)	11	2 F:9 M	43.0 ± 10.3	cTBS	80 % AMT	600	Right FDI
Orth et al. (2010)	14	9 F:5 M	$(28 - 62)$	cTBS	80 % AMT	300	Right FDI
Pichiorri et al. (2012)	11	3 F:8 M	31 ± 8.5	iTBS	80 % AMT	600	Right FDI
Player et al. (2012)	16	7 F:9 M	-	iTBS	80 % AMT	600	Right FDI
Suppa et al. (2008)	15	-	$(26 - 45)$	iTBS	80 % AMT	600	Left FDI
	15	-	$(26 - 45)$	cTBS	80 % AMT	600	Left FDI
	5	-	$(26 - 45)$	cTBS	80 % AMT	600	Right FDI
	5	-	$(26 - 45)$	cTBS	80 % AMT	600	Left FDI
Suppa et al. (2011a)	14	3 F:11 M	60 ± 11.28 $(49 - 81)$	iTBS	80 % AMT	600	Right FDI
Suppa et al. (2011b)	12	5 F:7 M	30 ± 4.9 $(25 - 40)$	iTBS	80 % AMT	600	Right FDI
	12	5 F:7 M	30 ± 4.9 $(25 - 40)$	cTBS	80 % AMT	600	Right FDI
Suppa et al. (2014b)	20	10 F:10 M	56.6 ± 11.5 $(36 - 81)$	iTBS	80 % AMT	600	Right FDI

Table S1: Summary of the collected studies for calibration of model parameters.

Study	Sample Size	Gender ratio	Mean age ± SD (age range)	TBS Protocol	Pulse Strength	Pulse Number	Target Muscle
	20	10 F:10 M	56.6 ± 11.5 $(36-81)$	cTBS	80 % AMT	600	Right FDI
Suppa et al. (2014a)	20	6 F:14 M	32.8 ± 11.2	iTBS	80 % AMT	600	Right FDI
	20	6 F:14 M	32.8 ± 11.2	cTBS	80 % AMT	600	Right FDI
Swayne et al. (2009)	10	3 F:7 M	29.6 ± 4.7	iTBS	80 % AMT	600	Right FDI
Talelli et al. (2007)	18	9 F:9 M	29.6 ± 3.9	iTBS	80 % AMT	600	Right FDI
	18	9 F:9 M	29.6 ± 3.9	cTBS	80 % AMT	300	Right FDI
Teo et al. (2007)	6	2 F:4 M	-	iTBS	80 % AMT	300	Right FDI
Todd et al. (2009)	20	12 F:8 M	25 ± 8	iTBS	80 % AMT	600	Right FDI
	8	4 F:4 M	27 ± 10	cTBS	80 % AMT	600	Right FDI
Vallence et al. (2013)	18	9 F:9 M	23.3 ± 2.7	iTBS	80 % AMT	600	Right APB
	18	9 F:9 M	23.3 ± 2.7	cTBS	80 % AMT	600	Right APB
Wu and Gilbert (2012)	11	-	-	iTBS	80 % AMT	600	Right FDI
Young-Bernier et al. (2014)	20	13 F:7 M	22.3 ± 3.2	iTBS	80 % AMT	600	Right FDI
	18	9 F:9 M	70.1 ± 5.6	iTBS	80 % AMT	600	Right FDI
Zafar et al. (2008)	9	5 F:4 M	21.3 $(21-26)$	iTBS	80 % AMT	600	Right FDI
	9	5 F:4 M	21.3 $(21-26)$	cTBS	80 % AMT	600	Right FDI
Zamir et al. (2012)	10	6 F:4 M	63.1 ± 8.8 (50-75)	iTBS	80 % AMT	600	Right FDI

Note: (a) SD represents standard deviation; (b) iTBS represents intermittent theta-burst stimulation; (c) cTBS is continuous theta-burst stimulation; (d) AMT is active motor threshold; (e) FDI is the first dorsal interosseous muscle; (f) APB is the abductor pollicis brevis muscle.

This supplementary document contains a list of studies focusing on theta-burst stimulation protocols (see Table S1). All of these studies used biphasic pulses and set the stimulus strength to 80% active motor threshold. For iTBS, the number of administered pulses were 600, 1200, and 1800, while cTBS used pulse numbers of 300, 600, 1200, and 1800. Note that these protocols were applied alone without breaks.

References

Antal A, Chaieb L, Moliadze V, Monte-Silva K, Poreisz C, Thirugnanasambandam N, et al. Brain-derived neurotrophic factor (BDNF) gene polymorphisms shape cortical plasticity in humans. Brain stimulation 2010; 3:230–237.

Belvisi D, Suppa A, Marsili L, Di Stasio F, Parvez AK, Agostino R, et al. Abnormal experimentally-and behaviorally-induced LTP-like plasticity in focal hand dystonia. Experimental neurology 2013; 240:64–74.

Brownjohn PW, Reynolds JN, Matheson N, Fox J, and Shemmell JB. The effects of individualized theta burst stimulation on the excitability of the human motor system. Brain stimulation 2014; 7:260–268.

Cheeran B, Talelli P, Mori F, Koch G, Suppa A, Edwards M, et al. A common polymorphism in the brain-derived neurotrophic factor gene (BDNF) modulates human cortical plasticity and the response to rTMS. The Journal of physiology 2008; 586:5717–5725.

Chuang WL, Huang YZ, Lu CS, and Chen RS. Reduced cortical plasticity and GABAergic modulation in essential tremor. Movement Disorders 2014; 29:501–507.

Conte A, Belvisi D, Bologna M, Ottaviani D, Fabbrini G, Colosimo C, et al. Abnormal cortical synaptic plasticity in primary motor area in progressive supranuclear palsy. Cerebral Cortex 2012; 22:693–700.

Di Lazzaro V, Pilato F, Dileone M, Profice P, Capone F, Ranieri F, et al. Modulating cortical excitability in acute stroke: a repetitive TMS study. Clinical Neurophysiology 2008; 119:715–723.

Di Lazzaro V, Dileone M, Pilato F, Capone F, Musumeci G, Ranieri F, et al. Modulation of motor cortex neuronal networks by rTMS: comparison of local and remote effects of six different protocols of stimulation. Journal of neurophysiology 2011; 105:2150–2156.

Di Lorenzo F, Bonnì S, Picazio S, Motta C, Caltagirone C, Martorana A, et al. Effects of cerebellar theta burst stimulation on contralateral motor cortex excitability in patients with Alzheimer's disease. Brain Topography 2020; 33:613–617.

Doeltgen SH, McAllister SM, and Ridding MC. Simultaneous application of slow-oscillation transcranial direct current stimulation and theta burst stimulation prolongs continuous theta burst stimulation-induced suppression of corticomotor excitability in humans. European Journal of Neuroscience 2012; 36:2661–2668.

Doeltgen SH and Ridding MC. Modulation of cortical motor networks following primed theta burst transcranial magnetic stimulation. Experimental brain research 2011; 215:199–206.

Edwards MJ, Huang YZ, Mir P, Rothwell JC, and Bhatia KP. Abnormalities in motor cortical plasticity differentiate manifesting and nonmanifesting DYT1 carriers. Movement disorders: official journal of the Movement Disorder Society 2006; 21:2181–2186.

Fang JH, Huang YZ, Hwang IS, and Chen JJJ. Selective modulation of motor cortical plasticity during voluntary contraction of the antagonist muscle. European Journal of Neuroscience 2014; 39:2083–2088.

Gamboa OL, Antal A, Laczo B, Moliadze V, Nitsche MA, and Paulus W. Impact of repetitive theta burst stimulation on motor cortex excitability. Brain stimulation 2011; 4:145–151.

Gamboa OL, Antal A, Moliadze V, and Paulus W. Simply longer is not better: reversal of theta burst after-effect with prolonged stimulation. Experimental brain research 2010; 204:181–187.

Goldsworthy MR, Pitcher JB, and Ridding MC. A comparison of two different continuous theta burst stimulation paradigms applied to the human primary motor cortex. Clinical Neurophysiology 2012; 123:2256–2263.

Goldsworthy MR, Pitcher JB, and Ridding MC. The application of spaced theta burst protocols induces long-lasting neuroplastic changes in the human motor cortex. European Journal of Neuroscience 2012; 35:125–134.

Guerra A, Suppa A, Asci F, De Marco G, D'Onofrio V, Bologna M, et al. LTD-like plasticity of the human primary motor cortex can be reversed by γ-tACS. Brain Stimulation 2019; 12:1490–1499.

Hamada M, Murase N, Hasan A, Balaratnam M, and Rothwell JC. The role of interneuron networks in driving human motor cortical plasticity. Cerebral cortex 2013; 23:1593–1605.

Hasan A, Hamada M, Nitsche MA, Ruge D, Galea JM, Wobrock T, et al. Direct-current-dependent shift of theta-burst-induced plasticity in the human motor cortex. Experimental brain research 2012; 217:15–23.

He XK, Liu HH, Chen SJ, Sun QQ, Yu G, Lei L, et al. Subsequent acupuncture reverses the aftereffects of intermittent theta-burst stimulation. Frontiers in Neural Circuits 2021; 15:675365.

Hinder MR, Goss EL, Fujiyama H, Canty AJ, Garry MI, Rodger J, et al. Inter-and intra-individual variability following intermittent theta burst stimulation: implications for rehabilitation and recovery. Brain stimulation 2014; 7:365–371.

Huang YZ, Chen RS, Rothwell JC, and Wen HY. The after-effect of human theta burst stimulation is NMDA receptor dependent. Clinical Neurophysiology 2007; 118:1028–1032.

Huang YZ, Edwards MJ, Rounis E, Bhatia KP, and Rothwell JC. Theta burst stimulation of the human motor cortex. Neuron 2005; 45:201–206.

Huang YZ, Rothwell JC, Lu CS, Chuang WL, Lin WY, and Chen RS. Reversal of plasticity-like effects in the human motor cortex. The Journal of physiology 2010; 588:3683–3693.

Huang YZ, Rothwell JC, Lu CS, Wang J, and Chen RS. Restoration of motor inhibition through an abnormal premotor-motor connection in dystonia. Movement disorders 2010; 25:696–703.

Huang YZ, Rothwell JC, Lu CS, Wang J, Weng YH, Lai SC, et al. The effect of continuous theta burst stimulation over premotor cortex on circuits in primary motor cortex and spinal cord. Clinical Neurophysiology 2009; 120:796–801.

Iezzi E, Suppa A, Conte A, Li Voti P, Bologna M, and Berardelli A. Short-term and long-term plasticity interaction in human primary motor cortex. European Journal of Neuroscience 2011; 33:1908–1915.

Ishikawa S, Matsunaga K, Nakanishi R, Kawahira K, Murayama N, Tsuji S, et al. Effect of theta burst stimulation over the human sensorimotor cortex on motor and somatosensory evoked potentials. Clinical Neurophysiology 2007; 118:1033–1043.

Kimura I, Oishi H, Hayashi MJ, and Amano K. Microstructural properties of human brain revealed by fractional anisotropy can predict the after-effect of intermittent theta burst stimulation. Cerebral Cortex Communications 2022; 3:tgab065.

Kishore A, Joseph T, Velayudhan B, Popa T, and Meunier S. Early, severe and bilateral loss of LTP and LTD-like plasticity in motor cortex (M1) in de novo Parkinson's disease. Clinical Neurophysiology 2012; 123:822–828.

Koch G, Di Lorenzo F, Bonnì S, Giacobbe V, Bozzali M, Caltagirone C, et al. Dopaminergic modulation of cortical plasticity in Alzheimer's disease patients. Neuropsychopharmacology 2014; 39:2654–2661.

Koch G, Di Lorenzo F, Bonnì S, Ponzo V, Caltagirone C, and Martorana A. Impaired LTP-but not LTD-like cortical plasticity in Alzheimer's disease patients. Journal of Alzheimer's Disease 2012; 31:593–599.

Li Voti P, Conte A, Suppa A, Iezzi E, Bologna M, Aniello M, et al. Correlation between cortical plasticity, motor learning and BDNF genotype in healthy subjects. Experimental brain research 2011; 212:91–99.

Mastroeni C, Bergmann TO, Rizzo V, Ritter C, Klein C, Pohlmann I, et al. Brain-derived neurotrophic factor–a major player in stimulation-induced homeostatic metaplasticity of human motor cortex? PloS one 2013; 8:e57957.

McAllister CJ, Rönnqvist KC, Stanford IM, Woodhall GL, Furlong PL, and Hall SD. Oscillatory beta activity mediates neuroplastic effects of motor cortex stimulation in humans. Journal of Neuroscience 2013; 33:7919–7927.

McAllister SM, Rothwell JC, and Ridding MC. Cortical oscillatory activity and the induction of plasticity in the human motor cortex. European Journal of Neuroscience 2011; 33:1916–1924.

McCalley DM, Lench DH, Doolittle JD, Imperatore JP, Hoffman M, and Hanlon CA. Determining the optimal pulse number for theta burst induced change in cortical excitability. Scientific reports 2021; 11:1–9.

Moliadze V, Fritzsche G, and Antal A. Comparing the efficacy of excitatory transcranial stimulation methods measuring motor evoked potentials. Neural plasticity 2014; 2014.

Monte-Silva K, Ruge D, Teo JT, Paulus W, Rothwell JC, and Nitsche MA. D2 receptor block abolishes theta burst stimulation-induced neuroplasticity in the human motor cortex. Neuropsychopharmacology 2011; 36:2097–2102.

Mori F, Ribolsi M, Kusayanagi H, Monteleone F, Mantovani V, Buttari F, et al. TRPV1 channels regulate cortical excitability in humans. Journal of Neuroscience 2012; 32:873–879.

Mori F, Rossi S, Piccinin S, Motta C, Mango D, Kusayanagi H, et al. Synaptic plasticity and PDGF signaling defects underlie clinical progression in multiple sclerosis. Journal of Neuroscience 2013; 33:19112–19119.

Murakami T, Sakuma K, Nomura T, Nakashima K, and Hashimoto I. High-frequency oscillations change in parallel with short-interval intracortical inhibition after theta burst magnetic stimulation. Clinical neurophysiology 2008; 119:301–308.

Oberman L, Eldaief M, Fecteau S, Ifert-Miller F, Tormos JM, and Pascual-Leone A. Abnormal modulation of corticospinal excitability in adults with Asperger's syndrome. European Journal of Neuroscience 2012; 36:2782–2788.

Opie GM, Catcheside PG, Usmani ZA, Ridding MC, and Semmler JG. Motor cortex plasticity induced by theta burst stimulation is impaired in patients with obstructive sleep apnoea. European Journal of Neuroscience 2013; 37:1844–1852.

Orth M, Schippling S, Schneider SA, Bhatia KP, Talelli P, Tabrizi SJ, et al. Abnormal motor cortex plasticity in premanifest and very early manifest Huntington disease. Journal of Neurology, Neurosurgery & Psychiatry 2010; 81:267–270.

Pichiorri F, Vicenzini E, Gilio F, Giacomelli E, Frasca V, Cambieri C, et al. Effects of intermittent theta burst stimulation on cerebral blood flow and cerebral vasomotor reactivity. Journal of Ultrasound in Medicine 2012; 31:1159–1167.

Player MJ, Taylor JL, Alonzo A, and Loo CK. Paired associative stimulation increases motor cortex excitability more effectively than theta-burst stimulation. Clinical Neurophysiology 2012; 123:2220–2226.

Suppa A, Marsili L, Belvisi D, Conte A, Iezzi E, Modugno N, et al. Lack of LTP-like plasticity in primary motor cortex in Parkinson's disease. Experimental neurology 2011; 227:296–301.

Suppa A, Belvisi D, Bologna M, Marsili L, Berardelli I, Moretti G, et al. Abnormal cortical and brain stem plasticity in Gilles de la Tourette syndrome. Movement disorders 2011; 26:1703–1710.

Suppa A, Marsili L, Di Stasio F, Berardelli I, Roselli V, Pasquini M, et al. Cortical and brainstem plasticity in Tourette syndrome and obsessive-compulsive disorder. Movement Disorders 2014; 29:1523–1531.

Suppa A, Marsili L, Di Stasio F, Latorre A, Parvez A, Colosimo C, et al. Primary motor cortex long-term plasticity in multiple system atrophy. Movement Disorders 2014; 29:97–104.

Suppa A, Ortu E, Zafar N, Deriu F, Paulus W, Berardelli A, et al. Theta burst stimulation induces after-effects on contralateral primary motor cortex excitability in humans. The Journal of physiology 2008; 586:4489–4500.

Swayne OB, Teo JT, Greenwood RJ, and Rothwell JC. The facilitatory effects of intermittent theta burst stimulation on corticospinal excitability are enhanced by nicotine. Clinical neurophysiology 2009; 120:1610–1615.

Talelli P, Cheeran BJ, Teo J, and Rothwell JC. Pattern-specific role of the current orientation used to deliver Theta Burst Stimulation. Clinical Neurophysiology 2007; 118:1815–1823.

Teo J, Swayne O, and Rothwell J. Further evidence for NMDA-dependence of the aftereffects of human theta burst stimulation. Clinical neurophysiology: official journal of the International Federation of Clinical Neurophysiology 2007; 118:1649–1651.

Todd G, Flavel SC, and Ridding MC. Priming theta-burst repetitive transcranial magnetic stimulation with low-and high-frequency stimulation. Experimental Brain Research 2009; 195:307–315.

Vallence AM, Kurylowicz L, and Ridding MC. A comparison of neuroplastic responses to non-invasive brain stimulation protocols and motor learning in healthy adults. Neuroscience letters 2013; 549:151–156.

Wu SW and Gilbert DL. Altered neurophysiologic response to intermittent theta burst stimulation in Tourette syndrome. Brain Stimulation 2012; 5:315–319.

Young-Bernier M, Tanguay AN, Davidson PS, and Tremblay F. Short-latency afferent inhibition is a poor predictor of individual susceptibility to rTMS-induced plasticity in the motor cortex of young and older adults. Frontiers in aging neuroscience 2014; 6:182.

Zafar N, Paulus W, and Sommer M. Comparative assessment of best conventional with best theta burst repetitive transcranial magnetic stimulation protocols on human motor cortex excitability. Clinical Neurophysiology 2008; 119:1393–1399.

Zamir O, Gunraj C, Ni Z, Mazzella F, and Chen R. Effects of theta burst stimulation on motor cortex excitability in Parkinson's disease. Clinical neurophysiology 2012; 123:815–821.