

# Author's Accepted Manuscript

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Neil M. Drummond, Erin K. Cressman, Anthony N. Carlsen



PII: S0028-3932(17)30128-8  
DOI: <http://dx.doi.org/10.1016/j.neuropsychologia.2017.04.007>  
Reference: NSY6321

To appear in: *Neuropsychologia*

Received date: 21 November 2016  
Revised date: 4 April 2017  
Accepted date: 5 April 2017

Cite this article as: Neil M. Drummond, Erin K. Cressman and Anthony N. Carlsen, Offline continuous theta burst stimulation over right inferior frontal gyrus and pre-supplementary motor area impairs inhibition during a go/no-go task, *Neuropsychologia*, <http://dx.doi.org/10.1016/j.neuropsychologia.2017.04.007>

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**Offline continuous theta burst stimulation over right inferior frontal gyrus and pre-supplementary motor area impairs inhibition during a go/no-go task.**

Neil M. Drummond<sup>\*</sup>, Erin K. Cressman, Anthony N. Carlsen

School of Human Kinetics, University of Ottawa, 125 University Private, Ottawa, ON, Canada, K1N 6N5

neil.drummond@uottawa.ca

neil.drummond@outlook.com

<sup>\*</sup>Correspondence address: 404 – 125 University Private, Ottawa, ON, K1N 6N5, Canada. Tel.: +1 (613)

562-5800 ext. 7081; Fax. +1 (613) 562-5149

Abstract

In a typical go/no-go task a single imperative stimulus is presented each trial, either a go or no-go stimulus. Participants are instructed to initiate a known response upon appearance of the go-signal and withhold the response if the no-go signal is presented. It is unclear whether the go-response is prepared in advance of the imperative stimulus in a go/no-go task. Moreover, it is unclear if inhibitory control processes suppress preparatory go-activation. The purpose of the present experiment was 1) to determine whether the go-response is prepared in advance of stimulus identification with the use of a startling acoustic stimulus (SAS), and 2) investigate the inhibitory role of the right inferior frontal gyrus (rIFG) and pre-supplementary motor area (preSMA) during the performance of a go/no-go task with the use of continuous theta burst stimulation (cTBS). The experiment consisted of three phases; a pre-cTBS phase in which participants completed a go/no-go and simple-RT task, followed by offline cTBS to temporarily deactivate either rIFG or preSMA (with a sham control), then a post-cTBS phase which was identical to the pre-cTBS phase. Results revealed that stimulation to both cortical sites impaired participants' ability to withhold movements during no-go trials. Notably, rIFG or preSMA stimulation did not affect the latency of voluntary go-responses and did not enable the SAS to involuntarily trigger responses. These findings suggest that preparation and initiation of the go-response occurs after the

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