

EXCITATORY AND INHIBITORY EFFECTS OF TRANSCRANIAL MAGNETIC STIMULATION

Zhen Ni, Robert Chen

*Division of Neurology, Department of Medicine, University of Toronto and Toronto Western
Research Institute, Krembil Neuroscience Centre, University Health Network,
Toronto, Ontario, Canada*

Abstract

This paper reviews the use of transcranial magnetic stimulation (TMS) in investigating intracortical circuits in the primary motor cortex (MI). TMS is a noninvasive and painless method of stimulating the human brain and has become a widely used technique in neurophysiology and neurology. When TMS is applied to the MI, it generates a motor evoked potential (MEP) in the target muscles. TMS also activates different intracortical circuits within the MI and connections from other cortical areas to the MI. These intracortical circuits interact with each other. Abnormalities in these circuits are found in neurological and psychiatric disorders and studies of these circuits are useful in understanding the pathophysiology of these conditions.

Keywords: transcranial magnetic stimulation, primary motor cortex, motor evoked potential, intracortical circuit, inhibition and facilitation