

## **Influence of spinal cord stimulation on evoked potentials by cutaneous electrical stimulation**

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In the past, limited research has been done to investigate the influence of spinal cord stimulation (SCS) for treatment of chronic pain on evoked potentials (EP). Further insight into the mechanism of SCS may provide explanations for unsatisfactory results with this therapy in certain subpopulations. It also might predict effectiveness of SCS. In previous research MEG responses were measured on median and tibial nerve stimulations in chronic pain patients with and without SCS (1). However, this stimulation method preferentially activates large myelinated proprioceptive fibres, leaving painrelated small fibres unrelated. We expect that the observation of pain processing is impaired by large amounts of non-painrelated activity.

In our experiments, small (1 mm) electrodes are used which are known to stimulate primarily A $\delta$  fibres (2). The experiments are performed under the regulations of the Medical Ethics Committee of Medisch Spectrum Twente. Evoked potentials are measured in patients with various intractable chronic pain etiologies who benefit from SCS. The EPs are obtained by averaging 30 identical stimuli just above sensation level. These EPs are recorded under SCS and non-SCS conditions from using stimulation on 3 locations on the body: a chronic pain location, its contralateral location and a reference location. Effects of SCS on EPs from the different locations and pain etiologies will be discussed.

1) Theuvenet *et al.* Brain Topography 1999;11:305-313

2) Inui *et al.* Pain 2002;96:247-252