

EWIC 2010 Keynote lecture

**Brain networks of voluntary and involuntary auditory attention**

**Professor Kimmo Alho,**

Institute of Behavioural Sciences, University of Helsinki.

Advanced Magnetic Imaging Centre, School of Science and Technology.

Source localizations of event-related brain potentials (ERPs) to deviant auditory events that distract our performance have suggested involvement of several brain areas, including auditory and prefrontal cortices, in initiating and shifting attention involuntarily to these events. According to other ERP studies, these auditory and prefrontal cortical areas are also involved in voluntary selective attention to particular sounds. These ERP results are supported by our functional magnetic resonance imaging (fMRI) studies that also indicate involvement of parietal cortex in voluntary maintenance and shifting of auditory attention. Some of the auditory, frontal, and parietal areas activated by voluntary auditory attention are also activated by involuntary attention to distracting auditory events. Perhaps deviant auditory events distract our performance in an attention demanding task due to this overlap. However, the overlap might be partly due to attempts to fight against distraction and to concentrate on task performance leading to enhanced task-related brain activity after a distracting auditory event.