Speaker: Prof Stephan Swinnen (Katholieke Universiteit Leuven)
Title: Age-related changes in structural and functional brain connectivity and effects on bimanual behavior
Where: ECL Postgrad Teaching Space [460.2.031]
Host: Dr Hak Fujiyama (Hakuei.Fujiyama@murdoch.edu.au)

SPESReS Coordinator:
Dr Robert P. O'Shea (r.oshe@murdoch.edu.au)

Abstract:
I will show that aging alters structural and functional brain connectivity and performance in networks mediating bimanual coordination and learning during normal and pathological conditions. In particular, I will show microstructural organization of interhemispheric (callosal) interactions. I will also address functional brain connectivity under resting-state and task-related conditions in motor and other brain networks. Using noninvasive dual-site transcranial magnetic stimulation (TMS), I will elaborate on functional connectivity mediated by pairwise interhemispheric interactions between motor cortex (M1), dorsal premotor cortex (PMd), and dorsolateral prefrontal cortex (DLPFC) during planning of bimanual movements with different degrees of complexity. I will argue my results support a model of bimanual movement control in which left PMd is responsible for division of labor between both hands, a unique feature of bimanual skill.

Biography:
Prof Stephan Swinnen currently directs the Movement Control & Neuroplasticity Research Group at KU Leuven, consisting of a multidisciplinary team of more than 35 members. He teaches motor control and learning, behavioural neuroscience, neuroanatomy and ergonomics at the Departments of Kinesiology, Revalidation Sciences, Psychology and Engineering at KU Leuven. He has supervised 28 PhD dissertations at KU Leuven and has written more than 300 refereed scientific-journal articles. Swinnen’s current research interests are on mechanisms underlying movement control and neuroplasticity using a multidisciplinary approach, spanning behavioural and (cognitive) neurosciences with a specific focus on the study of brain function, structure, and connectivity in normal and pathological conditions, using medical imaging. His team has devoted increasing attention to the study of lifespan changes in brain function and structure and how these can account for age-related deficits in motor performance. His team has also developed an extensive research program on movement and cognitive control deficits in patients with traumatic brain injury.

Meeting the presenter:
To arrange a meeting with the presenter, please contact the host.

Reading for the keen:

To see the full program of SPESReSs: