

Master Class Agenda & Presenters Bio

The Cerebellum – beyond movement

Saturday 7th October 2017

Time	Topic	Lecturer
08.30 - 09.00	Registration & Tea and Coffee	
09.00 - 10.00	Language processing and the cerebellum	Prof Andrew Worthington
10.00 – 11.00	Visual Processing and the Cerebellum	Dr Dee Birtles
11.00 – 11.30	Break	
11.30 – 12.30	Stroke Rehabilitation interventions with cerebellar brain stimulation	Dr Erwin van Wegen
12.30 – 13.30	Lunch	
13.30 – 14.30	The role of vision and cerebellum	Farshideh Bondarenko
14.30 – 14.50	Break	
14.50 – 16.00	Practice <ol style="list-style-type: none"> 1. Tobii eyes and calibration 2. Tobii eyes whilst sitting on an air cushion 3. Tobii eyes standing on balance mat 4. Tobii have moving step 	
16.00 – 17.00	Using technology to aid rehabilitation	

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Sunday 8th October 2017

Time	Topic	Lecturer
09.00 – 10.00	Language processing and cerebellum	Prof Andrew Worthington
10.00 - 11.00	The cerebellum's role in hand movement in adults and children	Dr Nicolas Holmes
11.00 – 11.20	Break	
11.20 – 12.20	Cognition and cerebellum	Dr Dee Birtles
12.20 – 13.20	Cerebellum and neuro rehabilitation practice	Farshideh Bondarenko
13.20 – 14.20	Lunch	
14.20 – 15.20	<ol style="list-style-type: none"> 1. Supine lying on a peanut ball (vertical eye movement) 2. Lying on an air cushion & stimulating VOR 3. Sitting on an air cushion doing hand & eye activity 4. Standing on different modalities 	
15.20 – 15.40	Break	
15.40 – 16.00	Questions and discussions	
16.00 -		

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Erwin van Wegen PhD

Dr. van Wegen is senior researcher in motor control, learning and rehabilitation in movement disorders.

His research over the years has focused on the coordination of locomotion and balance in relation to neurorehabilitation, specifically in Parkinson's Disease, Stroke, MS and the elderly.

Dr. van Wegen is currently employed at the VU University Medical Center (dept. of Rehabilitation Medicine) and member of the MOVE research institute amsterdam. He is local coordinator in several national and international multicenter grant projects (EU, ZonMW, Hersenstichting).

In addition, he is lecturer and coordinator of several Bachelor and Master courses in Medicine and Human Movement Sciences at the Vrije Universiteit Amsterdam. Dr. Van Wegen is also deputy-treasurer of the Dutch Society of Neurorehabilitation (www.dsnr.nl).

Stroke Rehabilitation interventions with cerebellar brain stimulation

Cerebellum, motor learning and non-invasive brain stimulation for balance rehabilitation after stroke: current knowledge and future directions.

The cerebellum is known to be involved in feedback based learning processes in posture and equilibrium control and plays a crucial role in motor learning as well as postural balance. Recently, non-invasive transcranial direct current stimulation (tDCS) has emerged as an innovative, promising approach in stroke rehabilitation. tDCS may prime the brain before or during a therapeutic intervention providing potential to augment the positive learning effects of task specific training, the idea being that such combined peripheral and central input enhances synaptic plasticity and skill relearning. Enhancing the function of the cerebellum by tDCS could optimize the (re) acquisition of motor programs and may accelerate a shift from feedback to feed forward movement control, improving functional outcome after stroke.

This lecture will review the current knowledge on balance rehabilitation and brain stimulation after stroke and outline future directions for optimizing stroke rehabilitation.

Master Class Agenda & Presenters Bio



Dr Deirdre Birtles

Dee Birtles is a Research Fellow at the Institute for Research in Child Development, University of East London.

She previously held research posts at University College London in the Department of Anatomy, studying the role of the cerebellum in visually guided behaviour and in the Visual Development Unit where she combined interests in developmental visual neuroscience and visuomotor control with longitudinal studies of children with developmental disorders including children with Down syndrome, Williams syndrome and children born very preterm.

Her current research activity at UEL includes a long-term follow-up of a cohort of children with Down syndrome studying perceptual-motor behaviour from infancy to adolescence and the development of bimanual coordination in young children and children with brain injury.

Visual Processing and the Cerebellum

Evidence from clinical, experimental and neuroimaging studies over the past few decades suggests that the cerebellum plays an important role in visual processes. Anatomical studies have revealed connections between the cerebellum and cortical areas associated with motion processing in the dorsal visual stream, while deficits in detecting and discriminating moving visual signals have been reported in patients with cerebellar lesions and several developmental disorders. A role for the cerebellum has also been proposed for biological motion processing and self-motion perception, visual processing abilities critical for a wide range of everyday activities. A better understanding of the involvement of the cerebellum in perceptual processes will help in the identification and treatment of visual deficits which at present tend to be overlooked. Findings will be presented on the specific anomalies of motion processing found in several developmental disorders including Down syndrome, Developmental Coordination Disorder and children born preterm including a possible role for abnormal cerebellar function and connectivity in these deficits.

Master Class Agenda & Presenters Bio



Dr Andrew Worthington

Professor Andrew Worthington is Director of Clinical Services and owner of Headwise. He has extensive clinical experience in neuropsychological rehabilitation and psychological adjustment to disability. He is an honorary Professor jointly in the University Medicine School and College of Human & Health Sciences at Swansea University. Professor Worthington is involved in a number of research projects and has published many academic journal articles and book chapters. He is also a well-respected speaker at clinical conferences both nationally and internationally. He is currently working with Headway West Midlands identifying brain injury with homeless people and helping them move forward with their lives again. Professor Worthington was the Programme Director for the MSC in Brain Injury Rehabilitation / Brain Injury Case Management at the University of Birmingham and is an Honorary Research Fellow in the Department of Psychology, Behavioural Brain Sciences at the University of Birmingham. For the past 20 years he has acted as an independent expert witness on brain injury, rehabilitation and post-traumatic stress conditions in personal injury, clinical negligence and criminal cases, on a joint and single instruction basis.

Cerebellum & Language

This two-part presentation will introduce a framework for understanding language disorders in the context of the structure and function of the cerebellum, which will examine how this sheds new light on language disorders and reveals more about cerebro-cerebellar interactions. The first part of the talk will review traditional concepts of language and communication in the brain, including historical and contemporary approaches to classification, and explore the relationship between language and action. The importance of understanding language in the broader context of a neuropsychological theory of cerebellar function will be discussed. The second part will present evidence on cerebellar disorders associated with language deficits, treatment approaches, and examine the impact of communication deficits on rehabilitation for other cerebellar impairments.

Master Class Agenda & Presenters Bio



Dr Nicholas Holmes

"Nick studied in Manchester and Oxford, then did postdoctoral research projects in Lyon and Jerusalem before taking up a lectureship at Reading University, then moving to Nottingham in 2015. He runs [The Hand Lab](#)¹, studying the brain's role in perception of touch on the hands, and in the rapid control of reaching and grasping movements. He is particularly interested in how individual differences in cerebellar function relate to differences in skilled movements in adults and children."

Master Class Agenda & Presenters Bio



Farshideh Bondarenko

Farshideh is NHS trained and qualified (1977), she has worked in many centres of neurological excellence, including The National Hospital for Neurology, Great Ormond Street Hospital and Cheyne Hospital.

In 1987, she set up The Birkdale Clinic, responding to the demand – which the NHS cannot afford to fulfil – for more long term, consistent, intervention to improve a client's quality of life.

Farshideh studied, and continues to, a broad range of physical therapy approaches, including Bobath, Peto, Carr and Shiatsu with many of the leading exponents of these disciplines. She has developed an effective and innovative approach to complex neurological presentations in both the adult and paediatric populations that may be tailored to each individual. Her area of special interest lies with children and young adults. She has extensive experience of most childhood conditions and their integration with family life over long time periods. Farshideh is a member of the Chartered Society of Physiotherapy (MCSP) and also of the Organisation of Chartered Physiotherapists in Private Practice (OCPPP) and the Association of Chartered Physiotherapists in Neurology (ACPIN).

Abstract:

For over two centuries our understanding of the role of the cerebellum in human behaviour has centred on its links to motor functioning

The cerebellum conference will seek to challenge this orthodoxy by arguing that there is increasing evidence to suggest its role in visual processing, language processing and cognitive behaviour; highlighting functions of cerebellum that involves visual processing and visual spatial orientation in rehabilitation of neurological patients. I will present an overview of cerebellums vital role in language and cognitive behaviour together with sensory and visual input in neuro rehab.