

MOVING STROKE REHABILITATION FORWARD: WHAT ARE THE NEXT STEPS?

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ABSTRACT: Stroke rehabilitation aims to reduce impairments and promote activity and participation among patients. A major challenge for stroke rehabilitation research is to develop interventions that can reduce patients' neurological impairments. Until now, there has been no breakthrough in this research field. To move stroke rehabilitation forward, we need more knowledge about underlying mechanisms that drive spontaneous (i.e., reactive) neurobiological recovery after stroke and factors that can be used to optimize its prediction early after stroke onset. The aim of the present keynote lecture is therefore to elaborate on the time window of reactive neurobiological recovery, the proportional recovery rule and its generalizability to other neurological impairments, as well as to discuss the consequences for designing stroke recovery and rehabilitation trials. In this presentation, I will offer suggestions to optimize the research designs of future stroke rehabilitation and recovery trials post stroke, in order to overcome the current prognostic heterogeneity introduced by variations in the potential for reactive neurobiological recovery. As a consequence, there is an urgent need for high-quality, aspirational and explanatory trials in the first three months post stroke. These trials should preferably stratify patients based on their potential for reactive neurobiological recovery, measure recovery repeatedly at fixed times post stroke, and differentiate in their outcomes between behavioral restitution and compensation early post stroke.

BIO: Professor Kwakkel is from background physical therapists and human movement scientists since the eighties. He received his PhD in 1998 about Dynamics of Functional Recovery Post Stroke. Based on his work focused on intensity of exercise therapy (Lancet 1999), he is responsible for the Dutch Stroke Guidelines with respect to Physical Therapy and Neurorehabilitation in the Netherlands. In March 2008, he received a chair 'Neurorehabilitation' at the VU University Medical Centre in Amsterdam. His chair is dedicated to translational research in the field of neurorehabilitation with special focus on the longitudinal relationship between brain plasticity and motor recovery early post stroke. Since 2014 he became also head of research of the department neurorehabilitation of rehabilitation center Reade in Amsterdam.

Professor Kwakkel published more than 240 papers with more than 13.000 citations in leading scientific journals such as The Lancet, The Lancet Neurology, BMJ and Stroke (Web of Science H-Index 57). Based on a prestigious laureate from the European Research Council (ERC) for his translational research in 2012, Professor Kwakkel belongs to one of the top researchers of the Amsterdam University Medical Centre. Last year, he received an honorary fellowship from the Associated Physiotherapists in Neurology (ACPIN) in the United Kingdom and the Outstanding Neurorehabilitation Clinician Scientists (ONCS) Award from the American Society of Neurorehabilitation in 2018. Finally, professor Kwakkel is European Managing Editor of the journal Neurorehabilitation & Neural Repair (NNR) and president of the Dutch Society of NeuroRehabilitation (DSNR) in the Netherlands.