About the author

Curriculum vitae

Elmar Kal was born on March 3th, 1988 in Haarlem, the Netherlands. He obtained his Bachelor's degree in Human Movement Sciences at VU University Amsterdam in 2011. After a small digression to Sports Psychology at the University of Amsterdam, he went back to the VU where he obtained his Master's degree in Human Movement Sciences with a specialization in rehabilitation in 2012 (cum laude). Subsequently, he started his PhD project on implicit motor learning in stroke in September 2012. This project was a collaboration between (what would later become) the Faculty of Behavioural and Movement Sciences of the VU University Amsterdam and Rehabilitation Centre Heliomare in Wijk aan Zee. This project has resulted in multiple publications in international peer-reviewed journals, as well as numerous presentations at national and international conferences. Since January 2018, Elmar works as a lecturer at the Faculty of Behavioural and Human Movement Sciences and University Centre for Behaviour and Movement of the VU. In addition, he works as a researcher at the chronic pain department of Heliomare, where his main role is to manage the clinimetrics database.

List of publications

Papers in international scientific journals

Brouwer R, **Kal E,** van der Kamp J, Houdijk H. Validation of the stabilometer balance test: Bridging the gap between clinical and research based balance control assessments for stroke patients. *Gait and Posture* 2018; Accepted.

Kal E, Houdijk H, van der Kamp J, Verhoef M, Prosée R, Groet E, Winters M, van Bennekom C, Scherder E. Are the effects of internal focus instructions different from external focus instructions given during balance training in stroke patients? A double-blind randomized controlled trial. *Clinical Rehabilitation* 2018; early online: 1-15.

Kal E, Prosée, R, Winters, M, van der Kamp J. Does implicit motor learning lead to greater automatization of motor skills compared to explicit motor learning? A systematic review. *PLoS ONE* 2018; 13(9): e0203591.

Denneman R, **Kal E**, Houdijk H, van der Kamp J. Over-focused? The relation between patients' inclination for conscious control and single- and dual-task motor performance after stroke. *Gait and Posture 2018; 62: 206-213.*

Van Ginneken W, Poolton J, Masters R, Capio C, **Kal E,** van der Kamp J. Comparing the effects of conscious monitoring and conscious control on motor performance. *Psychology of Sport and Exercise* 2017; **30**: 145-152.

Kal E, van den Brink H, Houdijk H, van der Kamp J, Goossens P, van Bennekom C, Scherder E. How physical therapists instruct patients with stroke: An observational study on attentional focus during gait rehabilitation after stroke. *Disability and Rehabilitation* 2017; 40: 1154-1165.

Kal E, Winters M, van der Kamp J, Houdijk H, Groet E, van Bennekom C, Scherder E. Is implicit motor learning preserved after stroke? A systematic review with meta-analysis. *PLoS ONE* 2016; 11: e0166376.

Kal E, Houdijk H, van der Wurff P, Groet E, van Bennekom C, Scherder E, van der Kamp J. The inclination for conscious motor control after stroke: Validating the Movement-Specific Reinvestment Scale for use in inpatient stroke patients. *Disability and Rehabilitation* 2016; 38: 1097-1106.

Brocken J, **Kal E,** & van der Kamp J. Focus of attention in children's motor learning: examining the role of age and working memory. *Journal of Motor Behavior* 2016; 48: 527-534.

Kal E, van der Kamp J, Houdijk H, Groet E, van Bennekom C, Scherder E. Stay focused! The effects of internal and external focus of attention on movement automaticity in patients with stroke. *PLoS ONE* 2015; 10: e0136917.

Kal E, van der Kamp J, Houdijk H. External attentional focus enhances movement automatization: a comprehensive test of the constrained action hypothesis. *Human Movement Science* 2013; 32: 527-39. **(Top 5 most-cited papers in *Human Movement Science* between 2014-2016)**

Papers in Dutch professional journals

Kal, E. Impliciet motorisch leren na CVA: Wat is het bewijs? *Fysiopraxis* 2017; 26, 51.

Kal, E. Effect van instructies op dubbeltaakprestatie na CVA. *Fysiopraxis* 2016; 25: 54.

Van Ginneken W, **Kal E,** van der Eb J, Pijpers R. Is er een verband tussen persoonlijkheid en motoriek? Enkele voorspellingen van ActionType methode getoetst. *Sportgericht* 2013; 67, 7-11.

Presentations at (inter)national conferences

Kal E, Prosée, R, Winters, M, van der Kamp J. Does implicit learning induce more automatic motor performance than explicit motor learning? A systematic review. Oral presentation at the 13th Sports Medical Scientific Year Congress, Ermelo, the Netherlands, 2017.

Kal E, Verhoef M, Houdijk H, van der Kamp J, Groet E, Prosée R, Winters M, van Bennekom C, Scherder E. Are external focus instructions more effective than internal focus instructions to improve balance in stroke patients? A double-blind randomized controlled trial. Poster presentation at the Day of the Physical Therapist, Barneveld, the Netherlands, 2017.

Kal E, van der Kamp J, Houdijk H, Verhoef M, Groet E, Prosée R, Winters M, Scherder E, van Bennekom C. Do external focus instructions benefit motor learning post-stroke? A randomized controlled trial. Poster presentation at the Dutch Congress of Rehabilitation Medicine, Maastricht, the Netherlands, 2017. **(Winner of award for best poster presentation)**

Kal E, van der Kamp J, Houdijk H, Verhoef M, Groet E, Prosée R, Winters M, van Bennekom C, Scherder E. Does an external attentional focus improve motor learning post-stroke? Results of a randomized controlled trial. Poster presentation at the ISPGR World Congress, Fort Lauderdale, USA, 2017.

Kal E. Motor learning in stroke rehabilitation: Does attentional focus matter? Oral presentation at the Kick-off meeting of Amsterdam Movement Sciences, Amsterdam, the Netherlands, 2017.

Kal E, van den Brink H, Houdijk H, van der Kamp J, Goossens P, Scherder E, van Bennekom C. Watch yourself! How do physical therapists use attentional focus instructions in rehabilitation post-stroke?. Poster presentation at the Day of the Physical Therapist, Utrecht, the Netherlands, 2017.

Kal E, van der Kamp J, Roerdink M, Kleynen M, Jie L. Putting motor learning into (neurorehabilitation) practice: A focus on analogies, cueing, and external focus of attention. Organiser of mini-Symposium & oral presentation at the Dutch Congress of Rehabilitation Medicine, Maastricht, the Netherlands, 2016.

Kal E, Winters M, van der Kamp J, Houdijk H, Groet E, Scherder E, van Bennekom C. A systematic review on implicit motor learning in people with stroke: Is there any evidence? Poster presentation at the International Brain Injury Association World Congress, the Hague, the Netherlands, 2016.

Kal E, van den Brink H, Houdijk H, van der Kamp J, Goossens P, Scherder E, van Bennekom. Attentional focus instructions and feedback during gait rehabilitation after stroke. Poster presentation at the Dutch Congress of Rehabilitation Medicine, Rotterdam, the Netherlands, 2015.

Kal E, van der Kamp J, Houdijk H, Groet E, van Bennekom C, Scherder E. Stay focused! The effects of attentional focus on motor and motor-cognitive performance after acquired brain injury. Poster presentation at the ISPGR World Congress, Fort Lauderdale, USA, 2015.

Kal E, van der Kamp J, Houdijk H, Groet E, van Bennekom C, Scherder E. Dual-tasking after acquired brain injury: Does attentional focus matter? Oral presentation at the Congress on Neurorehabilitation and Neural Repair, Maastricht, the Netherlands, 2015.

Kal E, van der Kamp J, Houdijk H, Groet E, Scherder E, van Bennekom. Measuring the inclination for conscious motor control in clinical stroke patients. Poster presentation at the Dutch Congress of Rehabilitation Medicine, Rotterdam, the Netherlands, 2014. **(Winner of award for best poster presentation; Abstract published in *Clinical Rehabilitation* 2015; 29: 306-311.)**

Kal E, van der Kamp J, Houdijk H. Reliability and sensitivity of the Dutch Movement-Specific Reinvestment Scale in clinical stroke patients. Poster presentation at the 5th International state-of-the-art congress on Rehabilitation: Mobility, Exercise and Sports, Groningen, the Netherlands, 2014.

Kal E, van der Kamp J, Houdijk H. External focus of attention enhances movement automatization. Mini-oral presentation at the European College of Sport Science Congress, Amsterdam, the Netherlands, 2014.

Kal E, van der Kamp J, Houdijk H. External focus enhances movement automatization and dual-task performance. Oral presentation at the Dutch Congress of Rehabilitation Medicine, Noordwijkerhout, the Netherlands, 2013.

Kal E, van Ginneken W. The relation between personality and motor behaviour. Oral presentation at the Day of Sports Science, the Hague, the Netherlands, 2012.