Cueing training in the home improves mobility in Parkinson's disease

Synopsis

Summary of: Nieuwboer A, Kwakkel G, Rochester L, Jones D, van Wegen E, Willems AM, Chavret F, Hetherington V, Baker K, Lim I (2007) Cueing training in the home improves gait-related mobility in Parkinson's disease: the RESCUE trial. *Journal of Neurology Neurosurgery and Psychiatry* 78: 134–140. [Prepared by Bart Staal, CAP Editor.]

Question: Does a 3-week, home-based cueing program improve gait, gait-related activity, and health-related quality of life in people with Parkinson's disease (PD)? **Design**: A multicentre, single-blinded randomised crossover trial. **Setting**: University medical centres in the UK, Belgium, and The Netherlands. **Patients**: 153 patients with PD aged between 41 and 80 years and in Hoehn and Yahr stage II–IV were randomly allocated to an 'early' or 'late' intervention group. Subjects in the late group were put on a 3-week waiting list, without intervention, followed immediately by three weeks of cueing training. The order of the 3-week periods was reversed in the early group. Both groups underwent a follow-up period of 6 weeks without training. **Interventions**: The cueing program was delivered at home and consisted of nine treatment sessions of 30 minutes. Patients were trained with their preferred cueing modality: auditory, visual (light flashes), or somatic-sensory (vibrations). Cueing strategies were trained during a variety of tasks and environmental situations (indoor and outdoor), aiming to improve step length and walking speed, prevent freezing episodes and improve balance, by correcting the temporal aspects of gait. **Outcomes**: Posture and gait scores (PG scores) measured at 3, 6, and 12 weeks were the primary outcomes. The PG scores consisted of a composite score of gait and balance based on items of the Unified Parkinson's Disease Rating Scale. Secondary outcomes included specific measures of gait, freezing and balance, functional activities, quality of life, and carer strain. **Main results**: Small but significant ($p < 0.05$) improvements were found after intervention of 4.2% on the PG scores, gait speed (5 cm/sec), step length (4 cm), timed balance tests, and the confidence to carry out functional activities as measured with the Falls Efficacy Scale (3.7%). Severity of freezing was reduced by 5.5% in freezers only. **Conclusion**: Cueing training in the home improves mobility in patients with PD.

Commentary

Idiopathic Parkinson's disease (PD) is a complex and progressive disease. Even with optimal medical treatment, using drugs or neurosurgery, patients with PD are faced with increasing mobility-related problems. For these remaining impairments, activity limitations, and participation restrictions, many PD patients make use of physical therapy. An important physiotherapy intervention for gait-related problems due to PD is the use of cueing strategies (Morris 2006). However, in their review Lim et al (2005) showed that there is a lack of high quality studies evaluating the efficacy of cueing outside a laboratory setting in PD.

The study by Nieuwboer is the first large randomised controlled trial with sufficient power evaluating home-based cueing strategies in PD, provided by specifically trained physical therapists. Only one drop-out occurred, which is an exceptional performance. Hopefully, this will inspire others to carry out studies of equal quality in this field of research.

The results are a welcome addition to available recommendations for physical therapy in PD (Keus 2007). The current practice recommendation was that 'it is plausible that gait is improved by using visual or auditory cues which have been trained during active gait training.' Now, we can add 'there are indications that a 3-week cueing intervention improves 'posture and gait' and the confidence to carry out functional activities, without an increased probability of a fall'. Moreover, by duplicating the results of Thaut (1996), Nieuwboer provides evidence for the recommendation 'there are indications that a 3-week cueing intervention has no effects at 6-weeks after termination of the intervention.'

However, the present results were found when cues were absent during the assessments. In daily life, PD patients will use the cues in the circumstances they need them, eg, to increase their gait velocity when crossing a street. Therefore, the results found by Nieuwboer might be an underestimation of the real effect when using the cues. Future study might consider assessing the patients while using the cues.

Finally, as Nieuwboer discusses, it questionable whether the short period of treatment provided is optimal. In stroke rehabilitation, intensity was found to be more important than content. Future studies should focus on evaluating whether a prolonged period of cueing training increases the sizes of the effects found, to determine whether habituation occurs to the stimulus of the cue and to evaluate the falls risk over longer periods. Also, answers should be found to how, and in which patients, cues improve movement.

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References

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