RehabMove 2018: AUTOMATIZED, STANDARDIZED AND PATIENT-TAILORED PROGRESSIVE WALKING ADAPTABILITY TRAINING: A PROOF-OF-CONCEPT STUDY

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PURPOSE: Walking adaptability may be improved by treadmill training with augmented reality, such as on the C-Mill. However, therapists have to be well versed in operating this instrumented treadmill to attune training to the specific needs and abilities of individual patients. We therefore developed a standardized, automatized and patient-tailored progressive walking adaptability training protocol, called C-Gait. C-Gait consists of a baseline assessment involving seven walking-adaptability tasks and a decision-algorithm to automatically update training content and execution parameters based on patients' performance and perceived challenge. The aim of this proof-of-concept study was to evaluate content and construct validity of the baseline assessment, as well as the feasibility, acceptability and clinical potential of C-Gait training.

METHODS: 24 healthy adults, 12 healthy elderly and 28 persons with gait and/or balance deficits (GD) performed the baseline assessment; the GD group received 10 C-Gait training sessions over a 5-week period and also performed post-training and retention tests (baseline assessment and walking-related clinical measures).

RESULTS: The content and construct validity of the baseline assessment were evidenced by significant differences over groups, no-to-moderate correlations with walking-related clinical measures, and limited correlations between walking-adaptability tasks. C-Gait training yielded significant progression in training content and execution, with considerable between-patient variation and minimal overruling by therapists. C-Gait training was well-accepted and led to improvements in walking adaptability and general walking-related clinical measures, which prevailed at retention.

CONCLUSIONS: C-Gait appeared valid and offers automatized, standardized and patient-tailored walking-adaptability training, which is feasible, well accepted, and with good potential for improving both task-specific and generic measures of walking.