GAIT ADAPTABILITY EVALUATION IN PERSONS WITH A LOWER-LIMB AMPUTATION

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PURPOSE: Persons with a lower-limb amputation have impaired balance control and a high prevalence of falls due to partial absence of muscular control of their prosthesis. Hence during walking, persons with a lower-limb amputation might experience difficulties with obstacle avoidance and visually guided stepping, especially when step adjustments need to be performed under time pressure. The C-Mill is an instrumented rehabilitation treadmill with visual context projected on the belt's surface that was particularly developed for training and evaluation of gait and gait adaptability. The aim of this study was to validate C-Mill gait adaptability evaluation protocols (i.e., the so-called WE-MOVE tracks) for persons with a lower-limb amputation by examining test-retest reliability and construct validity.

METHODS: Twenty-one persons with a lower-limb amputation (age 53.4 ± 12.8 years) participated in this study. Participants were tested twice within one week (test-retest). At each test, the WE-MOVE track was performed, a walking trail with obstacles and stepping targets that could unpredictably shift under time pressure during walking. In addition, Timed Up-and-Go (TUG) and 10 meter walking tests (10MWT) were performed (construct validity).

RESULTS: WE-MOVE scores correlated significantly between test and retest (r(19)=0.65; p<0.001). In contrast, no significant correlation was observed between WE-MOVE scores and TUG and 10MWT.

CONCLUSION: WE-MOVE scores were reproducible from test to retest. The absence of significant correlations between WE-MOVE and standard clinical walking assessments suggest that the gait adaptability construct captured with WE-MOVE is not captured with the TUG and the 10MWT. Hence, WE-MOVE assessments likely add value to clinical diagnosis.