C-Mill therapy improves gait adaptability in the chronic phase after stroke

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Introduction
The C-Mill is a novel instrumented treadmill, designed to train gait adaptability. C-Mill therapy is task-specific, repetitive, intensive and provides feedback on performance, adhering to evidence-based guidelines for effective gait rehabilitation.

Aim: To evaluate the effectiveness of gait adaptability training on the C-Mill in people with stroke.

Methods
Participants 16 persons in the chronic phase after stroke  
Age mean ± SD: 54.8 ± 10.8 years, FAC 4-5

Intervention Gait adaptability training on the C-Mill  
5 weeks, 10 sessions, 1 hour each  
(Protocol includes stepping targets, obstacle avoidance, speeding-up & slowing down, gait adaptability game)

Study design Pre- and post-intervention assessments  
1 week before and after training

Assessments
Clinical tests 10 Meter Walking Test [10MWT]  
Timed Up-and-Go Test [TUG]  
Berg Balance Scale [BBS]  
Trunk Impairment Scale [TIS]

Obstacle Avoidance Walking speed 2 km/h  
Obstacle in front of affected leg  
30 sudden obstacle drops  
Success: successful obstacle avoidance

Target Stepping Task 2 support conditions  
Affected leg steps to target  
40 unsupported, 40 supported trials  
40 % target jumps  
20% medial, 20 % lateral  
Success: Accurate step adjustment (<35 mm error)

The C-Mill

Results
Graphs show Mean ± SE

CONCLUSIONS
This study provides preliminary evidence for the benefits of gait training on the C-mill: improved functional balance, walking speed, step adaptability and obstacle avoidance. These findings are promising with respect to improving community ambulation in persons in the chronic phase after stroke, and warrant future research involving an RCT.

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