

CAT: Improving gait outcomes in stroke patients using backward walking

Clinical Bottom Line:

Backward walking added to current physical therapy for post-stroke patients appears to significantly improve gait velocity, stride length, and gait symmetry.

Citation: Yang YR, Yen JG, Wang RY, Yen LL, Lieu FK. Gait outcomes after additional backward walking training in patients with stroke: a randomized controlled trial. *Clinical Rehabilitation*. 2005; 19(3): 264-73.

Three/four part clinical question:

How can I improve gait speed and symmetry in my elderly, post-stroke patients?

The study: Non-blinded concealed randomized controlled trial with intention-to-treat.

The study patients:

25 subjects

Average age: 63

Months past stroke: 7.33

Inclusion criteria:

- First CVA with unilateral motor and/or sensory deficit
- Brunnstrom 3-4 for LE
- Ability to walk 11 m with no AD
- Stable medical condition

Control Group(s):

Control group (N = 12; 12 analyzed): 40 min training TIW for 3 weeks consisting of strengthening, function and mobility, and gait training (gait 20-30% of total time).

Experimental Group

Experimental group (N = 13; 13 analyzed): 40 min training TIW for 3 weeks consisting of strengthening, function and mobility, and gait training (gait 20-30% of total time). Additional 30 min per session of backward walking (beginning in parallel bars with assistance from therapist and gradually decreasing assistance). Distance and speed of backwards walking progressively increased.

The evidence:

Post Test Measure	Control Mean	SD	Experimental Mean	SD	Difference	95% CI
Gait velocity (m/min)	29.62	16.35	33.43	5.2	3.810	-121to 114
Stride length (m)	0.69	0.25	0.88	0.096	0.190	-0.2 to -0.16
Symmetry index	-32.55	39.9	-14.99	58.55	-17.560	-2129 to 2094

Change Outcomes	Time to outcome/s	Control group	Experimental group	P-value
Gait velocity change (m/min)	3 weeks	3.65 m/min	8.60 m/min	.032
Stride length change (m)	3 weeks	-0.0064 m	0.09 m	.006
Symmetry index change (Stride Analyzer)	3 weeks	5.30	44.07	.018

Comments:

1. Backward walking should be used as an adjunct to current therapy, not a replacement for forward walking.
2. Backward walking may be an affordable option at clinics without a bodyweight-supported treadmill.
3. A study comparing the bodyweight-supported treadmill to backwards walking would be helpful for future research.

Appraised by: Christine Iverson, SPT

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Kill or update by: 27 JUL 06