

# CHANGES IN WALKING PERFORMANCE OF CHRONIC PHYSIOTHERAPY AND ORTHOTIC MANAGEMENT: THREE LONGITUDINAL CASE STUDIES STROKE USING BOTULINUM TOXIN

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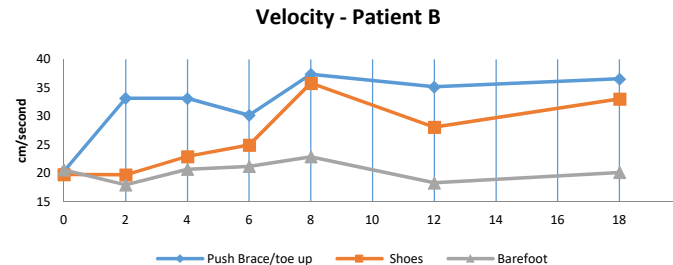
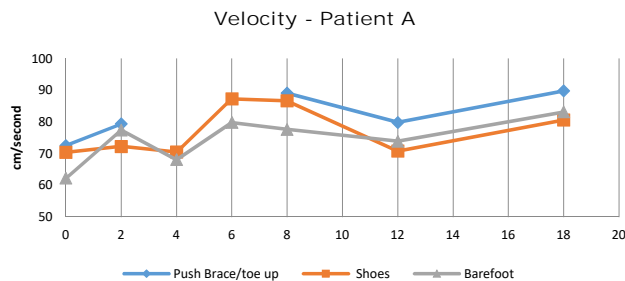
**INTRODUCTION :** Lower limb spasticity is an impairment which limits walking following stroke. There is extensive evidence for the efficacy of Botulinum Toxin (BT) to treat lower limb spasticity following stroke. Current clinical practice at SVHM is for patients to be referred for Rehabilitation after treatment with BT. Rehabilitation of walking following BT involves the prescription of orthotics and physiotherapy. This latter combination of therapies is not well represented in the literature. **METHODS:** Three longitudinal case studies are presented. Participants who consented had 18 months of therapy documented, including physiotherapy, orthotic and pharmacological management. Objective gait measures were recorded at baseline, two, four, six, eight, twelve and eighteen months post initial management. Gait measures recorded were velocity, affected step length (ASL) and single support (ALSS) walking in three walking conditions: barefoot (BF), shod (SH) and shod with prescribed orthoses (AFO) phases.

**RESULTS:** Participant A's velocity improved over the three walking conditions: however ALSL and ALSS were equivocal. Participant B's velocity, ALSL and ALSS improved walking in shoes and with bracing but not barefoot. Participant C's walking velocity, ALSL and ALSS improved between baseline and eight months walking in the bracing condition. There was deterioration in walking performance between eight and eighteen months. The decline in mobility may be attributed to a fall at 10 months resulting in pain and loss of confidence.

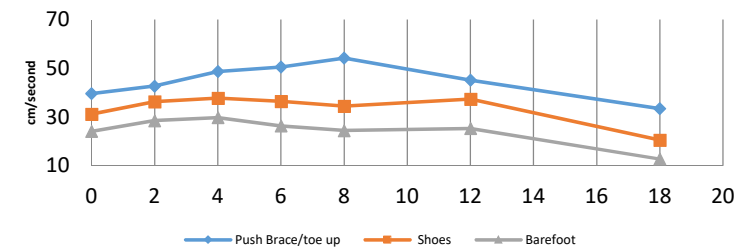
	Patient A	Patient B	Patient C
Age	59	58	68
Gender	M	M	M
Months since onset	6	6	288
Initial Berg Balance Score	51	34	38
Final Berg Balance Score	54	41	47
Initial Community Ambulation Scale	5	5	5
Final Community Ambulation Scale	6	6	6
Number of BTX interventions	2	4	4
Number of muscles injected	5	5	3
Number of therapy sessions	44	105	75

Participant A was treated with BT on two occasions. Initial treatment was 50mu to each of Rectus Femoris, Gastrocnemius (Med & Lat) & Tibialis posterior (TP). He received three weeks of serial casting for the calf. The second intervention occurred at 14m to TP (100mu), FHL (50mu) & FDL (50mu). Bracing has consisted of using a pushbrace & toe up. Over the 18m he has returned to driving & is able to walk nil aid independently in the community. He is receiving ongoing management for lower limb spasticity.

Participant B was treated with BT on four occasions five months apart. The main issue was painful flexion of the toes with barefoot walking. FDL, FHL, & FDB were treated on most occasions with an initial treatment to soleus (75mu) followed by serial casting for three weeks. Rectus femoris was treated on the third session. The calf contracture was managed surgically at the end of the trial. He is receiving ongoing management for toe clawing and optimal bracing.



Velocity - Patient C



Participant C received four interventions with BT, Tibialis Posterior and FDL were treated on each occasion with FHL treated initially. The stroke onset was over twenty years prior to the intervention. He was high functioning in the community. Inpatient admission and spasticity management was required due to falls and loss of mobility. Serial casting was performed over four weeks to assist with appropriate alignment for bracing. He returned to high functioning in the community. A decline in walking was noted after a fall.

**CONCLUSION:** Walking performance can be improved with an individualised multidisciplinary approach. Chronic stroke survivors perform differently under varied walking conditions. Deteriorations in walking performance may be attributable to adverse events.

