

## 8th Annual GF Strong Research Day, Vancouver, Canada, 2017

### Reducing compensatory movements in stroke therapy through the use of robotic devices and augmented feedback

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**Objectives:** To investigate if the trunk compensatory movements of people with stroke could be reduced by employing augmented feedback (visual and force), and to examine if one of the feedback modalities was more efficacious than the other in reducing this compensatory tendency.

**Design:** Randomized crossover trial.

**Setting:** Research laboratory.

**Participants:** 15 community dwelling adults ( $64 \pm 11$  years) with non-traumatic ischemic or hemorrhagic stroke (> 3 months post-stroke).

**Intervention:** In a single session, participants received augmented feedback about their trunk movements during a bimanual virtual reaching task. Force feedback (60 trials) was delivered through two robotic devices, and visual feedback (60 trials) through a computer monitor.

**Main Outcome Measure:** Primary: Change in anterior trunk displacement. Secondary: Index of curvature, trunk rotation, RMS error of hands' movements, reaching time, and a post-test questionnaire.

**Results:** Both feedback conditions reduced trunk compensation. The secondary outcome measures did not improve. No feedback condition was superior to the other one.

**Conclusions:** Force and visual feedback show promise as two modalities that could be employed to reduce trunk compensatory movements of people with stroke. The question of which feedback is more efficacious at reducing trunk compensation, remains unanswered. Using technology to provide the feedback that works best for each individual might be a more effective approach than finding one modality that works for individuals with all levels of motor, cognitive and sensory impairment.