

# Effectiveness Of Immediate Video Feedback On Wheelchair Propulsion Training For Patients With Spinal Cord Injuries: 2693: Board #87 May 29 3:30 PM - 5:00 PM

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Studies have shown video feedback to enhance motor skill learning in healthy individuals since it allows learners not only to visualize themselves but also to evaluate discrepancies so erroneous performance can be corrected. However, effectiveness of video feedback on wheelchair training in early rehabilitation for spinal cord injury (SCI) patients has not been determined.

**PURPOSE:** To examine effects of real-time video feedback on level wheelchair propulsion training for people with SCI.

**METHODS:** Twenty-eight patients, matched on age, gender, wheelchair seat width and SCI level were randomly assigned to either video feedback (VG, mean<sub>age</sub> = 33.9+10.3 yrs) or control (CG, mean<sub>age</sub> = 29.6+10.4 yrs) groups. Two reflective markers were attached on the right 3<sup>rd</sup> metacarpophalangeal joint and wheel axle. Both groups received one 30-min propulsion training during which their performance of wheelchair propulsion were recorded by video cameras from the sagittal plane. After each task, the VG observed their own performance via video motion analysis software and received feedback from a therapist to correct errors while the CG received feedback normally given during rehabilitation. Pushrim kinematics and number of strokes (NS) were obtained and compared between four different times: baseline, post-training, retention and transfer tests. A mixed-model ANOVA (2 groups x 4 times) and Bonferroni pos hoc test ( $p < .05$ ) were employed to determine statistical differences.

**RESULTS:** No significant difference in kinematic variables and NS were found between VG and CG. However, NS of both groups in post-training decreased 50% as compared to baseline. Pushing angles significantly increased in both groups during post-training (CG=78.2°, VG=82.6°), retention (CG=80.1°, VG=83.4°) and transfer tests (CG=76.3°, VG=86°), compared to baseline (CG=68.8°, VG=72.9°). In VG, significantly increased cycle time during post-training (1.92 s) and retention test (1.93 s) was found, compared to baseline (1.12 s).

**CONCLUSIONS:** Wheelchair propulsion training improves stroke efficiency by increasing contact and total push angles in both groups. Although no significant differences between two groups are found, real-time video feedback seems helpful in terms of motivation and performance correction.

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