

**Critical Review:**  
**Examining the efficacy of a telerehabilitation model for the delivery of Lee Silverman Voice Treatment**

Martina Di Gioacchino  
M.Cl.Sc SLP Candidate  
University of Western Ontario: School of Communication Sciences and Disorders

This critical review examines the current evidence regarding the efficacy of telerehabilitation

homes. Studies not specifically using LSVT treatment were eliminated from this review.

#### Data Collection

The search strategy yielded five articles that fit with the selection criteria. Study designs included: single subject multiple baseline trial (1), randomized controlled non-inferiority trial (1), repeated measure mixed design trial (2), and single group repeated measures trial (1).

#### ***Results***

The efficacy and feasibility of delivering LSVT to patients with Parkinson's disease via telerehabilitation were examined in the literature using a variety of delivery methods. Tindall, Huebner, Stemple, and Kleinert (2008) delivered LSVT treatment to 24 participants via videophone in a repeated measures, mixed design study. They compared results of the current study to the results of traditional LSVT delivery as reported by Ramig et al. (2001a).

Methodology for collecting pre- and post-treatment measures in the face-to-face condition outlined in Ramig et al. (2001a) was replicated by the current study. Comparisons of gender and age differences between the two groups of participants were not found to be significant. There was a significant difference between the mean time post-onset of PD between the two groups (Ramig et al. =  $8.6 \pm 6.3$  years; current study =  $3.2 \pm 1.5$  years) which the authors attribute to the presence of four outliers in the Ramig, et al. (2001a) data. One-sample t-tests used to compare pre-treatment results of the two groups were found to be non-significant for all variables. Standard LSVT therapy protocol was delivered to participants of the current

were found in the measures of hoarseness ( $p = 0.083$ ),



Furthermore, while the researchers report that the results obtained in this study are similar to those reported in previous face-to-face trials of LSVT, they provide no statistical comparison to determine if they are truly similar to traditional methods. This study provides compelling evidence that a telerehabilitation model can produce significant effects in the treatment of vocal intensity in patients with PD. It does not, however, provide sufficient evidence to allow a clinician to assert that a telerehabilitation delivery of LSVT is as efficacious as face-to-face delivery of the program.

Theodoros et al. (2006) and Constantinescu et al. (2011) offer the most compelling evidence of the efficacy of this delivery model. Both studies were conducted in the same environment, using the same protocol, equipment, and software. While their identical setup provides consistency, which is desirable, all treatment in these studies was performed in a university laboratory setting, with a non-treating SLP present to ensure accuracy of setup of the equipment.

The delivery of the program in this manner has several implications: firstly, the studies do not allow any conclusions to be drawn regarding the efficacy of delivering the treatment to the participants' homes. The laboratory setting allows for a highly controlled environment, free of distractions and with minimal complications. These same conditions cannot be guaranteed in a patient's home. Secondly, the program was delivered over custom software on which all treating SLPs were trained prior to beginning delivery of treatment. Therefore, based on these two studies alone, no conclusions can be drawn about whether telerehabilitation delivery would be equally successful if

Despite this, these studies demonstrate that pursuing a telerehabilitation model for delivery of LSVT to patients with PD is a promising avenue of research and should be further explored and developed. The results suggest that this method of therapy has the potential to be as effective as traditional face-to-face methods if applied correctly. Because LSVT is such a highly structured and standardized program, it lends itself well to a telerehabilitation delivery. Given the current results, with some development, LSVT via telerehabilitation should be able to maintain its high rate of success.

### *Clinical Implications*