

**Critical Review:**

What is the evidence of the effectiveness of Lee Silverman Voice Treatment (LSVT) in increasing speech intensity in individuals with non-hypokinetic dysarthria?\*

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This critical review examined the effectiveness of Lee Silverman Voice Treatment (LSVT) on the speech intensity of individuals with non-hypokinetic dysarthria. One randomized control trial, two experimental single subject studies, one within groups study, one case series study, two case studies, and two systematic reviews were included in this critical review. Overall, results provided suggestive evidence of the effectiveness of LSVT in increasing speech intensity among individuals with non-hypokinetic dysarthria. Recommendations for clinical implications and future research are discussed.

***Introduction***

Lee Silverman Voice Treatment (LSVT) was originally

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assessment phases made perceptual judgments of the loudness of participants speech in a reading of the three middle sentences of “The Rainbow Passage”, providing a sample more representative of participants’ speech. Good to very good intra- and inter-rater reliability was reported. Daily homework and maintenance exercises were provided, but participant compliance was not reported, which may impact individual participant outcome performances and the external validity of findings. Inclusion criteria included stimulability of participants for increasing loudness, which may weaken the representativeness of participants of the population of interest, thus also affecting generalizability of this study’s findings. The inferential statistical analyses conducted were appropriate for this research design. Given the methodological issues indicated above, the evidence of this study is suggestive.

#### Case Series Studies

Sapir, Pawlas, Ramig, Seeley, Fox, and Corboy (2001) evaluated the effects of LSVT on vocal function in two individuals with dysarthria secondary to multiple sclerosis. Loudness was assessed via reading and picture description tasks for pre- to post-treatment only. Results indicated that statistically significant increases in loudness were found post-treatment; however, ratings were not taken at follow-up for these tasks. Four additional perceptual ratings of loudness given a forced choice between two stimuli indicated a preference for the post-treatment stimuli across all raters. Intensity was assessed via maximum duration of sustained vowel “ah”, reading “The Rainbow Passage”, picture description, and a monologue w.129 0 37inba3 ((s) -2 1 (n7 (7) 4 (e)T pem7 (7) (o) -3 (wpem ) (ab) -3tT pem.24 1 as) 1 (a 4 (g).24pem ) (a.24 1 9.05

increases from pre- to both post-treatment and follow-up for all speech tasks. These results lend greater support to LSVT's effects on speech intensity in individuals with non-hypokinetic dysarthria, and provide information to the authors on LSVT's effects on persons with ataxic dysarthria secondary to cerebellar dysfunction.

This level 4 case study established baseline and assessment phase controls with repeated assessments (three at pre-, two at post-, and one at follow-up), offering more stable points for comparison with later results. No reporting is made of whether assessors of each assessment phase, data analyzers, or individuals administering LSVT were independent of the study, resulting in potential bias and affecting study results. Inter- and intra-rater reliability is not reported nor can it be understood if more than one individual rated the perceptual and acoustic data, further limiting the study's generalizability. The authors adequately describe the procedures used in this research design. However, given the limitations in design and methodology, the strength of the evidence from is deemed suggestive.

These two level 4 studies are not as strong in design and methodology as studies of higher levels. Case studies lack experimental rigor and attempted methods of control are not robust enough to account for differences between assessment phases, offering limited support for a particular treatment's direct result on outcome measures of interest and weakening each studies' internal and external validity. As these are case studies, other variables that could influence results were difficult to control for and have a strong likelihood of considerably influencing results. As well, any generalizability is seriously affected given the sample sizes consisted of only a single participant.

#### Systematic Review Studies

Yorkston, Spencer, and Duffy (2003) completed a systematic review of the literature evaluating the effects of behavioural techniques in managing respiratory/phonatory dysfunction in individuals with dysarthria. Sixteen of the thirty



