

TrainingBIG™ for Improved Mobility in Parkinson's
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Studies in animal models of Parkinson's disease (PD) suggest that exercise is neuroprotective – that is, it may slow or halt the progression of this neurological disease (Tillerson et al. 2001; Tillerson et al. 2003, Fox et al 2004). It is postulated that regular exercise helps the brain produce its own neurochemicals (growth factors) that protect the dopamine cells that are destroyed in PD (Cohen et al. 2003). The idea that something as simple as exercise may be neuroprotective is a potential major breakthrough, as exercise is immediately available, and can be safely combined with other treatments for potentially additive effects. We have developed a novel rehabilitation approach for Parkinson's (TrainingBIG™) that, when combined with medication therapy, results in a significant decrease in neurological symptoms (impairments) and improvements in balance and quality of life beyond what medications offer alone.

TrainingBIG™ targets a single goal: making big movements. For sixteen therapy sessions, people with PD are encouraged to take big steps, make big gestures, and make a big effort. The findings of researchers B.F. Farley and G. F. Koshland demonstrate that practicing big movements reduces bradykinesia, which is one of the most disabling symptoms of Parkinson's disease (Farley and Koshland 2005a and 2005b). Bradykinesia causes people to move slowly and to underestimate how much effort it will require to take a step. For example, a person with

ONE STEP AHEAD

mobility

PD will believe he is expending enough effort to take a large step, when, in reality, it's only enough effort for a shuffle.

Traditional therapy for people with Parkinson's disease usually has multiple goals - flexibility, strength, and balance - and requires patients to remember multiple instructions for each goal.

TrainingBIG™ patients simply focus on one goal: **Think Big!** As a result they learn to use more effort in everything they do - standing, dressing, getting out of a car, walking, cooking, cleaning. Focusing on one goal makes it easier for people with neurological disorders who typically have difficulty with attention-demanding complex tasks. As well, when there is only one goal, patients find it easier to participate in intensive, repeated practice. Recent neuroimaging and motor learning studies suggest that this kind of intensive, high effort practice may be necessary to modify neural organization and effect recovery of functional motor skills (Petzinger et al, 2007; Fisher et al, 2004).

The cueing strategy at the heart of TrainingBIG™ (Think Big) can be generalized for all types of movements in any situation. In addition, TrainingBIG™ represents a standardized protocol for teaching “Think Big” to patients, and has been tested in randomized control trials. Initial National Institutes of Health (NIH) - funded studies suggest that LSVT BIG results in:

- faster walking with bigger steps
- better balance
- increased trunk rotation and
- improved quality of life.

These benefits were sustained for at least three months post- treatment (Farley et al, in press).

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mobility

Even though TrainingBIG™ is a strategy for focusing attention, study patients were able to continue taking big steps even when they were asked to recite the days of the week backwards from an unpredictable starting point (Farley et al, 2006). This suggests that with practice, TrainingBIG™ will become so automatic, it will not impose a conflict when patients are performing cognitive and motor tasks at the same time (Farley et al, in press).

TrainingBIG™ is based on a proven treatment for the speech motor system in people with Parkinson's disease, the Lee Silverman Voice Treatment™ (LSVT™) (Fox et al, 2002). Like TrainingBIG™, LSVT™ has a simple focus: **Think Loud**. For the past 15 years research has shown that LSVT™ results in improvements in speech intelligibility and voice loudness. Speech studies have also shown that treatment with a single focus may generalize improvement to other systems such as speaking rate, swallowing, respiration, and may in fact result in changes in the way the neurons of the brain are organized (Fox et al, 2002). Thus, one can predict that Training BIG™ will not only result in being able to make bigger movements, but may generalize to improvements in posture, respiration, handwriting and speech.

TrainingBIG™ offers the field of rehabilitation a novel standardized behavioral intervention for the limb motor system that has the potential to generalize across motor systems (gait, reaching, respiration, balance, speech, handwriting) and to help the person with PD to function optimally. Future studies will continue to investigate the short/long term effects of TrainingBIG™. Additional information about this intervention, including a list of certified TrainingBIG™ therapists, can be found at: www.LSVTBIG.org, and from TrainingBIG™ certified physiotherapists Jan Goldstein Elman and Rebecca Gruber in Toronto at 416 783- 7175.

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