# Lighten Up!

# Brief Exposure to Alexander Technique Concepts Improves Mobility in Patients With Parkinson's Disease

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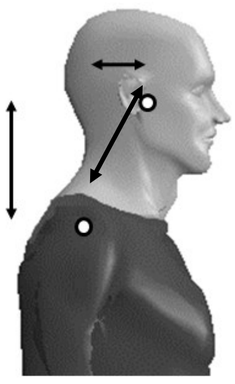
## Introduction

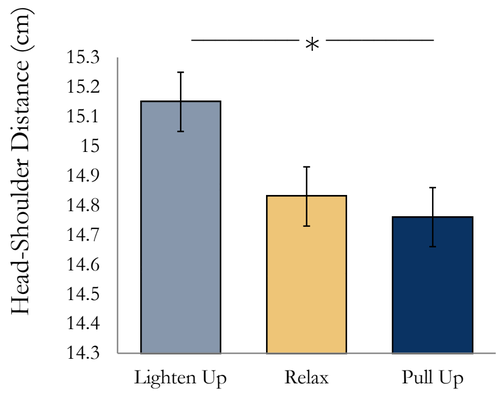
Parkinson's disease (PD) is a relatively common neurodegenerative disorder. Symptoms include stooped posture, slow movement, rigid muscles, impaired proprioception, and poor inhibitory control. PD is interesting from an Alexander Technique (AT) perspective because many of its symptoms are things that AT specifically addresses. Thus, it is a useful population in which to test the specific effects of the AT, in order to better understand the mechanisms by which the AT leads to documented changes in broader outcome measures, such as pain reduction[1] performance[2], and improved quality of life.[3]

## Methods

**Subjects:** 20 older adults with PD (ON medication), ages 59-76.
**Design:** single-session, within-subjects, counterbalanced design.
**Protocol:** Verbal instruction and brief (5-10 min) practice of 3 postural conditions: AT-based ("Lighten Up"), effort-based ("Pull Up"), and relaxation-based ("Relax"), followed by performance of each task in each condition.
**Tasks:** 30s quiet stance; 3 trials step initiation; 5 min axial rotation.
**Measurements:** Postural sway from inertial sensors on waist. Ground reaction forces and position of head and shoulders during gait initiation from force plate and 3d camera system. Peak torque during axial rotation from Twister[4].

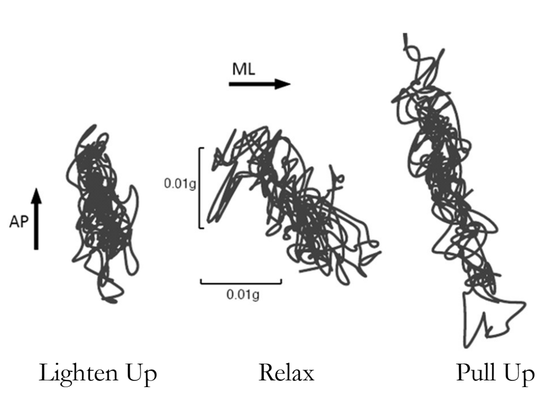
## Result 1: Postural Intentions Affect Uprightness

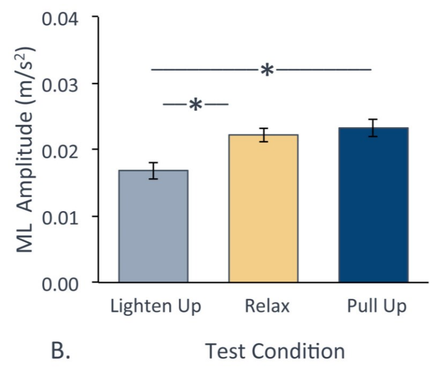





Head-shoulder distance was greatest in the Lighten Up condition and least in the Pull Up condition. Interestingly, there was no difference in vertical distance between Lighten Up and Pull Up, but the Pull Up instructions caused the head to be pulled farther back than the other conditions, thus reducing the total distance between the head and shoulders and compressing the neck. Error bars represent standard error. —*— indicates statistically differences between ends of line.

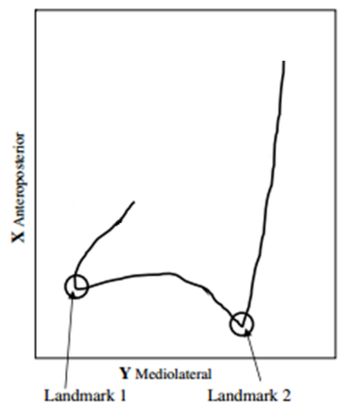
## Result 2: Postural Intentions Affect Steadiness

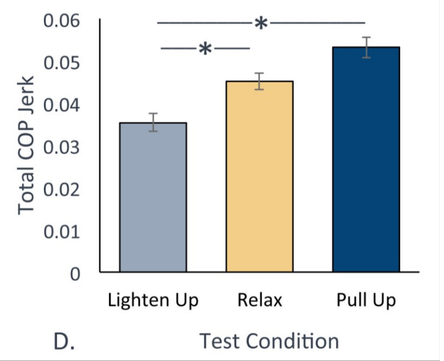



Standing postural sway was lowest in the Lighten Up condition in both axes, suggesting greater steadiness.

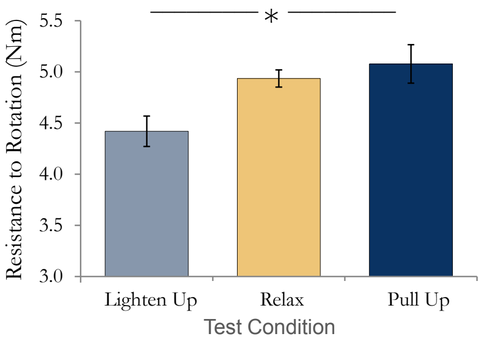
## Result 3: Postural Intentions Affect Coordination




The Lighten Up instructions led to the smoothest movement of the center of pressure during step initiation, suggesting better control.

## Result 4: Postural Intentions Affect Stiffness


Resistance to axial rotation was lowest in the Lighten Up condition, indicating greater responsiveness. This may partly explain the improved steadiness and coordination.

## Conclusions & Future Plans

- The "Lighten Up" instructions had beneficial effects on head carriage, sway amplitude, step initiation, and axial tone. Thus, even brief exposure to AT principles can affect performance of well-learned activities. These results support the AT claim that a "high-level" cognitive intervention (changing the way you think about your body) can affect "low-level" functions such as posture and movement.
- The changes seen in the PD subjects may be clinically important, as postural sway is associated with fall risk[5], gait initiation is associated with freezing of gait, and axial rigidity is associated with turning difficulty[6]. This might help explain why AT training was previously found to decrease disability associated with PD[1].
- This study was recently published[7]. We are now collecting pilot data for a similar study with healthy older adults. For more information, contact Dr. Rajal Cohen at rcohen@uidaho.edu, or see our lab website: *http://www.webpages.uidaho.edu/mindinmovementlab/*.

## References

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