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Changes in Resting and Postural Tremor in Parkinson’s disease as a Function of Postural Position

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Background: Altered postural and resting tremor dynamics and increased postural instability are just two characteristics associated with Parkinson’s disease. This study examined the effect postural position (sitting or standing) had on the resting and postural tremor responses of young, older and PD individuals. Any alteration in the tremor output of these groups under differing postural conditions may provide further insight as to what effect posture and Parkinson’s disease has on physiological tremor.

Method: The effect of postural position on resting and postural tremor was examined in 12 young, 8 elderly and 8 PD subjects (on and off medication) who completed a unilateral pointing task. Tremor was recorded from the hand and index finger segments of each arm using uniaxial accelerometers.

Results: The postural position adopted had a significant effect on both the resting and postural tremor dynamics, but only for the elderly and PD subjects. When the PD and elderly subjects performed the task while standing, the amplitude of their tremor responses significantly increased. In contrast, no differences in tremor were seen for young subjects when they performed the task when sitting or standing.

Conclusion: The increases seen in tremor dynamics when PD and elderly subjects adopted a standing position indicates that these oscillations are not wholly determined by the state of disease or the normal ageing process. Rather, the changes also reflect the fact that tremor is a highly variable feature of the motor system that can be altered by the nature of the task being performed.