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**NORMAL MOTOR ADAPTATION IN CERVICAL DYSTONIA:
A FUNDAMENTAL CEREBELLAR COMPUTATION IS INTACT**

Anna Sadnicka, Bansi Patani, Tabish Saifee, Panagiotis Kassavetis, Isabel Pares, Pras Korlipari, Kailash Bhatia, John Rothwell, Joseph Galea, Mark Edwards. *National Hospital for Neurology and Neurosurgery/UCL*

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Background The potential role of the cerebellum in the pathophysiology of dystonia has become a focus of recent research. However, direct evidence for a cerebellar contribution in humans with dystonia is difficult to obtain.

Methods We examined motor adaptation, a test of cerebellar function, in 20 subjects with primary cervical dystonia and an equal number of aged matched controls. Adaptation to both visuomotor (distorting visual feedback by 30°) and forcefield (applying a velocity-dependent force) conditions were tested. Our hypothesis was that cerebellar abnormalities observed in dystonia research would translate into deficits of cerebellar adaptation. We also examined the relationship between adaptation and dystonic head tremor as many primary tremor models implicate the cerebellothalamocortical network which is specifically tested by this motor paradigm.

Results Rates of adaptation (learning) in cervical dystonia were identical to healthy controls in both visuomotor and forcefield tasks. Furthermore, the ability to adapt was not clearly related to clinical features of dystonic head tremor.

Conclusions We have shown that a key motor control function of the cerebellum is intact in the most common form of primary dystonia. We discuss these results within the current framework of dystonia research in which there has been speculation on an important role for the cerebellum. Future research should aim to critically and directly examine the extent and nature of cerebellar involvement in a hypothesis driven framework. The role of the cerebellum in this enigmatic disease perhaps remains to be proven.