

## **Abnormal movement perception in functional limb weakness**

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*Introduction:* Functional motor disorders (FMD) are characterized by motor symptoms which resemble voluntary movements but are perceived as involuntary by the patients. The mismatch between the apparently voluntary nature of motor symptoms and the sense of involuntariness reported by patients may result to abnormal sense of agency, that is the feeling of control over actions and their consequences [1]. Despite proprioception plays an important role in the sense of agency [2], impairment of the proprioceptive system in FMD has never been previously investigated.

*Objective:* We tested the hypothesis that functional limb weakness - one of the most frequent phenotypes among FMD is associated with dysfunction of proprioception, by evaluating the amount of tonic vibration reflex (TVR) and the perception of the TVR movement [3].

*Methods:* 20 patients with functional weakness of the lower and/or the upper limbs and 25 healthy controls were recruited for the study; delivery of 92-Hz transcutaneous vibration of the biceps brachii tendon of the arm elicited elbow flexion (TVR). Participants matched the final position of the vibrated arm with their contralateral tracking arm. The TVR and the perception of the TVR movement were measured as angle movements of the vibrated arm and the tracking arm, respectively.

*Results:* The TVR and the perception of the TVR movement were significantly reduced in the patients compared to the controls. These abnormalities did not differ between patients with unilateral or bilateral upper limb involvement, or between unaffected and affected side in patients with unilateral impairment, suggesting that the observed deficits were independent of motor impairment.

*Conclusions:* Proprioceptive dysfunction may underlie alterations in body movement and sense of agency in patients with functional limb weakness and may play a role in the pathophysiology of these disorders.

### **References**

- [1] Edwards et al., 2013. *Curr Opin Neurol*; 26: 442–447.
- [2] Farrer et al., 2003. *Conscious Cognit*; 12: 609–619.
- [3] Yoneda et al., 2000. *Eur J Neurol*; 7: 529–533.