

## Gait Analysis in Restless Legs Syndrome Patients

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No gross clinical motor abnormalities have been reported in idiopathic restless legs syndrome (RLS) where peripheral neuropathy has been excluded with electromyographic and conduction velocity examinations. It is unclear how the supposed dopaminergic pathophysiological mechanism of RLS<sup>1, 2</sup> has apparently no consequences during normal voluntary motor activity of wakefulness. For this reason, we hypothesized that in RLS a minor voluntary motor involvement might be present. This motor involvement would not be detectable clinically but might be observed by means of a sophisticated instrumental analysis of movement, such as gait analysis.

Gait analysis was performed and surface electromyography (EMG) activity was recorded from 8 muscles: tibialis anterior, gastrocnemius lateralis, gastrocnemius medialis, and soleus of both legs of 13 RLS patients and 8 normal controls. Ten out of the 13 RLS patients and none of the normal control group showed a mild abnormality of the EMG activation of the gastrocnemius muscles during gait, which, however, had no detectable effects on its kinematics. These results might be interpreted as the effect of an impaired supraspinal dopaminergic control with possible action on spinal structures involved in the control of gait. This mild EMG abnormality might constitute an additional supportive feature for the diagnosis of RLS in difficult cases.

### References

1. Rye DB. Parkinson's disease and RLS: the dopaminergic bridge. *Sleep Med* 2004;5(3):317-328.
2. Clemens S, Rye D, Hochman S. Restless legs syndrome: revisiting the dopamine hypothesis from the spinal cord perspective. *Neurology* 2006;67(1):125-130.