

## Drummer's lower limb dystonia

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Dear Sirs,

Musician's dystonia is an occupational focal dystonia characterized by loss of motor control and coordination, generally affecting particularly demanding tasks on over-used body parts. The right hand is generally involved in pianists and guitarists, left hand in violinists, and embouchure in trumpeters [1]. Drummers can develop upper extremity dystonia but there are no prior reports of lower limb dystonia (LLD) even though both feet also become engaged in repetitive, stereotyped, and skilled movements. Here we report two cases.

A 23-year-old jazz percussion student presented with a 4-month coordination problem of his left foot when he

played the left pedal. He started playing at age 16, and had been playing 5 h/day during the past 4 years. Six months prior to onset of symptoms he had switched to a raised heel playing technique. There were no symptoms during daily life activities. When playing, he developed involuntary tension at left toes, ankle, and knee muscles. This provoked ankle and knee blocking and extension of toes, mainly the first one, during drum playing. The left hip and right leg were not involved. The patient underwent reeducation based on Sensory Motor Retuning experiencing progressive improvement [2]. After 1 year of tailored work at our center, he has resumed conservatorium classes, and is finishing his rehabilitation process.

A 22-year-old semiprofessional hard rock drummer presented with a 2-year history of playing difficulties. He had played 3 h/day since he was 17 years old. He also worked as a bulldozer driver for 10 h/day. He had been intensively practicing the double bass pedal technique increasing the kick speed progressively (both feet alternately push their own pedal to kick the bass drum). He first noticed incoordination when playing sixteenths at  $\geq 160$  beats/min. The problem progressively worsened and he became unable to coordinate alternating leg movement at 60 beats/min (Fig. 1). This was associated with involuntary tension at knee and ankle muscles in both legs. Alternating flexion and extension of the ankle was difficult and, as he played, flexion of the toes and rising of the heels appeared. He had no symptoms during daily activities, or driving the bulldozer. When kicking with only one of the pedals problems were of less intensity. During the follow-up, symptoms persisted for 1 year and, after that, he experienced a mild improvement secondary to modifications in practice routines during 1 year more.

In both cases, ancillary tests, including brain MRI, electromyogram, and nerve conduction studies were normal.

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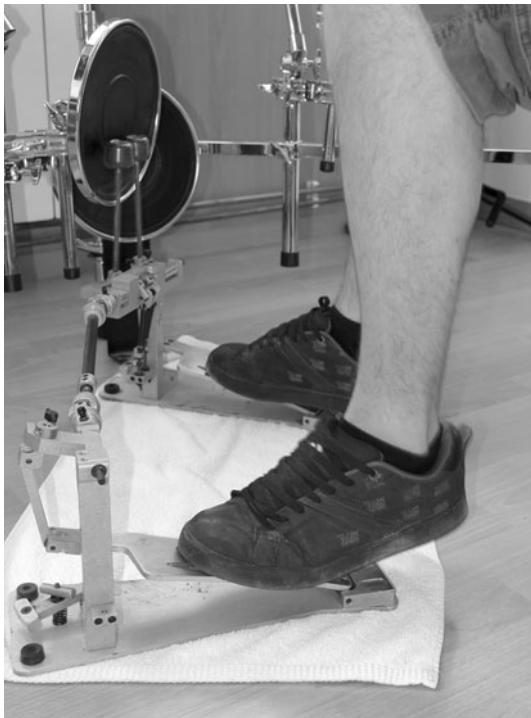
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**Fig. 1** Lack of coordination during double pedal bass drum kick can be clearly appreciated in the form of loss of rhythmicity of the sound and by observing the masses not biting in an alternating manner, but synchronously

Multichannel electromyogram recordings of anterior tibial and gastrocnemius muscles showed co-contraction during kicking the drum pedal. There were no abnormalities on neurologic exam, no akinesia, no prior exposure to dopamine antagonists, no trauma to lower extremities, no major psychiatric disorders, stressors or pending litigation, and no family history of movement disorders.

In both patients symptoms begun around age 20 and were task-specific. Task-specificity in LLD has been previously described [3–6], but young age of onset is rare [4, 5]. Related cases have been described in long distance

runners [7] and flamenco dancers [3]. LLD symptoms may appear early if the task is repeated more intensely as usually happens in upper limb dystonia in musicians [1].

The possibility of a symptomatic dystonia is worth considering, particularly in case 2. However, medical history was negative, and after a 2-year follow-up, there are no other neurological signs, and symptoms remain strictly task-specific.

In conclusion, we report two cases of musician's dystonia affecting lower extremities. This has not been previously reported, but supports the notion that task-specific dystonia can affect all those structures that are subjected to repetitive and stereotyped work, including lower extremities.

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## References

1. Rosset-Llobet J, Fàbregas-Molas S (2010) A practical manual to understand and take care of the disorder that affect the ability to play music. *Musician's Dystonia*, Panamir
2. Candia V, Schäfer T, Taub E et al (2002) Sensory motor retuning: a behavioral treatment for focal hand dystonia of pianists and guitarists. *Arch Phys Med Rehabil* 83:1342–1348
3. García-Ruiz PJ, del Val J, Losada M, Campos JM (2011) Task-specific dystonia of the lower limb in a flamenco dancer. *Parkinsonism Relat Disord* 17:221–222
4. McKeon A, Matsumoto JY, Bower JH, Ahlskog JE (2008) The spectrum of disorders presenting as adult-onset focal lower extremity dystonia. *Parkinsonism Relat Disord* 4:613–619
5. Schneider SA, Edwards MJ, Grill SE et al (2006) Adult-onset primary lower limb dystonia. *Mov Disord* 21:767–771
6. Lo SE, Frucht SJ (2007) Is focal task-specific dystonia limited to the hand and face? *Mov Disord* 22:1009–1011
7. Wu LJ, Jankovic J (2006) Runner's dystonia. *J Neurol Sci* 251:73–76