

Functional gait disorders: a sign-based approach

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**European
Reference
Network**

for rare or low prevalence
complex diseases

Network

Neurological Diseases
(ERN-RND)

Member

Radboud University
Medical Center Nijmegen
— The Netherlands

Functional neurological symptom

- Unintentionally produced symptom without a structural underlying lesion
- Other terms: psychogenic disorder, conversion
- Wide variety of symptoms

Goal of today

- How do I recognise a functional gait disorder



This was a....

- A. Dystonic gait disorder
- B. Functional gait disorder
- C. Other...



This was a....

- A. Functional gait disorder
- B. Parkinsonian gait disorder
- C. Other...



Take home message #1

**Bizarre gait pattern
≠
Functional gait pattern**

Take home message #2

**Diagnosis should be based on inconsistency
AND incongruencies of symptoms and signs**







Is this a congruent gait pattern?

- A. Yes
- B. No



A sign-based approach

PERSPECTIVES

OPINION

Neurological disorders of gait, balance and posture: a sign-based approach

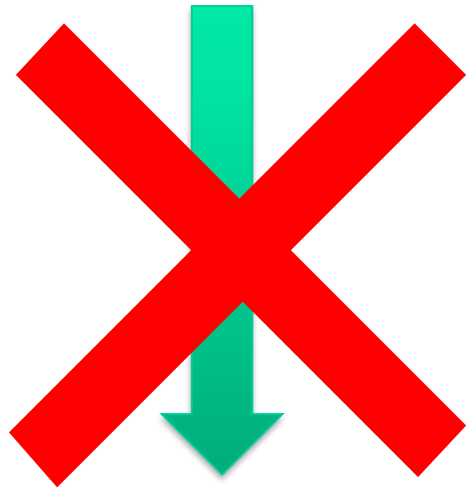
Jorik Nonnekes, Rianne J. M. Goselink, Evžen Růžička, Alfonso Fasano, John G. Nutt and Bastiaan R. Bloem

Abstract | Neurological disorders of gait, balance and posture are both debilitating and common. Adequate recognition of these so-called disorders of axial mobility is important as they can offer useful clues to the underlying pathology in patients with an uncertain clinical diagnosis, such as those early in the course of neurological disorders. Medical teaching programmes typically take classic clinical presentations as the starting point and present students with a representative constellation of features that jointly characterize a particular axial motor syndrome. However, patients rarely present in this way to a physician in clinical practice. Particularly in the early stages of a disease, patients might display just one (or at best only a few) abnormal signs of gait, balance or posture. Importantly, these individual signs are never pathognomonic for any specific disorder but rather come with an associated differential diagnosis. In this Perspective, we offer a new diagnostic approach in which the presenting signs are taken as the starting point for a focused differential diagnosis and a tailored search into the underlying neurological syndrome.

reduced arm swing are among the earliest (and can even be the first) detectable motor signs in patients with PD^{8–10}. Very subtle gait abnormalities might even precede the onset of overt motor signs: in a 2015 study, subtle changes in gait were detected in carriers of PD-related mutations in *LLRK2* and *PINK1* who were otherwise clinically asymptomatic^{9,11}. Similarly, slowing or other changes in gait can be the first objective clinical marker of an underlying cerebrovascular pathology¹². A widening of the base of support and other gait changes are among the earliest presenting features in patients with hereditary cerebellar ataxia¹³. Early signs can also assist in the differential diagnosis. The development of postural instability and recurrent falls within the first year after onset of hypokinesia or rigidity features suggests the presence of a form of atypical parkinsonism, such as progressive supranuclear palsy (PSP) or multiple system atrophy (MSA)^{14–16}. A disproportionate antecollis in patients with parkinsonism might also suggest the presence of MSA or perhaps (in patients with PD) the adverse effects of dopamine receptor agonists¹⁷. Further examples include an impaired tandem gait in patients with essential tremor^{18,19}, a feature useful in the

A sign-based approach

Neurological syndrome



Classical descriptions,
listing all possible features

Focused differential diagnosis



Presenting sign
(eg reduced arm swing)



Functional gait disorders

A sign-based approach

Jorik Nonnekes, MD, PhD, Evžen Růžička, MD, DSc, Tereza Serranová, MD, PhD, Stephen G. Reich, MD, Bastiaan R. Bloem, MD, PhD, and Mark Hallett, MD

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Abstract

Functional gait disorders are common in clinical practice. They are also usually disabling for affected individuals. The diagnosis is challenging because no single walking pattern is pathognomonic for a functional gait disorder. Establishing a diagnosis is based not primarily on excluding organic gait disorders but instead predominantly on recognizing positive clinical features of functional gait disorders, such as an antalgic, a buckling, or a waddling gait. However, these features can resemble and overlap with organic gait disorders. It is therefore necessary to also look for inconsistency (variations in clinical presentation that cannot be reconciled with an organic lesion) and incongruity (combination of symptoms and signs that is not seen with organic lesions). Yet, these features also have potential pitfalls as inconsistency can occur in patients with dystonic gait or those with freezing of gait. Similarly, patients with dystonia or chorea can present with bizarre gait patterns that may falsely be interpreted as incongruity. A further complicating factor is that functional and organic gait disorders may coexist within the same patient. To improve the diagnostic process, we present a sign-based approach—supported by videos—that incorporates the diverse clinical spectrum of functional gait disorders. We identify 7 groups of supportive gait signs that can signal the presence of functional gait disorders. For each group of signs, we highlight how specific clinical tests can bring out the inconsistencies and incongruencies that further point to a functional gait disorder.

MORE ONLINE

► Videos

Clinical test to reveal inconsistencies and incongruencies











Can functional and organic gait disorders co-exist?

- A. Yes
- B. No





Take home message #3

**Functional gait disorders and
organic gait disorders can co-exist**













Take home message #4

**A sign-based approach and focused clinical tests
can help to diagnose a functional gait disorder**

Potential pitfalls





Functional gait disorders

A sign-based approach

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MORE ONLINE

► Videos

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