Video Article

Erratum: Use of Rotorod as a Method for the Qualitative Analysis of Walking in Rat

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Abstract

A correction was made to: Use of Rotorod as a Method for the Qualitative Analysis of Walking in Rat. An additional paragraph was added to the discussion, the abstract was modified, and another reference was included.

Additional reference:

15. Whishaw IQ, Li K, Whishaw PA, Gorny B, Metz GA. Distinct forelimb and hind limb stepping impairments in unilateral dopamine-depleted rats: use of the rotorod as a method for the qualitative analysis of skilled walking. J Neurosci Meth 126, 13-23 (2003).

Revised Abstract:

High speed videoanalysis of the details of movement can provide a source of information about qualitative aspects of walking movements. When walking on a rotorod, animals remain in approximately the same place making repetitive movements of stepping. Thus the task provides a rich source of information on the details of foot stepping movements. Subjects were hemi-Parkinson analogue rats, produced by injection of 6-hydroxydopamine (6-OHDA) into the right nigrostriatal bundle to deplete nigrostriatal dopamine (DA). The present report provides a video analysis illustration of animals previously were filmed from frontal, lateral, and posterior views as they walked (15). Rating scales and frame-by-frame replay of the video records of stepping behavior indicated that the hemi-Parkinson rats were chronically impaired in posture and limb use contralateral to the DA-depletion. The contralateral limbs participated less in initiating and sustaining propulsion than the ipsilateral limbs. These deficits secondary to unilateral DA-depletion show that the rotorod provides a use task for the analysis of stepping movements.

Additional Discussion Paragraph:

A more detailed presentation of the present study has been made (Whishaw et al, 2003), but the present study presents the video support describing the stepping movement in the good and affected limbs of unilateral dopamine-depleted rats. For the analysis, rats with unilateral DA depletions and control rats were video recorded from front, lateral and posterior views. A rating scale of posture and forelimb movements indicated that stepping movements were chronically impaired following surgery. Examination of limb movements indicated that whereas the DA-depleted rats could use the limbs contralateral to the lesion for support, they received minimal use for shifting weight. The results of this study indicate that the rotorod task, in addition to providing quantitative measures of motor impairments, can also provide insights into the qualitative impairments.

Original Abstract:

The rotorod test, in which animals walk on a rotating drum, is widely used to assess motor status in laboratory rodents. Performance is measured by the duration that an animal stays up on the drum as a function of drum speed. Here we report that the task provides a rich source of information about qualitative aspects of walking movements. Because movements are performed in a fixed location, they can readily be examined using high-speed video recording methods. The present study was undertaken to examine the potential of the rotorod to reveal qualitative changes in the walking movements of hemi-Parkinson analogue rats, produced by injection of 6-hydroxydopamine (6-OHDA) into the right nigrostriatal bundle to deplete nigrostriatal dopamine (DA). Beginning on the day following surgery and then periodically over the next two months, the rats were filmed from frontal, lateral, and posterior views as they walked on the rotorod. Behavior was analyzed by frame-by-frame replay of the video records. Rating scales of stepping behavior indicated that the hemi-Parkinson rats were chronically impaired in their posture and in the use of the limbs contralateral to the DA-depletion. The contralateral limbs not only displayed postural and movement abnormalities, they participated less in initiating and sustaining propulsion than did the ipsilateral limbs. These findings not only reveal new deficits secondary to unilateral DA-depletion, but also show that the rotorod can provide a robust tool for the qualitative analysis of movement.

Protocol

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Disclosures

No conflicts of interest declared.

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