

Ataxia: From Clinical Recognition to Rehabilitation

Practical considerations for neurologic physical therapists

Ataxia describes impaired coordination, but it can also be a standalone diagnosis. It may arise from dysfunction of the cerebellar, sensory, or vestibular systems. The constellation of gait variability, appendicular discoordination, oculomotor abnormalities, and ataxic dysarthria should raise concern for a cerebellar syndrome rather than an isolated balance impairment.^{1,2}

Cerebellar ataxia may be genetic, immune-mediated, toxic or metabolic, vascular, infectious, neoplastic, or degenerative. Family history may be absent even when the cause is genetic.^{1,2}



Early Recognition and Referral

Early recognition can shorten the diagnostic pathway and connect the patient with appropriate rehabilitation, ataxia-specific multidisciplinary management, and genetic counseling when indicated. When findings suggest an undiagnosed cerebellar syndrome or are not adequately explained by the patient's established condition, communicate the complete clinical pattern and recommend neurologic evaluation.

Recognize the Cerebellar Pattern

Gait and Postural Control Cerebellar gait is characterized by:	Appendicular Coordination Assess movement accuracy, timing, scaling, and decomposition:	Oculomotor Control A brief oculomotor screen may reveal findings that a routine balance examination misses:	Speech and Swallowing Listen and ask about:
• Increased spatial and temporal variability, including inconsistent step length, timing, and lateral foot placement³ • Wide-based, staggering, or veering gait • Excessive trunk sway • Difficulty with tandem gait, turning, obstacle negotiation, or rapid changes in direction • Impaired anticipatory or reactive postural control • Falls that appear disproportionate to strength or sensory findings^{1–3}	• Dysmetria with finger-to-nose, finger chase, or heel-to-shin testing • Dysdiadochokinesia • Decomposition of multi-joint movement (Dyssynergia) • Irregularity in movement timing, force, or direction • Impaired check or rebound response^{1,2}	• Gaze-evoked nystagmus • Saccadic rather than smooth pursuit • Hypometric or hypermetric saccades • Square-wave jerks • Ocular dysmetria or impaired gaze holding^{1,2}	• Slurred, scanning, or irregular dysarthria • Altered speech rate, rhythm, prosody, or volume • Coughing, choking, prolonged mealtimes, or difficulty managing liquids • Unintentional weight loss or recurrent respiratory illness^{1,4}

Localize Before You Label

Cerebellar Ataxia: Gait and truncal instability accompanied by appendicular dysmetria, dysdiadochokinesia, ataxic dysarthria, or central oculomotor findings.

Sensory Ataxia: Imbalance that worsens substantially with visual input removed, often with impaired proprioception or vibration sense and a positive Romberg test.

Vestibular Ataxia: Imbalance associated with vertigo, oscillopsia, head-motion sensitivity, or peripheral vestibular findings.

Mixed presentations are common, particularly in hereditary and multisystem disorders.

Rehabilitation Is Part of Ataxia Care

Progressive Does Not Mean Untreatable

Although disease-modifying treatment remains limited for many degenerative ataxias, rehabilitation can address activity limitations, participation, secondary complications, falls, and deconditioning.

Physical Activity Should Be Both a Rehabilitation Goal and a Treatment Target

Physical therapists are uniquely positioned to promote long-term participation through behavior-change strategies such as physical activity coaching. Balance impairment, low balance confidence, and fatigue may limit participation and should inform intervention and exercise prescription. A recent feasibility study found that telehealth physical activity coaching was feasible and associated with improvements in physical activity, functional mobility, and SARA scores; controlled studies are needed to establish efficacy.¹³

Outcome Measures: Measure More Than “Balance”

Pair an ataxia-specific measure with functional and patient-prioritized outcomes.

Ataxia Severity

- **Scale for the Assessment and Rating of Ataxia (SARA):** Eight-item measure of gait, stance, sitting, speech, and appendicular coordination with strong interrater and test-retest reliability. Consider tracking individual items as well as the total score.¹¹

Performance and Mobility

Select measures based on the patient’s presentation and goals:

- Gait speed or 10-Meter Walk Test
- 6-Minute Walk Test
- Timed Up and Go
- Functional Gait Assessment
- 9-Hole Peg Test and Box and Block Test
- Patient-Reported Outcome Measure of Ataxia (PROM-Ataxia)
- Repeated sit-to-stand (5 Times Sit to Stand or 30 Second Sit to Stand tests)
- Instrumented or observational measures of step variability, when available

The **Spinocerebellar Ataxia Functional Index** combines an 8-meter walk, 9-Hole Peg Test, and PATA repetition rate and may be useful in specialty or research settings.¹²

Patient Experience and Participation

- Activities-specific Balance Confidence Scale
- Patient-Specific Functional Scale
- Goal Attainment Scaling
- Falls and near-falls
- Device use across environments
- Community mobility and participation
- Fatigue and exercise adherence

Match Intervention to the Phenotype

Coordination, Motor Learning, and Control Consider:	Balance and Gait Interventions may include:	Aerobic Capacity, Strength, and Conditioning Apply usual exercise-testing and prescription principles, with added consideration of:
• Embedding coordination activities into functional tasks and beginning with blocked, high-repetition practice before progressing to variable practice when appropriate¹⁴ • Reducing task complexity by practicing components of a task before progressing to the whole task, with emphasis on movement accuracy, timing, scaling, and consistency • Multi-joint and reciprocal movement • Trunk control and transitions between postures • As a compensatory strategy, decrease degrees of freedom to increase stability • Progression through speed, amplitude, direction, base of support, task complexity, and environmental context^{4,6} • Performance variability is a hallmark of cerebellar dysfunction. Provide adequate practice while managing fatigue and avoiding repetitions performed with progressively deteriorating movement quality.	• Static and dynamic postural control • Weight shifting and limits-of-stability training • Anticipatory and reactive stepping • Turning, obstacle negotiation, and multidirectional gait • Adaptation to relevant environmental demands • Safe practice of floor transfers and fall-recovery strategies • Assessment and training with appropriate walking devices • Orthotic and environmental recommendations based on the individual presentation^{4,6,7} • A six-week individualized home program improved gait, balance, and functional mobility. Balance challenge (not exercise duration) best predicted change in walking speed. Select a sufficiently challenging dose that remains safe and repeatable.⁷	Exercise self-efficacy and motivation • Fall risk and equipment access • Autonomic dysfunction • Cardiomyopathy, particularly in Friedreich ataxia • Fatigue and heat sensitivity • Medication effects • Ability to monitor intensity accurately • Cognition • Anxiety or depression • Neuropathy • Support required for adherence and progression^{4,8} Do not attribute all mobility limitations to ataxia severity. Screen for weakness, reduced power, pain, cardiopulmonary limitations, fatigue, and deconditioning. In a 2025 trial of 62 ambulatory adults with cerebellar ataxia, supported home-based high-intensity cycling improved SARA scores, fatigue, and aerobic capacity more than dose-matched balance training. Generalizability to other phenotypes and disease stages remains uncertain.⁸ Although strength is not always a primary deficit, strengthening can play a key role in rehabilitation. In a small pilot study, a home-based core-stability telerehabilitation program was feasible and associated with short-term improvements in gait performance.⁵

Ataxia-Specific Clinical Resources

NAF Ataxia Centers of Excellence 	NAF Physical Therapist Resources 	Exercises for Ataxia Patients 	Newly Diagnosed Fact Sheet 	List of NAF Physical Therapy/Exercise Resources 
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