

NINDS CDE Notice of Copyright
Physical and Neurological Examination for Subtle Signs

Availability:	Not available at this time
Classification:	Exploratory: Mitochondrial Disease (Mito)
Short Description of Instrument:	<p>PANESS is a Revised Physical and Neurological Examination for soft Signs scale by Martha Denckla . It is used for physical and neurological soft signs. It can be used for children and adolescents. It is an observational scale having 21 questions covering gait, stance, laterality, quality of rapid movements, impersistence score, involuntary movement score, repetitive speed of movement score, and sequenced speed of movement score, asymmetrical movement score. It assesses in terms of laterality, timed and untimed motor movements. It has been found to have adequate test retest reliability, inter-rater reliability, and internal consistency (Vitiello et al., 1997). The PANESS is particularly useful for assessment of motor speed in children because it is brief, minimizes the need for equipment, provides lateralized data, and is applicable to children as young as 5 years. The measure also provides an assessment of subtle neurological signs like dysmetria and motor overflow that can provide localization or "neighborhood signs" of neurological inefficiency/developmental delay.</p>
Rationale/ Justification:	<p>Strengths/ Weaknesses:</p> <p>Specific to Mitochondrial Disease: With the likelihood of neurological involvement in mitochondrial disorders, the PANESS can provide a sensitive and reliable measure of localized and generalized motor impairment. Particular patterns of performance on the PANESS have been shown to discriminate between different developmental disabilities (e.g., dyslexia vs. ADHD) (, and thus the instrument may provide phenotypic information that could discriminate different mitochondrial disorders from other conditions.</p> <p>Advantages: The instrument is engaging for children and has been used in a variety of developmental disability populations. Portions of the examination can be administered in place of the full battery depending on the motor skills of the individual or population of interest (e.g., could elect not to administer stress gaits, but still get measures of sequencing and persistence using fingers and tongue).</p> <p>Limitations: Some scores like overflow and dysmetria require clinical judgment in assessing and may therefore have less interrater reliability. Though it is few items, some of the motor skills showed some practice effects with shorter intertest intervals.</p>

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Scoring:	<p>Gaits: Each series of gaits is scores on a scale of 0-2 based on motor errors observed during execution (i.e., 0 = no errors, 2 = 3 or more errors). Gait scores are totaled and converted to z-scores based on normative expectations for age.</p> <p>Persistence: Motor persistence tasks are scored on 0-2 scale (i.e., 0 = persists for 20 or more seconds, 2 = less than 10 seconds). Scores are totaled and converted to z-scores based on normative data. Observations of motor phenomena like choreiform or motor impersistence (e.g. eye opening) are also recorded. Hopping is scored based on how many consecutive hops are completed.</p> <p>Rapid sequential movements: Scored based on time to complete 20 consecutive movements and on a scale of 1-3 based on the presence or absence of overflow movements (one point each for proximal, orofacial and mirror overflow movements). Each score is converted to a z-score based on normative data for age.</p>
References:	<p>Physical and Neurological Examination for Subtle Signs (PANESS, Denckla, M.B., Revised Neurological Examination for Subtle Signs (1985), Psychopharmacology Bulletin, 21(4), 773-800)</p> <p>http://www.researchgate.net/publication/22294932 <u>The physical and neurological examination for soft signs (PANESS) pediatric norms and comparisons between normal and deviant boys proceedings</u></p> <p>Denckla MB. Revised Neurological Examination for Subtle Signs (1985). Psychopharmacol Bull. 1985;21(4):773-800 [PUBMED]</p> <p>Vitiello, B., Riccuiti, A.J., Stoff, D.M., Behar, D., and Denckla, M.B. (1989). Reliability of subtle (soft) neurological signs in children. J Am. Acad Child Adolesc Psychiatr, 28, 5:749-753.</p>