



Meeting the Challenge of Developmental Coordination Disorder With Associate Medical/Educational Diagnoses

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This poster presents a practical approach for providing services to children with Developmental Coordination Disorder (DCD). It gives examples of associated diagnoses with symptom commonalities, stages of visual-perceptual-motor development, and a case study giving examples of therapeutic activities leading to improved function.

History of Terminology

- Motorically deficient – 1925
- Clumsiness and motor difficulties – 1937
- Developmental apraxia - 1962
- Minimal brain dysfunction – 1966
- Perceptual-motor dysfunction - 1967
- Sensory integration disorder– 1972
- Developmental coordination disorder 1994-current

Criteria of DCD Diagnosis (DSM-5)

Diagnostic and Statistical Manual of Disorders - Fifth edition

- A neurodevelopmental disorder
- Childhood onset
- Impairment of motor skills interfering with academic, social, and occupational activities of daily living
- Other neurological conditions affecting movement ruled out

Examples of Conditions Associated with DCD

- Attention deficit/hyperactivity disorder (ADHD)
- Autism spectrum disorder (ASD)
- Specific Learning Disabilities (SLD)
- Sensory processing disorders (SPD)

Commonalities of Delays and Deficits: DCD with ADHD, ASD, SLD, and SPD

- Academics (reading, writing, math)
- Attention
- Communication
- Executive function
- Motor control (gross, fine, visual)
- Postural control (balance, joint stability, muscle tone, strength)
- Self-regulation
- Social interaction
- Transition adjustments

Developmental Perceptual-Motor Stages: A Foundation for Spatial and Temporal Awareness and Motor Coordination

1. Posture
2. Body image
3. Laterality
4. Directionality
 - Relationship to external objects
 - Relationship between external objects

Case Study: Functional Problems of a Teenager with Specific Learning Disorder

- Academic performance
- Handwriting
- Energy levels
- Manual dexterity
- Organizational skills
- Self-esteem
- Sports

Current DCD Assessments

- Bruininks-Oseretsky Test of Motor Proficiency (BOT-2)
- Developmental Coordination Disorder Questionnaire (DCD-Q)
- Developmental Test of Visual-Motor Integration (VMI)
- Movement Assessment Battery for Children (M-ABC-2)
- Test Of Legible Handwriting (TOLH)

Intervention Approaches

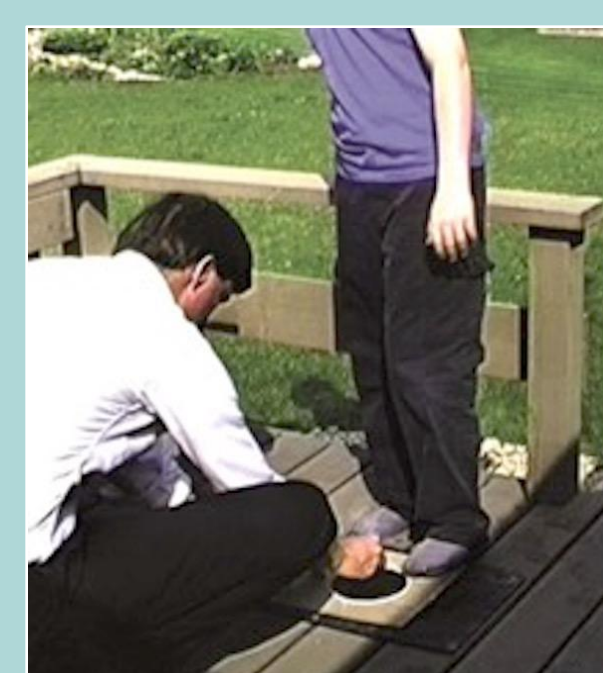
Process-oriented

- Bottom-up
- Foundational components needed for successful performance and acquisition of motor skills

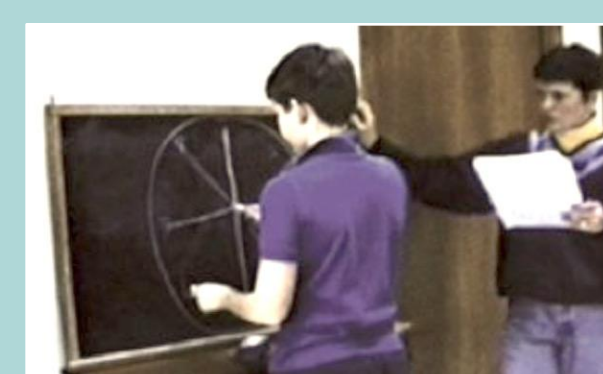
Task oriented

- Top-down
- Cognitive analysis of interaction between context, child's resources, and task to be learned

Visual-Perceptual-Motor Activity Examples



Gross motor: Standing on one leg while erasing chalk shapes with wet sock, to improve balance, eye-foot coordination, and spatial awareness, using rail for balance, then independently



Fine Motor: Clock game on chalkboard, for eye-hand control and bilateral competency



Oculomotor: Tracking with mirror eye and tongue → more strength and accuracy

Independent Evaluations of Occupational Therapy Program	Before Rx Age 13	After Rx Age 14
Optometric		
VMI-Beery percentile	7th%	98th%
Accomodative amplitude (focus)	8.00 OD	10.50 OD
Normal: 13 diopters	7.00 OS	10.50 OS
Psychological		
VMI-Beery percentile	16th%	96th%
VMI-Beery age equivalent	9-6	14-0

Conclusions and References

Children who have been diagnosed with Developmental Coordination Disorder can benefit from visual-perceptual-motor intervention programs that have been proven effective in those who have conditions associated with DCD.

www.erhardtproducts.com/DCDrefs.html