

Dyspraxia from an Occupational Therapy perspective

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Paediatric occupational therapy uses purposeful activity and play to “work with the child to help him or her attain the highest possible quality of life. The occupational therapist assesses the child and uses therapeutic techniques and activities to help maximise the child’s abilities and independence.” (National Association of Paediatric Occupational Therapists)

Some children frequently seen by an occupational therapist include those who present with difficulties with motor, co-ordination and perceptual difficulties. There are a number of different terms commonly used to describe the group of children with co-ordination difficulties. They include Clumsy children, Developmental Dyspraxia, Co-ordination difficulties or perceptual motor difficulties. There is confusion in the use of these terms. Some clinicians use these terms interchangeably, others may use them to define slightly different problems.

Currently the preferred term worldwide is Developmental Co-ordination Delay or DCD (DSM-IV 1994, American Psychiatric Association Diagnostic and Statistical Manual). The diagnostic criteria for DCD are:

- A. Performance in daily activities that require motor co-ordination is substantially below that expected given the person’s chronological age and measured intelligence. This may be manifested by marked delays in achieving motor milestones (e.g. walking, crawling, sitting), dropping things, “clumsiness”, poor performance in sports, or poor handwriting.
- B. The disturbance in Criterion A significantly interferes with academic achievement or activities of daily living.
- C. The disturbance is not due to a general medical condition (e.g. cerebral palsy, hemiplegia, or muscular dystrophy) and does not meet the criteria for a Pervasive Developmental Disorder.
- D. If mental retardation (learning difficulties) is present, the motor difficulties are in excess of those usually associated with it.

Occupational therapists use DCD as an umbrella term which includes dyspraxia. Some definitions of praxis / dyspraxia include:

Praxis is the ability by which we figure out how to use our hands and body in skilled tasks like playing with toys; using tools, including a pencil or fork; building a structure, whether a toy block tower or a house; straightening up a room, or engaging in many occupations. (Ayres, Mailloux and Wendler, 1987)

Dyspraxia is defined as difficulty in planning and carrying out skilled non-habitual motor acts in the correct sequence. It is not a primary problem in motor co-ordination (motor execution). Rather the problem is hypothesized to be due to difficulty in formulating the plan of action. Praxis includes both knowing what to do and how to do it. (Ayres 1972a, 1979, 1985, 1989 in Fisher, Murray & Bundy, "Sensory Integration: Theory and Practice", 1991, F.A. Davis Company, p. 141)

Ayres defined somatodyspraxia as a disorder of encoding a new, as opposed to a habitual, motor response strategy. That is, clients with somatodyspraxia have difficulty learning new tasks, but once learned and performed as a part of the client's daily life performance, the task can be performed with adequate skill. Although clients can acquire reasonable degrees of skill in specific activities with practice, the acquired skill remains highly specific to the particular tasks they have practiced and doesn't generalise to other similar activities. (Fisher, Murray & Bundy, "Sensory Integration: Theory and Practice", 1991, F.A. Davis Company, p. 141)

Praxis is "the ability to interact successfully with the physical environment, to plan, organise and carry out a sequence of unfamiliar actions and to do what one needs and wants to do." (Kranowitz, C.S., "The Out of Sync Child", 1998, p.290)

Praxis as defined from an occupational therapist's perspective includes three components:

1. Ideation - the ability to grasp the idea to allow purposeful interaction with the environment. It involves knowing what to do with an object and being able to anticipate a plan of action.
2. Planning – The ability to plan and structure a purposeful adaptive response involving the motor and sensory systems. It involves knowing how to move, and being able to send the right messages from the brain to the relevant muscles and areas of the sensory system in order to carry out the movements.
3. Execution – carrying out the movement, and putting the plan into action.

A client must present with difficulties with ideation or planning to be regarded as dyspraxic from an occupational therapy point of view. Dyspraxia is not viewed as a primary problem in motor co-ordination.

To further clarify we will compare children with co-ordination difficulties with those with dyspraxic problems.

Co-ordination difficulties

- Poor balance
- Difficulties with bilateral skills (such as using 2 hands when cutting out or catching a ball with 2 hands).

Dyspraxia

- Poor planning of movements
- Poor sequencing of movements
- Poor organisation of self in the environment

Characteristics of a client with dyspraxia:

Play, developmental and educational characteristics

1. clumsy – difficulty transitioning from one body position to another
2. poor tactile discrimination – difficulty with feeling or localising a touch stimulus
3. inadequate body scheme – difficulty relating their bodies to physical objects in environmental space / difficulty imitating actions of others / direction of movement may be disturbed, e.g. toys broken unintentionally
4. difficulty with sequencing and timing the actions involved in a motor task
5. slowness in learning activities of daily living (especially fastenings)

6. problems in gross motor skills and sports
7. problems in constructive or manipulative play and poor fine motor abilities
8. handwriting difficulties
9. developmental articulatory deficit
10. accompanying soft neurological signs
11. accompanying learning disabilities

Behavioural characteristics

1. Low self-esteem and poor self-concept
2. easily frustrated; avoids new situations
3. often manipulative
4. may prefer “talking” to “doing”
5. often late and forgetful
6. disorganised approach to tasks.

What an Occupational Therapist will do:

Assessment process:

The occupational therapist will:

1. interview the mother / father and probably the teacher and obtain information about the child’s current level of functioning and their early development. A sensory history questionnaire may be used.
2. perform a classroom observation
3. observe on non-standardised clinical observations of neuromotor behaviour e.g. how does the child initiate active exploratory behaviour, watch child in class / PE / other motor tasks.
4. perform selected standardised assessments
 - Sensory Integration and Praxis Tests (SIPT), Ayres 1989
 - Bruininks-Oseretsky Test of Motor Proficiency, 1978
 - Miller Assessment for Preschoolers, Miller 1988
 - Movement Assessment Battery for children (Henderson & Sugden)
 - Developmental Test of visual-motor integration (Beery)
 - Motor Free Visual Perceptual Test – revised
 - Test of Visual Perceptual Skills (Gardner)
 - Sensory Profile (Winnie Dunn)

The OT will observe the way in which the child performs motor tasks, including quality of movement as well as the end skill. There is no one test which can be used and information is looked at as a whole in order to draw up a pattern of difficulties and underlying problems.

In the course of an assessment, an occupational therapist will try to define more specifically the difficulties a child may present with. A child with DCD may also present with dyspraxia. Occupational Therapists regard dyspraxia as falling under the umbrella of DCD.

The child with dyspraxia usually achieves motor milestones at appropriate ages but then has difficulty with more complex tasks eg buttoning and fastening zippers.

A useful checklist for motor development for preschoolers:

- | | |
|---|-----------|
| <input type="checkbox"/> bangs 2 sticks tog after demo | 18 months |
| <input type="checkbox"/> uses spoon, spilling little | 2 years |
| <input type="checkbox"/> uses fork to pierce food | 2 years |
| <input type="checkbox"/> can climb out of large low box | 2 years |

❑ rides a tricycle	3 years
❑ uses scissors to snip	3 years
❑ buttons small buttons	4 years
❑ pumps self on swing	4 years
❑ can neatly cut out a circle	5 years
❑ skips reciprocally	5-6 years
❑ ties shoelaces	6 years
❑ rides a 2-wheeled bicycle without training wheels	6-7 years

(Adapted from Ayres, 1979, Fisher, Murray & Bundy, “Sensory Integration: Theory and Practice”, 1991, F.A. Davis Company)

Treatment:

1. An Occupational Therapist may recommend *sensory integrative* treatment:
Treatment for children with developmental co-ordination delay with an sensory integration basis involves treating the child in a 1:1 environment using equipment which would provide the child with increased opportunity to take in sensory information such as touch, deep pressure, movement experiences and visual information. Occupational therapists refer to these as tactile, vestibular-proprioceptive information. This sensory information provides feedback and improves body awareness as well as awareness of where the child is in space. Activities would involve planning and in doing the activities it is essential that the child is actively involved in purposeful and meaningful tasks. Sensory Integration uses a child lead approach. Treatment should also focus on those skills necessary for his/her daily life tasks such as self-care, classroom or play tasks. The occupational therapist attempts to provide activities that encourage the client to engage in tasks which challenge them slightly but are not so difficult that the client becomes frustrated or results in poor quality of movement.
2. The occupational therapist may adopt a *perceptual motor* approach. Kephart contributed largely to perceptual-motor intervention theories. Kephart believed that learning developed in predictable stages. Motor actions directed toward the environment were almost exclusively responsible for early learning i.e. the child’s perception of the environment are based on his or her motor experience. As the child matures, this changes where perceptual and cognitive processes become more central to learning than motor experiences. Current theories view the theory as a “conceptual framework of interrelated motor, perceptual and more broadly cognitive factors” (Lazlo & Bairstow). (Fisher, Murray & Bundy, 1991, pp 360-361) When using a perceptual motor intervention approach, the child is required to practice specific graded tasks to improve their perceptual or motor difficulty.
3. A *sensorimotor* approach is another tool used by occupational therapists. This approach emphasises active, experience-based learning. Piaget based his theories on the assumption that children learn about their bodies and their environment through experience. Sensory integration is regarded as an example of a sensorimotor approach. A sensorimotor approach can also include more structured activities such as exercises used in a group. Such an approach would not be as flexible and spontaneous as that used in sensory integration. The term sensorimotor approach can also be used to refer to an approach such as that used by Rood, where a specific sensory input such as vibration is expected to produce a specific motor output. Fisher, Murray & Bundy, “Sensory Integration: Theory and Practice”, 1991, F.A. Davis Company, p.359-360
4. A *cognitive goal directed* approach may be used. The child is assisted in identifying,

developing and using cognitive strategies (a problem solving approach) to perform daily occupations effectively.

5. A *compensatory skill development* approach may be used to supplement the other approaches used. It aims to help the child / family develop specific skills or coping strategies in the face of a dyspraxia. E.g. provide the child with a weighted pen, computer, scribe, provide specific suggestions to help the child organise himself/ herself on a daily basis.
6. *Consultation* – the occupational therapist helps family members, teachers and others who deal with the child to understand the nature of the problem. He / she will provide information and develop strategies through collaboration with them.

Suggested references:

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