

Down Syndrome

Down Syndrome is a condition caused by extra genetic material located at the 21st chromosome. It is one of the most common congenital syndromes and the largest single known cause of intellectual impairment. According to Smith (1997) there is no association between Down syndrome and any given culture, ethnic group, socio-economic status or geographical region. The causes of Down syndrome are unknown; however increased maternal age is thought to increase the risk of having a child with Down syndrome. Varying degrees of intellectual impairment may result from Down syndrome. This may affect attention, memory, abstract thinking and problem solving and generalisation skills. According to Kozma and Stock (1993), abstract thinking - the ability to grasp concepts, or processes that can not be directly experienced through the senses - and generalisation - the ability to apply what has been learned to new situations - are areas that present the greatest learning difficulties.

Besides affecting intellectual and cognitive skills, Down syndrome may also cause one or more of the following physical characteristics: a rounded face with a flat profile due to flattened bridge of the nose and small nose size; slightly upward slanting eyes and epicanthus (a small fold of skin that runs vertically between the inner corner of the eye and the bridge of the nose); small, low set ears; slightly smaller mouth cavity and larger tongue; broad hands and feet with short digits with a single crease across the palm or sole; short stature with arms and legs short in comparison to trunk size; low muscle tone; joint laxity and diminished proprioceptive sense (movement awareness).

There are also some medical concerns related to Down syndrome including congenital heart problems and gastro-intestinal blockages, however these medical concerns will not affect all people who have Down syndrome.

In early childhood, problems may develop affecting the eyes, ears and teeth of children with Down syndrome. Eye problems may affect vision. Ear problems may result in hearing loss. Intermittent or persistent hearing loss can also affect language acquisition.

Children with Down syndrome may experience sensory processing, particularly the receiving of sensory information (Umansky and Hooper 1998). Tactile discrimination and upper and lower body awareness may also be reduced. Gross motor, fine motor and oral motor skills and cognitive development may be affected as a result of sensory processing problems.

Effects on Developmental Areas

Social and Emotional Development

- Short term delays in developing clear smiles and eye contact
- Social and emotional progress in the first year of life is essentially normal
- Shows interest in people, socially responsive and sensitive
- Pattern of good social and emotional development and good non-verbal communication skill usually continues in later years

Physical Development

There are delays in both fine motor and gross motor skills in children with Down syndrome. The physical characteristics which delay motor development include:

- *Hypotonia or low muscle tone* may delay development of head and body control
- *Ligament and joint laxity* refers to the looseness of the ligaments supporting the joints. Children may be unable to control excessive joint movement, nor prevent it from happening
- *Shorter limbs* in relation to their torso may be evident
- *Hand characteristics* display some unique physical appearances including two palm creases instead of three, smaller hands and fingers, undeveloped wrist bones at birth and an inward curved or slightly bent fifth finger

Language and Communication Development

- Communication skills affected by both physical and developmental delays
- Limited tongue control may result in some speech delays
- Increased tongue and jaw strength enhances the ability to control the tongue
- Children may receive speech therapy to remedy problems with articulation
- Delays in speech production may prevent children from saying clear words even though they know what they want to say
- Language progresses naturally from two word utterances to three and four word utterances or longer
- May string words together in a way that enables them to be understood but the words may lack correct grammatical understanding
- Children with Down syndrome may experience frustrations in making themselves understood. Many children may try/use gestures in order to communicate their want or needs

Health and Safety

- May experience hearing loss in the early years; as many as four out of five
- Most hearing loss will be fluctuating and caused by middle ear infections blocking the ear
- Significant minority have sensory-neural deafness which will be permanent

Cognitive

- May need help to practice and consolidate new knowledge and skills
- Some sensory processing difficulties - particularly the receiving and interpreting of sensory information
- Smaller short-term auditory memory causing delays in learning the grammatical and syntactical rules of language as memory store is used to hold spoken language for just long enough to process it for meaning

Down Syndrome Inclusion Strategies

Each child diagnosed with **Down syndrome** will be different and individual. It is important to gain information from the parents as to what characteristics of **Down syndrome** their child displays. It is important to work closely with the parents as well as any additional support specialists e.g. therapists who may be involved with the child. It is also important to gain an understanding from the parent as to what is the most important aspect of their child attending your service. What is it that parents hope to gain from using your service? The following inclusion strategies are just some examples which may be applied to support the inclusion process. This list is only the start and it is dependant on a variety of factors such as environment, length of time child is in care, child's interest, likes, dislikes and skills already achieved. Strategies developed should be age appropriate for the child. The strategies are divided into developmental areas however some strategies overlap and assist in a variety of developmental areas.

Social and Emotional Development

- Always encourage inclusion in group activities in an active or passive role.
- Provide ample opportunity for dramatic play episodes.
- Plan for the dramatisation of favourite stories using props and felt pieces encouraging children to participate in the retelling on these stories.
- Support peer relationships support by acknowledging all in the group.
- Through play experiences, children with Down Syndrome are drawn into naturally spontaneous conversations from which their social skill development benefits enormously.

Physical Development

- Promote body stability in children e.g. providing push toys for the younger child and balance beams, jumping rope for the school age child.
- Hands can be strengthened through shovelling experiences in the sand/mud pit.
- Hammering experiences help children develop accuracy in their arm movements.
- Pouring activities in water play promote stability and control.
- Ball skills including bouncing, catching and throwing promote stability and planning for arm and hand movements. Begin with rolling experiences and substitute a ball with a balloon (to allow for slower movements) or bean bag (may be easier to catch).
- Waving streamers or ribbons through the air promotes shoulder strength.
- Obstacle courses encourage skills which enhance strength and co-ordination.
- Clapping games and finger plays promote bilateral co-ordination i.e. the ability to use both hands together, as does holding a book with one hand and turning pages with the other and lacing and threading experiences.
- Sensory experiences including play dough, finger painting etc. strengthens hands.
- Stickle bricks can be used to develop pulling apart and putting together skills
- Tactile experiences can promote sensory discrimination.

- Shape sorters, stacking rings, stacking cups, simple shape puzzles and activity boards all promote dexterity including the skills of grasp and release, pinch and thumb control, wrist movement and finger co-ordination.

Cognitive Development

- Provide experiences that allow for practice in memory, problem solving and gaining new knowledge e.g. memory games, books that ask “where is ___”, “how many ___”, or ask child for ideas on how to problem solve e.g. “where did we put the ___ yesterday”.
- Provide reminders of sensory information through activities e.g. listening to tape/CD on sounds and asking what the sound reminds you of.
- Practice lots of facial games to strengthen muscles e.g. bubble blowing, making funny faces, looking in the mirror, expressing feelings through the face - show me your sad, happy face etc..

Language and Communication Development

- Encourage the child who has Down syndrome to participate verbally themselves and avoid talking for them or allowing others to do so.
- Be alert to the child’s attempts to communicate and ensure that the environment provides opportunities and time for children to practice and improve these skills.
- Respect and understand the communication systems that the child uses including sign and symbol substitutions to augment verbal communication skills.
- Child’s communication skills may not necessarily reflect their comprehension i.e. the child’s level of comprehension is often much higher than the level of expressive language.
- Give clear instructions and send clear messages – one at a time.
- Use consistency terms for routines e.g. do not interchange little lunch and morning tea – use one or the other.
- Provide children with advance warning and prepare them for major changes to the daily routine.

Reference

Umansky, W. and Hooper, S. (1998) *Young Children with Special Needs* Third Edition New Jersey, USA:Prentice-Hall

Deiner, P.L. (1993) *Resources for Teaching Children with Diverse Abilities - Birth through Eight*. Harcourt Brace:

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