

The Impact of Down Syndrome on Development and Early Intervention

What is Down Syndrome?

Down Syndrome is a genetic condition in which a person has an extra copy of all or most of the genes from chromosome 21.

- Three main types of Down syndrome: Trisomy 21, Translocation, and Mosaic.
- Children with Down syndrome tend to reach physical, emotional, and cognitive developmental milestones later than their peers.
- Physical milestones: develop motor skills later, such as holding their heads up, rolling over, and sitting, trouble acquiring independent skills
- Emotional milestones: respond to smiles, express pleasure, and develop relationships at a slower rate than their typically developing peers.
- Cognitive milestones: taking in less information during critical periods of their cognitive development (Eckdahl, 2017, p.8)

Table 1.1 Common Down syndrome physical features

Body part	Description
Skull	Small, shortened skull that is flattened on the back, sloping forehead, missing or underdeveloped sinuses
Eyes	Upward slanted and wide-set eyes, epicanthal folds, Brushfield spots
Ears	Smaller ears with extra folds, ears set lower on the head
Nose	Smaller nose, flattened nasal bridge
Mouth	Smaller mouth, large tongue that tends to stick out more often, undersized teeth, crooked teeth, irregularly shaped teeth
Hands	Broad hands, only one crease across the palm, short fingers, curved fifth finger
Feet	Larger gap between the first and the second toe
Limbs	Short and stocky arms and legs with hyperflexible joints
Body	Short stature, shorter and wider neck, protruding stomach



Coffey, L. T. (2021, October 7). 21 things I wish I knew about having a child with Down syndrome. TODAY.Com. <https://www.today.com/series/things-i-wish-i-knew/down-syndrome-stories-21-things-parents-wish-they-knew-t150473>

Stages of Early Expressive Vocabulary Development Comparison

From: Næss, K. B., Ostad, J., & Nygaard, E. (2021). Differences and Similarities in Predictors of Expressive Vocabulary Development between Children with Down Syndrome and Young Typically Developing Children. *Brain sciences*, 11(3), 312. <https://doi.org/10.3390/brainsci11030312>

- Rapid growth
- First words by approx. 1 year
- 50 words by approx. 1.5 years
- Sentence production by approx. 1.5 years

Typically Developing Child

- Slow growth
- First words by approx. 1-9 years.
- 50 words by approx 3 years (25%), 4 years (50%), and 5 years (75%).
- Sentence production by approx. 3.5-5 years or after 100 words

Child with Down Syndrome

Compared to typical development, developmental milestones vary for children with Down syndrome, including varying symptoms such as adaptive behavior, cognitive abilities, and autism symptoms (Channell, 2021).

Early Intervention Services

Executive Function and Daily Living Skills (DLS)

- Children's performance on executive function measures was positively associated with DLS in young children with Down syndrome (Van Deusen et al., 2024).
- Shows how focusing on executive function can help DLS which are essential to building a foundation of early learning.

Adapted Physical Education:

- Van Duijn et al. (2010) found that "through the support of preschool APE, children with DS may be better equipped to transition to an inclusive kindergarten and elementary school setting by acquiring skills at a faster pace" (Young, 2020 pg. 238)
- Parents saw positive growth in children's growth motor skills using active homework assignments
- APE interventions allow children with DS to begin to lessen the developmental gaps between them and their peers before they are even in school.

Intensity of intervention:

- High-intensity intervention required less time to master targets and was more effective than low or moderate doses of intervention (Neil, & Jones, 2019).
- Each child had different results, showing how variable the condition can be
- This supports the important role of the teacher, parent, and service provider in customizing intervention to meet the needs of each student

Diagnosis and Prevalence

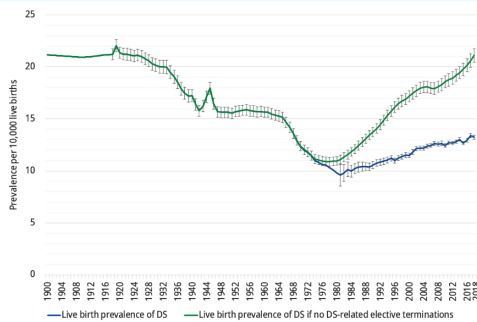


Figure 3. Live birth prevalence of Down syndrome in the USA, 1900-2018

- Most diagnoses take place immediately after birth.
- Approximately 74% of parents choose to terminate a prenatal diagnosis of Down syndrome.
- Many parents do not get prenatal testing due to the risk of pregnancy complications or because of insurance limitations (Graaf, Skotko & Buckley, 2024).
- The rise in selective terminations of pregnancies when Down syndrome is detected may increase harmful stereotypes, impacting the mental health of those with DS and societal misconceptions.



About Down syndrome | National Down Syndrome Society (Ndss). (n.d.). Retrieved October 27, 2024, from <https://ndss.org/about>

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