Fine Motor Skills

Fine Motor Skills

What are Fine Motor Skills?

Fine motor skills involve manipulation of the hands and fingers. Examples include picking up small objects, using scissors, writing, drawing, threading, and tying shoelaces. They develop in a continuous process from birth to adulthood.

How do fine motor skills develop in children with Down Syndrome?

Children with Down syndrome usually develop fine motor skills in the same pattern as typically developing children but with some delay, reaching milestones later than their typically developing peers. They also tend to perform skills less well than their peers, although there is a wide range of variability. Difficulties are especially noticeable in the early years and primary age range. They tend to decrease over time and, as they grow older, most children are able to achieve a perfectly adequate level of dexterity to enable them to participate in everyday life.

However, all motor skills improve with practice. Every time we perform a particular motor sequence or movement, the neural pathway (the connections made between the brain and the muscles involved) is reinforced again and again and we get better at performing the movement. Also, the more we use our muscles the stronger they become. It is vital, therefore, children are given additional and appropriate practice and encouragement, from this early age, to develop skills as much as possible.

There are several reasons why children with Down syndrome may have delayed motor development:

Possible causes of delay:

Cognitive skills

Research suggests that children with Down syndrome have difficulties processing the information they receive from their senses and then co-ordinating their movements. This process takes longer than in typically developing children. Their motor neuron pathways

are relatively inefficient and take longer to become established. Therefore, they need more practice than their peers to develop and establish these pathways. In addition, the more complex the task, the more difficulty they will have translating it into action. Tasks which require faster perceptual and cognitive judgements, are particularly hard, as they demand a greater level of co-ordination and planning. Studies also show slower reaction times, with difficulties in adapting movements.

As a result of the above factors, although the muscles themselves can perform the movements, they are often performed in a slower, more clumsy or un-coordinated manner.

Hypotonia
Children with Down syndrome commonly have hypotonia, although this tends to decrease with age. Hypotonia means low muscle tone and affects both gross and fine motor skills. However, the precise effects on the development of motor skills are not clear and more research is needed to investigate this further.

Loose joints and ligaments
Ligaments are attached to joints and connect bones together. In children with Down syndrome, the ligaments are looser and stretchier, enabling a wider range of movement and flexibility. An example of this is often seen in the hip joints of children who can sit cross-legged with both knees flat on the floor and their feet resting on their knees. The thumb joint can also be particularly lax causing additional difficulties when manipulating small objects and developing pencil control. Again, more research is needed to clarify the effect of this additional flexibility on the development of motor skills.

Hand formation
The hands of children with Down syndrome are often smaller and the fingers shorter and stubbier. The thumb is often set lower down. Some children may not have all the usual wrist bones. These factors will inevitably affect the ability to hold and manipulate objects.

The following factors should be considered when working on improving fine motor skills:

Improving skills:

Stability
Good seating and positioning are critical in providing the stability needed to keep one part of the body still while moving another e.g. writing, tying laces.

The chair and desk should be the right size. The pupi l's knees should be in line with their hips and with feet flat on the floor, directly under

their knees. If necessary, place a footrest under the feet. Elbows should rest comfortably on the desk.

Working on a slanted surface or writing board can help many children sit up straight for longer. A variety of different working positions and techniques (e.g. short periods working at the computer, desk, on carpet) may help a child work for longer.

Allow short breaks to compensate for tiring more quickly than peers.

Hand exercises
Before, during and after activities, encourage a variety of exercises to increase awareness of hands and fingers, stimulate or relax them and restore blood flow, e.g.

- Open/close hands slowly and rapidly
- Shake hands and rub them together
- Tap thumbs to each fingertip in turn

Strengthening activities for wrists and hands
Make available some specific items to help strengthen wrists, hands and fingers. Offer them when finishing an activity early or when a change is needed. They could be: -

- A stress ball or small squashy ball – count the seconds before it regains its shape.
- Tearing paper for collages or papier-mache.
- Finger puppets.
- Wind up and squeaky squeeze toys.
- Pop-together beads, Lego and Multi-link.
- Small items such as macaroni to pick up and put into bowls or small cups.
- Bulldog clips and coloured clothes pegs; Clip them onto the side of a box or tin.
- Sponges or cloths to wring out.
- Tiddlywinks.
- Hammering pegs.
- Stacking cups, Russian dolls.
- Small bits off plasticine/play dough to roll into balls or snakes.
- Theraputty activities (normally provided by an Occupational Therapist).

Activities to develop perceptual skills and hand-eye co-ordination
Pupils may need help with perceptual concepts. e.g. the ability to place a mark with finger or pencil on a selected point, move from left to right and top to bottom, beginning in the top left corner etc. Practice large movements involving their whole arms before trying smaller, finer movements and introduce a range of activities, which

use a multi-sensory approach as developing sensory awareness will aid development of motor skills: -

- Painting the floor or walls outside with water.
- Making marks in a tray of cornflour mixed with water or normal plain flour.
- Cars and pens – Tape felt tips, with the nib facing downwards to cars. Place a large sheet of paper or roll of wallpaper on the floor and encourage pushing the cars up and down to make marks.
- Giant child Spirograph – Lay a large sheet of paper on the floor and get the child to lay on their front or back. The child then holds a marker pen in each hand with their arms stretched out and moves their arms up and down or their bodies round on the floor to make Spirograph type patterns.
- Under table marks – tape a sheet of paper to the underneath of a table and then get the child to lay underneath the table and stretch their arms up with pens to make marks on the table.

Cutting

Cutting is a higher-level fine motor skill and often popular: Blunt ended metal scissors work best. Spring-loaded or self-opening scissors position the hand automatically in the thumb-up position and only need squeezing to close. Double-handed scissors will enable adult hands to use the scissors behind the pupil's hands, to guide with the squeeze/release movements. Cutting straws and paper strips are good early cutting activities. Card and heavy paper are easier to cut than normal paper.

Improving writing skills

Writing is a highly complex task including many skills in addition to hand-eye co-ordination, and is a result of motor, sensory, perceptual and cognitive processes working together. Multi-sensory, visual and perceptual motor activities will all contribute towards developing handwriting skills. Theraputty exercises, provided by an Occupational Therapist, can also help by strengthening hand muscles and improving fine motor co-ordination.

Further support

Our School Liaison Service can provide further advice and support.
Contact us by emailing: info@upsanddowns.net