Movement disorders

Cerebral palsy is characterised by the presence of one or more movement disorders as follows:

- **Spasticity** is the most common type, found in about 85% of individuals with cerebral palsy. It is a condition in which certain muscles are overactive causing stiffness or tightness of muscles. This may interfere with normal movement, speech and gait. There is often underlying weakness and contractures may result.
- **Dyskinesia** is the term used for a category of movement disorders that are characterized by involuntary muscle movements and variable muscle tone. There are various types:
  - Dystonia is a movement disorder in which sustained or repetitive muscle contractions result in twisting and repetitive movements or abnormal fixed postures. Dystonia may be intensified or exacerbated by physical activity, anxiety or stress.
  - Athetosis is a movement disorder characterized by slow, involuntary, convoluted, writhing movements of the fingers, hands, toes, and feet and in some cases, arms, legs, neck and tongue.
  - Chorea is a movement disorder characterised by brief, random, irregular movements that are not repetitive or rhythmic but appear to flow from one muscle to the next, in a 'dance-like' fashion.
- **Ataxia** is the term used for a movement disorder characterised by unsteadiness and tremor. People with ataxia who are ambulant tend to walk with a wide based unsteady gait. Low muscle tone (hypotonia) is usually present.
- **A mixture of more than one type** of motor disorder is common, particularly the combination of spasticity and dystonia.

85%

of people with cerebral palsy have spasticity

Distribution

The movement disorder may be present or more prominent:

- on one side of the body (**hemiplegia**);
- in legs more than arms (**diplegia**); or
- in all four limbs (**quadriplegia**).

Identification of the particular type of movement disorder is essential as there are different treatments depending on the diagnosis. This is not always easy and may require assessment and opinion from a physiotherapist, neurologist, paediatrician and/or rehabilitation specialist with skills in the area of movement disorders in cerebral palsy.

Treatment

Spasticity may be treated with:

- Oral medication: muscle relaxants such as Baclofen or benzodiazepines.
- Injectable agents for specific muscle groups: Botulinum toxin.
- Phenolisation of particular nerves supplying a muscle group e.g. obturator nerve/hip adductors.
- Intrathecal baclofen.

Surgical procedures can be used to treat fixed contractures. For example; lengthening of tendons such as Achilles tendon or hamstrings.

Dystonia may be treated with:

- Oral medication: baclofen is the first line treatment and others such as gabapentin or trihexyphenidyl might be trialled.
- Intrathecal baclofen.
- Deep brain stimulation (rarely used in cerebral palsy).

Athetosis is extremely difficult to treat.

Chorea is also difficult to treat. Atypical neuroleptics such as risperidone and quetiapine are occasionally tried. Dopamine-depleting agents such as reserpine and tetrabenazine are another option.

When using medication for any of the movement disorders, it is important to:

- Be clear about the goals of treatment (e.g. improve and maintain comfort and/or function, maintain optimal bone/joint alignment, reduce functional/postural deterioration, enable personal care, reduce pain, reduce spasms).
- Commence at a low dose.
- Increase the dose slowly.
- Monitor closely for side effects.

These resources are designed to support General Practitioners in the care of their patients with cerebral palsy. They were developed in partnership by The Royal Children's Hospital; the Centre for Developmental Disability, Monash Health; and Murdoch Children's Research Institute. The project was funded by an Avant Quality Improvement Grant 2017.

MonashHealth

CDDH Centre for Developmental Disability Health Better Health Better Lives

murdoch children's research institute

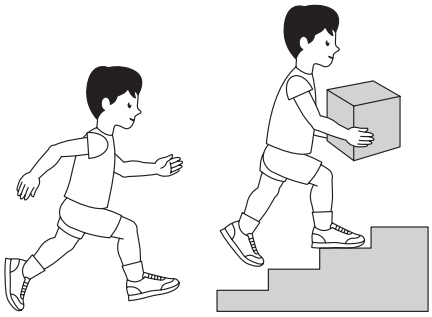
The Royal Children's Hospital Melbourne

Describing severity of movement disorders

The impact the movement disorder has on gross motor function is described using the Gross Motor Function Classification System for Cerebral Palsy (GMFCS).

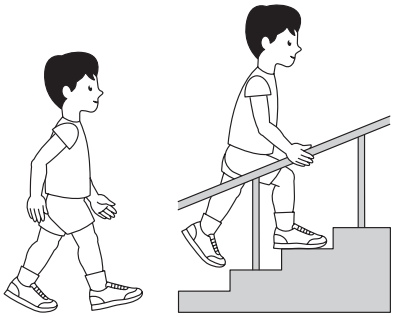
GMFCS Level I

Walks without restriction inside and outside. Can climb stairs without using support of railing or assistance. Can run and jump but speed, balance and coordination are limited.



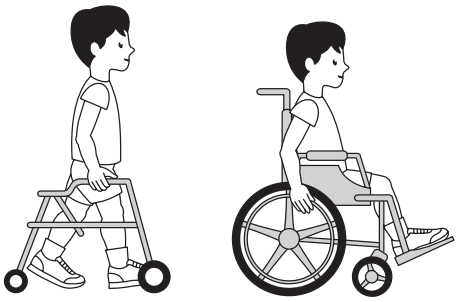
GMFCS Level II

Walks without assistive devices. Limitations in ability to walk long distances or over rough terrain. May walk with physical assistance, a handheld mobility device (walker) or used wheelchair over long distances. May climb stairs holding onto railing or with assistance. Use wheelchair for long distances. May self-propel wheelchair for short distances. Difficulty running or jumping.



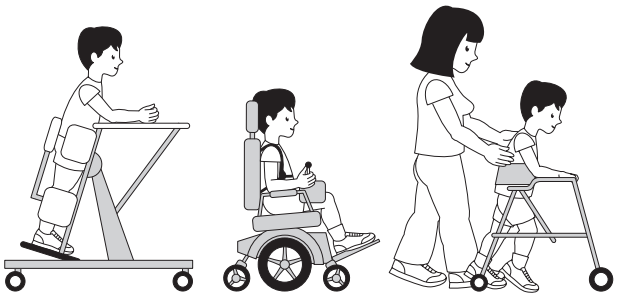
GMFCS Level III

Walks with hand held mobility device (walker) indoors. May be able to climb stairs with railing or assistance. Uses wheelchair for longer distances.



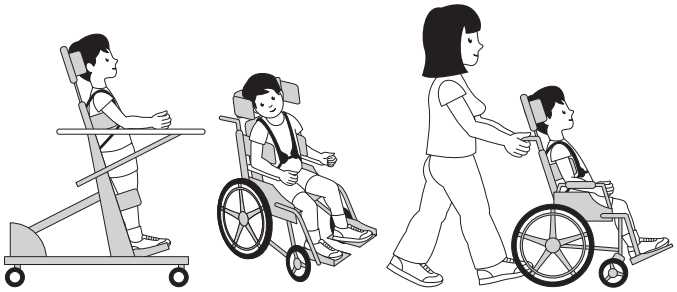
GMFCS Level IV

Require physical assistance from carer or powered mobility in most settings. May be able to walk short distances inside. For longer distances require assistance of carer to propel wheelchair or use powered mobility device (wheelchair or scooter).



GMFCS Level V

Uses wheelchair – either manual or powered – propelled by carer in all settings. Limited ability to maintain head and trunk control and so need support of mobility for comfort and safety.



For more information see:

Gross Motor Function Classification System – Expanded & Revised

https://canchild.ca/en/resources/42-gross-motor-function-classification-system-expanded-revised-gmfcs-e-r