Coaching Athletes with Cerebral Palsy (CP)

Definition

Cerebral Palsy literally means altered muscle control as a result of brain impairment. Cerebral palsy can affect a person's posture, balance and ability to move, communicate, eat, sleep and learn. CP involves injury to the developing brain that occurs before during or after birth. There is no single cause of CP. People with CP are likely to have other impairments as well as their physical condition, e.g. impaired speech, epilepsy, intellectual disability or vision impairment.

Three in 4 people with cerebral palsy experience pain (according to the CP Alliance of Australia). Pain is often a result of the impairments that are associated with cerebral palsy, e.g. contractures, abnormal postures, dystonia. Speech impairments and communication difficulties are present in around 1 in 4 people with CP. Strategies for communication will be highly individualised.

Children with cerebral palsy may experience specific learning difficulties. These may include a short attention span, motor planning difficulties (organisation and sequencing of movement), perceptual difficulties, behaviour issues and language difficulties. People with cerebral palsy need to put more effort into concentrating on their movements and sequence of actions than others, so they may tire more easily.

While CP will be present for life, individualised training programs can greatly improve physical development, fitness, health and function.

Types of CP

CP can be classified as either:

- quadriplegia (4 limb affected),
- diplegia (both legs affected) or;
- hemiplegia (predominantly a unilateral effect, arm and leg on one side of the body).

Further Descriptive Classification of CP

Spastic

Most common form – muscle stiff and tight

Dyskinetic (e.g. athetosis, dystonia)

Involuntary movements (i.e. out of a person's control)

Ataxic

Affects voluntary movements, causes in coordinated movement and can appear shaky. Affects balance and sense of positioning in space.

Likely conditions within CP and how they might be compensated for with coaching

Please note that there is a great variance in the way individual athletes with CP present.

Spasticity

Increased muscle tone will worsen with fatigue which will affect gait or coordination of movement. Pacing and intensity of training to be considered.

Startle reflex

Prone to extensor reaction to sudden stimuli such as load noise. Gradual desensitisation to stimuli (e.g. starter's pistol).

Ataxia

Incoordination – may need to break movement patterns down initially into small segmented movements.

Spastic diplegia

Effects both legs, athletes will not be able to perform one legged balance or coordination tasks.

Motor Impairment	Presentation	Coaching/training considerations
Spasticity / hypertonia	Increased muscle tone, increased resistance to movement (greater with increased movement velocity), may affect coordination of movement and gait. May cause reduced range of motion	Pacing and intensity of training, recovery time, altering speed of movement can assist learning – use a gradual increase in speed as proficiency improves. Compression garments may assist affected limbs.
Startle reflex	Prone to extensor reaction to sudden stimuli e.g. loud noises	Consider desensitisation to stimuli e.g. starters pistol, crowds at events by using ear plugs or preparation for events
Ataxia	Incoordination, poor balance, may appear like the athlete is struggling to learn new tasks. Sometimes athlete might be better at a dynamic task than a static one.	May need to break movement patterns down initially into small segmented movements. May need to repeat tasks until learnt.
Athetosis	Involuntary contractions of muscles	Involuntary movement can increase with effort. Fitness and training will enable better function. Providing a stable base of support can help (e.g. seated athletes can use good trunk support and more contoured seating interfaces.

Secondary Impairments

May be evident and can affect the way an athlete moves and trains. These might include:

- Weakness or reduced power
- Joint contracture
- Reduced range of movement
- Altered biomechanics/movement patterns
- Impairments in motor planning, learning and strategies
- Increased fatigue (a person with CP utilises more energy doing tasks)
- Reduced sensation
- Altered sensory field deficits

Medical Risk Factors

Seizures

This is often managed through regular medication; speak with the athlete about patterns and risk factors for seizures and how best to manage if they occur. There might be times of the day when function is best – base training schedules around this if required. Sleep quality and quantity might be essential.

Chest infection

CP can impact on swallowing and lung function. If an athlete is at higher risk be mindful of exposure to colds and viruses.

Poor heat regulation

May overheat quickly as the athlete often has to use more muscles and work harder to coordinate movements.

Intellectual impairment

Sometimes athletes with CP also have an intellectual or learning impairment (the rate is around 50%). This needs to be considered in the way you coach the individual. Refer to PA reference "coaching athletes with intellectual impairment".

If you have content to add, please contact keren.faulkner@paralympic.org.au

Resources

- Cerebral Palsy Alliance. https://cerebralpalsy.org.au/
- https://cerebralpalsy.org.au/our-research/about-cerebral-palsy/what-is-cerebral-palsy/facts-about-cerebral-palsy/
- Novak I, Hines M, Goldsmith S, Barclay R (2012). Clinical prognostic messages from a systematic review on cerebral palsy. *Pediatrics*. Nov 2012;130 (5).
- Palisano R, Rosenbaum P, Walter S, Russell D, Wood E & Galuppi B (1997). Development and validation of a Gross Motor Function Classification System for children with Cerebral Palsy.

- *Developmental Medicine and Child Neurology*, 39, 214-223. CanChild Centre for Childhood Disability Research www.canchild.ca. Australian Cerebral Palsy Register Report 2013 www.cpregister.com.