

LECKEY[®] Pal

Classroom Seat Clinical Information

The Pal seat is designed to be a simple self-assessment product for children who need minimal physical support.



WHAT IS PAL?

Why do children need this support?

When children are posturally unstable, they end up using excess energy to try to maintain their stability and balance. This can affect how they function as there is little energy left over to concentrate on fine motor tasks, schoolwork, or even just to listen.

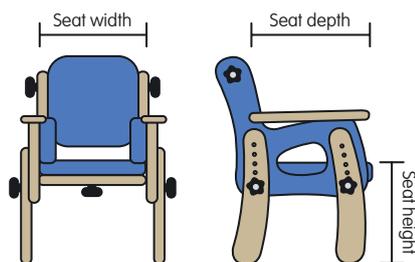
Think of trying to write when standing up – you adopt a wide base of support (feet apart) and stabilise your writing hand by locking your elbow into your sides. The task is achievable, but you use more energy than necessary and repeating the task becomes more difficult.

The quality of your writing will also be affected, and will further deteriorate as time goes on. If you are sitting down, with feet and elbows supported, your head (and therefore eyes) are steadier, your hands can freely move, and the quality and quantity of your written work is better.

It is exactly the same principle with everyday fine motor/concentration tasks for children with postural instability.

So how does Pal provide this support?

Pal provides support using the same principles as all Leckey's seating systems: pelvic stability, trunk and head alignment, and leg and foot positioning. Using 3 simple measurements, Pal can be easily prescribed.



Pelvic stability: Pal uses a simple combination of side pads to adjust the seat width (measurement 1), and a two-point lap belt to give additional support. An optional ramped cushion is available for those needing that little bit extra help to maintain their pelvis and femurs in optimal alignment.

Trunk and head alignment: While the children that Pal is designed for won't need specific head support, maintaining the trunk in a midline posture automatically translates to improved head alignment. This enables eyes to focus more easily, and contributes to increased reading and writing ability. Pal's angle adjustable backrest, armrests, tray and tables ensure that the trunk has that little extra lateral, posterior or anterior support needed to lessen fatigue and maintain trunk alignment.

Leg and foot positioning: Supporting the femurs is important for weight distribution and therefore comfort. Pal comes with a depth adjustable seat base as standard (measurement 2), and an optional pommel for maintaining femur alignment. Adequate foot support is essential for helping the rest of the body stay stable. Pal has height adjustable legs (measurement 3), and a footrest which can be used to make sure feet are well supported whatever the size of the child or table height they are sitting at. In addition, the optional high seat frame converts Pal size 1 to a high chair, ideal for feeding and inclusion at family meal times.

What sorts of children are suitable for Pal?

Pal, as a simple self-assessment item, is for children at the milder end of the physical disability range including Cerebral Palsy, Down's syndrome, the early stages of Muscular Dystrophy, developmental delay, and Developmental Co-ordination Disorder.

Typically, children who will benefit from Pal:

- Are levels II-III on GMFCS
- Are levels 4-7 on Chailey Levels of Sitting Ability
- Are usually mobile (especially the older children)
- Have lower than normal muscle tone leading to postural fatigue caused by holding the seated posture against gravity
- Have higher than normal or uneven muscle tone leading to postural fatigue caused by constantly correcting or "fighting" against it in the seated posture
- May be found in all types of schools - SLD, MLD, PD, and mainstream
- Need extra postural support and balance (given largely by the pelvic belt, laterals and tray) in order to improve their function
- "function" may be fine motor tasks such as writing, feeding, drawing and/or colouring in, puzzles
- "function" may also be listening and concentration

APPENDIX

Cerebral Palsy (CP)

For a general picture, see the table below which describes the Gross Motor Function Classification Scale (GMFCS) and the Chailey Levels of Ability those with CP (note that the descriptions are not a checklist, but simply a way to give you a “mental picture” of the type of child who will use Pal). Therapists are usually familiar with at least one of these scales. Teachers and classroom assistants are unlikely to be familiar with them.

GMFCS	Summary
<p>LEVEL II</p> 	<p>Age 2-4: Children floor sit, but have difficulty with balance when both hands are free to manipulate objects; movements in and out of sitting are performed with adult assistance; may crawl, cruise, or walk using a hand-held device (sticks, crutches or walkers that do not support the trunk) when first learning to walk.</p> <p>Age 4-6: Children sit in a chair with both hands free to manipulate objects; may move in/out of chair or up/down from floor but often need a stable surface to push or pull up on; may use wheeled mobility for long distances outdoors; need a railing to walk up and down stairs; unable to run or jump.</p> <p>Age 6+: Children walk in most settings; have difficulty on uneven ground, over long distances, crowded or confined spaces etc.</p>
<p>LEVEL III</p> 	<p>Age 2-4: Children maintain floor sitting by “W” sitting and may need adult assistance to assume sitting; creep or crawl as main means of mobility; may walk short distances using a hand-held mobility device indoors, needing adult assistance for steering and turning; may use wheeled mobility outdoors or in the community.</p> <p>Age 4-6: Children sit on a regular chair but may require pelvic or trunk support to maximise hand function; can usually walk with hand-held mobility device on level surfaces; transported for long distances.</p> <p>Age 6+: Children may require a seat belt for pelvic alignment and balance; walk with hand-held device indoors; may self-propel or use powered mobility for outdoors.</p>

Chailey Levels	Summary
<p>LEVEL 4</p> 	<p>Can be placed in a symmetrical sitting position; able to move trunk forward within base; able to return to upright; able to move laterally within base both ways; able to rotate trunk within base; pelvis is anteriorly tilted; can retract chin; shoulder girdle is protracted; arms can move to shoulder height; back profile is upright; hands can be brought to midline.</p>
<p>LEVEL 5</p> 	<p>As for level 4 plus: able to tilt pelvis anteriorly and posteriorly enabling trunk weight to fall behind base, allowing unilateral leg movement; arms can move above shoulder height; can use hands freely; can recover balance after leaning to either side.</p>
<p>LEVEL 6</p> 	<p>As for level 5 plus: can sit independently; can transfer weight outside of sitting base to leave the position.</p>
<p>LEVEL 7</p> 	<p>As for level 6 plus: can move into the sitting position.</p>

Children with CP who will use Pal are most likely to have hemiplegia, diplegia or milder quadriplegia.

CP – Hemiplegia:

A form of cerebral palsy that affects one arm and leg on the same side of the body. The majority of children with hemiplegia have normal intelligence, go to regular, age-appropriate schools, can expect to have relatively normal function as adults, and have few problems beyond the physical difficulties of the arm and leg that are involved. In most hemiplegia cases, the arm is usually more affected than the leg, and the problems are usually worse at the end of a limb. A child with hemiplegia may start walking late and may first start walking on tiptoe. They also may grow out of this.

CP – Diplegia:

A form of CP primarily affecting the legs. Most children with CP have some problems with their arms but with Diplegia they are less involved. Most children with diplegia have spasticity, and have difficulty with balance and coordination. Delayed muscle growth and spasticity cause their leg muscles to be short, and as a result the joints become stiff and the range of motion can decrease as a child grows. The feet and ankles present more problems than the knees, and the hips may become dislocated. Many diplegic children are born prematurely and have had respiratory problems. Most have normal or near-normal learning abilities. Most diplegic children are eventually able to walk, though many begin walking late.

CP – Quadriplegia:

A form of cerebral palsy that affects all limbs. Children with mild -moderate spastic quadriplegia can sit quite well, lift themselves into a wheelchair independently, may be able to walk short distances with a walker, and have enough hand function to feed themselves.

Down's Syndrome

Down's Syndrome is a chromosomal disorder caused by an additional 21st chromosome (the condition is medically referred to as Trisomy 21). Physically, Down's children are similar in appearance, often with:

- Eyes that have an upward slant, oblique fissures, epicanthic skin folds on the inner corner, and white spots on the iris
- Low muscle tone
- Small stature and short neck
- Flat nasal bridge
- Single, deep creases across the center of the palm
- Protruding tongue
- Large space between large and second toe
- A single flexion furrow of the fifth finger

Cognitive development in children with Down syndrome is quite variable. Children with Down syndrome often have a speech delay and require speech therapy to assist with expressive language. In addition, fine motor skills are delayed and tend to lag behind gross motor skills. Children with Down syndrome may not walk until age 4, but some will walk at age 2.



Photo courtesy of Down's Syndrome Association with permission

Muscular Dystrophy

The terms 'muscle disease', 'muscular dystrophy', 'neuromuscular conditions' and 'neuromuscular disorders' all describe a large group of conditions which affect either the muscles, such as those in the arms and legs or heart and lungs, or the nerves which control the muscles. Different conditions affect different muscles. Most conditions are progressive, causing the muscles to gradually weaken over time. People's mobility is affected and most conditions lead to some sort of disability. The severity of conditions and how they affect individuals varies greatly from person to person. Muscle disease affects babies, children and adults, both males and females and all ethnic groups. Conditions are often inherited but can also occur out of the blue where there is no family history.

Developmental Delay

Developmental delay is a term used to describe a baby or young child who is slower than expected in achieving the normal developmental milestones. This may affect gross and fine motor skills, speech and language skills, cognitive skills and/or social skills. A child diagnosed with global developmental delay will have delays in all their areas of development. In some children, developmental delay is suspected soon after birth because of feeding difficulties or unusual muscle-tone. In other children, developmental delay is only suspected much later when learning or behavioural difficulties surface at school. There are many different causes for developmental delay. It is a common condition affecting 1-3% of the population. The delay may be caused by a child's genetic makeup (eg Down's syndrome), by problems during pregnancy (eg infection), around the time of delivery, especially if very premature (eg bleeding in the brain), early infancy (eg meningitis) or later in childhood (eg head injury). A cause can be found in about half of cases.

Developmental Co-ordination Disorder (DCD)

Developmental coordination disorder (also known as clumsy child syndrome, clumsiness, developmental disorder of motor function, dyspraxia) is considered a 'marked impairment of motor coordination', which 'significantly interferes with academic achievement or activities of daily living' and is 'not due to a general medical condition' (American Psychiatric Association, 2000). Where the term 'dyspraxia' is used, definitions tend to focus on the organisation, planning and organisation of movement (Dixon and Addy, 2004).

Children with developmental coordination disorder often have difficulty performing tasks that involve both large and small muscles, including forming letters when they write, throwing or catching balls, and buttoning buttons. Children who have developmental coordination disorder have often developed normally in all other ways. The general characteristic is that the child has abnormal development of one or more types of motor skills when the child's age and intelligence quotient (IQ) are taken into account.

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kids & adults.
Sleeping, Sitting,
Standing, Walking,
Moving, Bathing,
Toileting.