ORTHOTIC & ASSISTIVE DEVICES

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ORTHOSIS

An orthosis may be defined as any device, applied to the **external surface of an extremity**, that provides better positioning, immobilizes, prevents deformities, maintains correction, relieves pain, mobilizes joints, exercises parts, or assists or supports weakened or paralyzed parts

STATIC VS DYNAMIC

- Orthotic devices may be classified as **static or dynamic**, depending on the functional need and ability of the extremity

A **static orthosis** is rigid and supports the affected area in a particular position,

whereas a **dynamic orthosis allows for some movement**.
They can be used to substitute for absent motor power, allow optimal function, assist motion, provide for an attachment of devices, and supply corrective forces to increase directional control

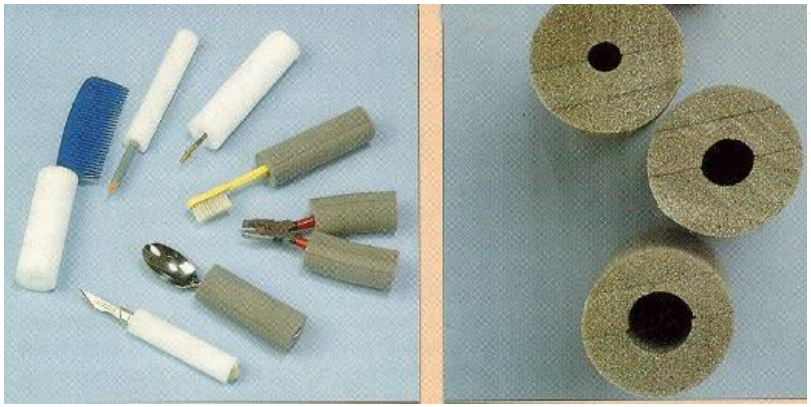
STATIC VS DYNAMIC

STATIC

DYNAMIC

ASSISTIVE TECHNOLOGY

- Assistive technology includes “. **products, devices or equipment,** whether acquired commercially, modified or customized, that are used to **maintain, increase or improve the functional capabilities of individuals with disabilities**
- These may include specialize **augmentative and alternative communication equipment**, such as speech- generating devices, off-the-shelf computer mouse alternatives (such as a trackball), or **software** that provides special features.




DynaVox

PRESCRIBING AN ORTHOSIS

The **key to identifying the most appropriate orthosis** or augmentative communication device is being **creative** and having a proper **understanding of the anatomical, biomechanical, and communication needs** of the patient and being **sensitive to the patient's preferences and desires.**

CHOOSING AN ORTHOSIS

When choosing an orthosis, there are a **few key principles** to keep In mind

- The orthosis should **enhance normal movement** while decreasing the presence of **abnormal postures and tone**
- It should be **simple, lightweight, durable, And strong**
- It should **be easy for the child to use and maintain**
- It should **augment functional independence**
- An orthotic device is not successful unless it assists in improving a child's quality of life

UPPER EXTREMITY ORTHOSES

FINGER & HAND

UPPER EXTREMITY ORTHOSIS	COMMON NAME	FUNCTION (REF.)	SPECIAL CONSIDERATIONS (REF.)
STATIC			
Finger	Neoprene thumb abductor	Places thumb in abduction to promote functional use of the hand	Will not overcome severe cortical thumb position
	Static metal orthosis	Places thumb in abduction	Not recommended for fluctuating edema in the joint areas
Hand	Short opponens	Places thumb in abduction and rotated under the second metacarpal. Wrist and fingers are freely mobile.	Allows for full wrist flexion and extension. Should be worn at all times, removing only for hygiene and exercise.

Thumb abductor

Short opponen

WRIST- HAND

UPPER EXTREMITY ORTHOSIS	COMMON NAME	FUNCTION (REF.)	SPECIAL CONSIDERATIONS (REF.)
Wrist-hand	Thumb spica 	Immobilizes and protects the thumb, positioning it in opposition. Provides a stable post against which the index finger can pinch.	Need to allow for full MCP flexion of the fingers, especially the index finger, and full IP flexion of the thumb.
	Resting hand 	Preserves a balance between extrinsic and intrinsic musculature and provides joint support when the hand is put at rest. Prevents deformity.	Should preserve the MCP joint descent and palmar arch following the contour of the distal palmar crease. Pressure at the MCP joint or proximal phalanx should be avoided, as this could cause injury to the MCP joint.
	Wrist cock-up 	Supports, immobilizes, or stabilizes the wrist in extension. Increases mechanical advantage for grasp	Must maintain full MCP flexion and CMC motion of the thumb. Monitor the area over the styloid process for pressure changes if a dorsal splint is used.
	Anti-spasticity ball	Positions the wrist, abducts the fingers and thumb, and maintains the palmar arch in a reflex-inhibiting position	Should not to be used for minimal spasticity. (16)

Wrist cock up

Thumb Spica

Resting hand

Antispasticity ball

ELBOW, ELBOW-WRIST-HAND, SHOULDRE

UPPER EXTREMITY ORTHOSIS	COMMON NAME	FUNCTION (REF.)	SPECIAL CONSIDERATIONS (REF.)
Elbow 	Elbow extension	Increases extensor range of motion and prevents flexion	Not recommended for severe flexor contracture or fluctuating tone in either flexor or extensor patterns
Elbow-wrist-hand 	Full elbow/hand	Promotes supination at the forearm and provides a long stretch of the limb near end range to decrease tone	Not recommended for flexor tightness
Shoulder	Humeral orthosis	Stabilizes the shaft of the humerus circumferentially	May shift position if not appropriately anchored by straps
	Gunslinger	Supports the shoulder girdle and prevents shoulder subluxation	Make sure the edges around the base of the splint do not cut into the hip area. Check the fitting both in standing and supine positions to accommodate the shift of the splint.

Wrist extension splint

ELBOW-WRIST-HAND SPLINT

HUMERAL ORTHOSIS

GUNSLINGER SPLINT

CLAVICLE

UPPER EXTREMITY ORTHOSIS	COMMON NAME	FUNCTION (REF.)	SPECIAL CONSIDERATIONS (REF.)
Clavicle	Harness strap	Proximally stabilizes shoulder girdle movement and limits shoulder flexion and abduction movement beyond 90 degrees	Must mark settings for appropriate fit due to increased adjustability. Keep a check on skin integrity around the underarm area.

Dynamic splints for upper limb

Hand

- MCP flexion assist splint
- MCP extension assist splint
- PIP extension assist

MCP flexion assist splint

- Gradually lengthens or gently stretches soft tissue structures that limit joint flexion
- Ensure that the traction applied is gentle to guard against soft tissue hemorrhages around the joints, which can cause edema, pain, and increased scarring

MCP extension assist splint

- Passively pulls the proximal phalanx into extension while allowing active flexion
- Do not position the proximal phalanx in either radial or ulnar deviation when using dynamic traction

PIP extension assist

- Gives dynamic traction of the PIP joint without limiting motion at the MCP joint. Assists in reducing tightness or contractures of the PIP joint.
- Not recommended for severe spasticity

Elbow Dynasplint Brace

- Brace adjusts to lock out undesired flexion and extension. Settings are adjusted in increments of 10 degrees.
- Not recommended for severe spasticity

Smart-WHO (wrist-hand orthosis)

- Flexor-hinge hand orthosis that immobilizes the thumb in opposition and semiflexes the IP joints of the index and middle fingers to allow the index and middle fingers to move simultaneously toward the thumb.

Lower limb splints

ORTHOSIS	COMMON NAME	FUNCTION (REF.)	LIMITATIONS
Solid ankle foot orthosis	AFO, MAFO	Reduces tone, prevents joint contracture, and provides knee and ankle stability. Most appropriate for a child with severe tone, ankle joint hypermobility, and rigid deformities.	Does not allow any ankle movement and therefore limits smooth progression from heel strike to push off
Hinged or articulated ankle foot orthosis	HAFO	A hinged AFO with a plantarflexion stop and free motion into dorsiflexion allows the tibia to translate over the foot in stance. This orthosis allows the foot to dorsiflex for balance reactions and improves ambulation on uneven surfaces and stairs. Posteriorly, a dorsiflexion stop strap can be added to limit the amount of dorsiflexion. A plantarflexion stop in 2–5 degrees of dorsiflexion may assist to control genu recurvatum at the knee.	Does not control "crouched" posture allowing increased dorsiflexion and knee flexion. Children with strong extensor posturing may break the ankle joint. May allow hindfoot to slip, causing midfoot break if insufficient hindfoot dorsiflexion is present.

Anterior floor reaction or ground reaction ankle foot orthosis

GRAFO

FUNCTION (REF.)	LIMITATIONS
Limits a “crouch” posture (stance posture with hip flexion, knee flexion, and ankle dorsiflexion). At heel strike, it encourages a force up through the anterior cuff of this orthosis, giving the knee an extension torque. Knee extension is maintained throughout stance.	A child with significant hamstring or hindfoot tightness or tone will not benefit from this orthosis

Rear-entry hinged floor reaction AFO

FUNCTION	LIMITATION
Dorsiflexion stop limits a "crouch" posture while allowing for plantarflexion during the loading phase of stance and at push-off	Active dorsiflexion is required to restrict foot drag during swing

Posterior leaf spring PLS

The trimlines of this solid AFO are posterior to the malleoli. The slender posterior portion of this AFO gives it flexibility to allow for some dorsiflexion in stance and plantarflexion at push-off.

Does not allow full motion into dorsiflexion or plantarflexion. For medial-lateral ankle stability and arch control, another orthosis may be more appropriate. Does not control foot deformity or extensor tone. Excessive torque on spring may cause skin problems.

Knee hyperextension splint

Maintains neutral knee and limits knee hyperextension. Uses three points of pressure: superior-anterior surface of the knee, inferior-anterior surface of the knee, and posterior to the knee joint .

Controls only the knee. Does not control extensor posturing well. It is bulky under clothes and difficult to sit with.

Swedish knee cage KO

Controls genu recurvatum with the same three points of pressure a knee hyperextension splint and works the same. Uses metal uprights and straps instead of plastic material (7).

Controls only the knee. It is difficult to fit to smaller children, and it is difficult to maintain correct positioning.

KAFO

Molded plastic upper and lower leg components, usually with a locked or unlocked hinged knee joint. Four most common knee locks are free, drop lock, bail lock, and dial lock. Free knee allows full motion at the knee axis. Knee axis may be straight or offset. Offset axis has an increased extensor moment at the knee joint. The drop lock is a metal collar that slides into place to maintain the knee in extension. The bail lock is a spring-loaded lock that has a trip mechanism to unlock the knee. The dial lock is a lock that may be set in varying degrees of flexion, used to accommodate or decrease a knee flexion contracture (13).

It is bulky and difficult to don/doff. Free knee at times allows too much motion. Drop lock requires fine motor control to lock and unlock. The child must be able to get the knee fully extended to engage the drop lock. Bail locks at times become easily disengaged. Dial locks do not allow free movement through the available range.

HKAFO

ORTHOSIS	COMMON NAME	FUNCTION (REF.)	LIMITATIONS
Hip knee ankle foot orthosis	HKAFO	Hip belt and joint. Hip and knee joints may be locked or unlocked. Able to progress child to an increasing number of free joints at a time.	Bulky, difficult to don/doff. Difficult to manage clothing for toileting.

RGO

HKAFOs that are connected by a cable system that links hip flexion on one side with hip extension on the other. This device assists children with active hip flexion and no hip extension to advance legs with a more normalized gait. Allows the child to ambulate with a reciprocal or swing-through gait (13).

Bulky, expensive. Difficult to don/doff. Not appropriate for a child with hip and/or knee flexion contractures. Difficult to manage clothing for toileting.

Shoe Inserts

- Heel cups help with shock absorption for joints, heel spurs, bursitis, and tendonitis.
- In the midfoot, orthoses assist to maintain the arch of the foot in varying degrees of firmness.
- Numerous products are also available to control disorders of the forefoot and toes.

Orthoses for Positioning, Range of Motion, and Healing

- Traditionally, caregivers have used **pillows and towel rolls** to maintain more appropriate postures. Bony areas such as the occiput, scapular spine, coccyx, femoral head, fibular head, and calcaneus are at greatest risk for skin breakdown from prolonged bedrest or maintenance of one position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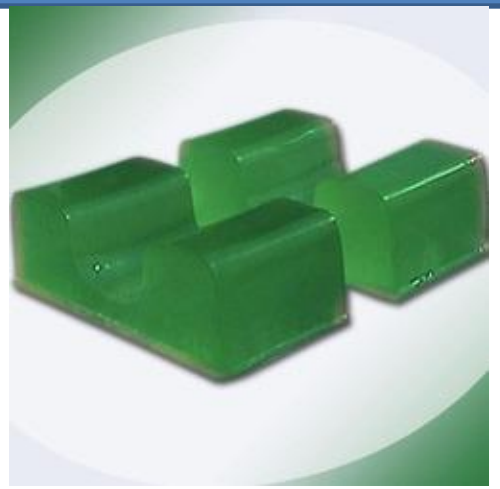
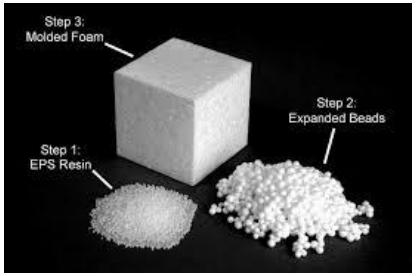
- **Gel pads** may be used to distribute weight over a larger area. The child may benefit from positioning pieces to maintain neutral positions and decrease pressure on parts of the body.



- **Foam wedges** in various lengths and sizes are commonly used for back support to position a child in side-lying

- An **abduction pillow** may be used to decrease scissoring and increase hip abduction.
- Foam arm and leg **elevators** help to reduce edema,
- foot splints/**boots** are available to maintain the foot in a dorsiflexed position with relief for the calcaneus to prevent pressure sores.

- The Versa Form pillow is a **semipermanent** positioning support.
- These **styrene bead bags** are available in a variety of sizes and allow for molding to a child in any position.



ASSISTIVE TECHNOLOGY

DEFINITION

- Assistive technology (AT) is an umbrella term for a wide range of products. A commonly accepted definition is ‘any item, piece of equipment or product system whether acquired commercially off the shelf, modified or customized that **is used to increase, maintain or improve functional capabilities of individuals with disabilities**
- Therefore in terms of devices or equipment it includes from walking sticks to environmental control systems (ECS), or simple dressing aids to communication aids

Assistive Technology and IDEA

Assistive Technology Device
...any item, piece of equipment or product that is used to increase, maintain or improve functional capabilities of individuals with disabilities.

Low-tech

- pencil grip
- adapted books
- slant board
- highlighters, tape
- magnifiers
- color coding
- picture communication
- sign language
- picture schedule
- extra time
- peer support

Mid-Tech

- word processor
- text to speech
- spell checker
- calculator
- digital recorders
- organizers
- e-books
- adapted keyboard
- adapted mouse
- adapted toys
- CCTV

High-Tech

- computer
- smartphones, smartpens
- magnification software
- speech output devices
- switch, joystick access
- scanning access
- voice recognition
- environmental control devices

- The AT described will be divided into two sections
- **1. Mechanical (i.e. seating, lying, standing equipment and personal care/activities of daily living (ADL)**
- **2. Electronic (i.e. computer access, communication aids, powered mobility and environmental control).**

BENEFITS AND PURPOSE

- The benefits and purpose of AT are in many respects self-evident.
- When appropriate equipment is provided in a timely manner it allows **children to move around their environment, communicate with others and take part in developmentally appropriate activities** that they would be unable to do without this technology.
- It also enables the family and carers to look after a child in activities which the child cannot undertake independently, such as personal care, e.g. hoisting, bathing and toileting

- It is important to **have knowledge of local equipment services** so that information can be passed on to families

Physiotherapists are most usually involved in the assessment and provision of:

- Walking equipment
- Standing supports
- Seating
- Orthoses
- Wheelchairs
- Prostheses
- Lying supports

ASSESMENTS

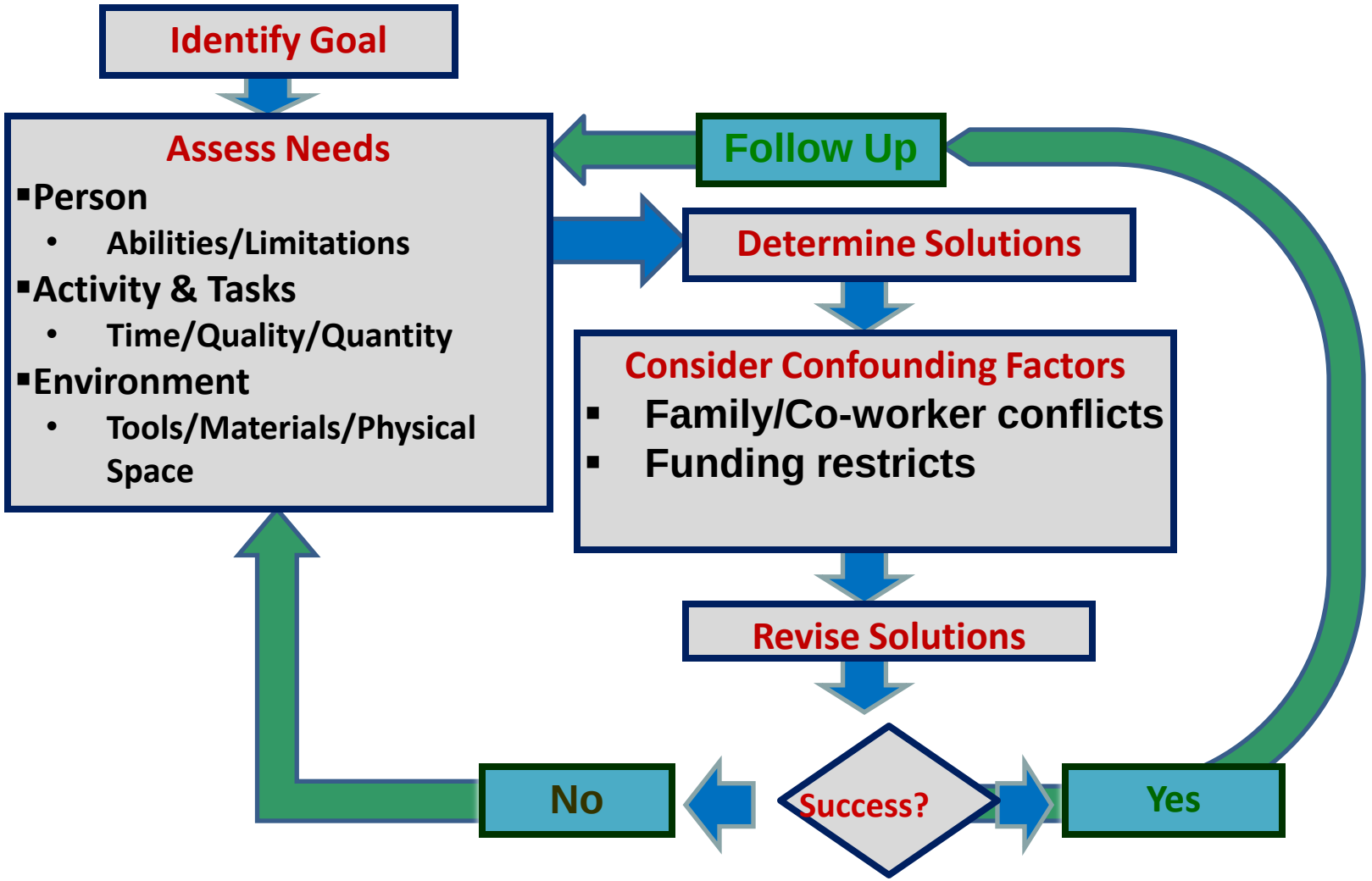
MULTIDISIPINARY APPROACH:

AT that are possible it is becoming more necessary to include other disciplines to participate in the prescription and provision.

Members of the team can include:

- Pediatricians
- Therapists (occupational, physiotherapist and speech and language therapist)
- Engineer (rehabilitation, clinical
- Prosthetist/orthotist.

ASSESMENTS & REASSESMENTS



child and family

- The child and family must be central to this team. It is vital for them to be and feel part of the decision-making process
- The family and child must be central to the team in decision-making about equipment.
- **Equipment rarely impacts on just one aspect of child's life and function.**
- It is important that the child and family have a local team who works together to ensure their equipment needs are met and that any equipment continues to meet the child's needs

OUTCOME MEASUREMENTS

- Quebec User Evaluation of Satisfaction with assistive Technology (QUEST)
- Psychosocial Impact of Assistive Devices (PIAD)

MECHANICAL ASSISTIVE TECHNOLOGY

equipment that may be used by a child with a disability that is not controlled electronically.

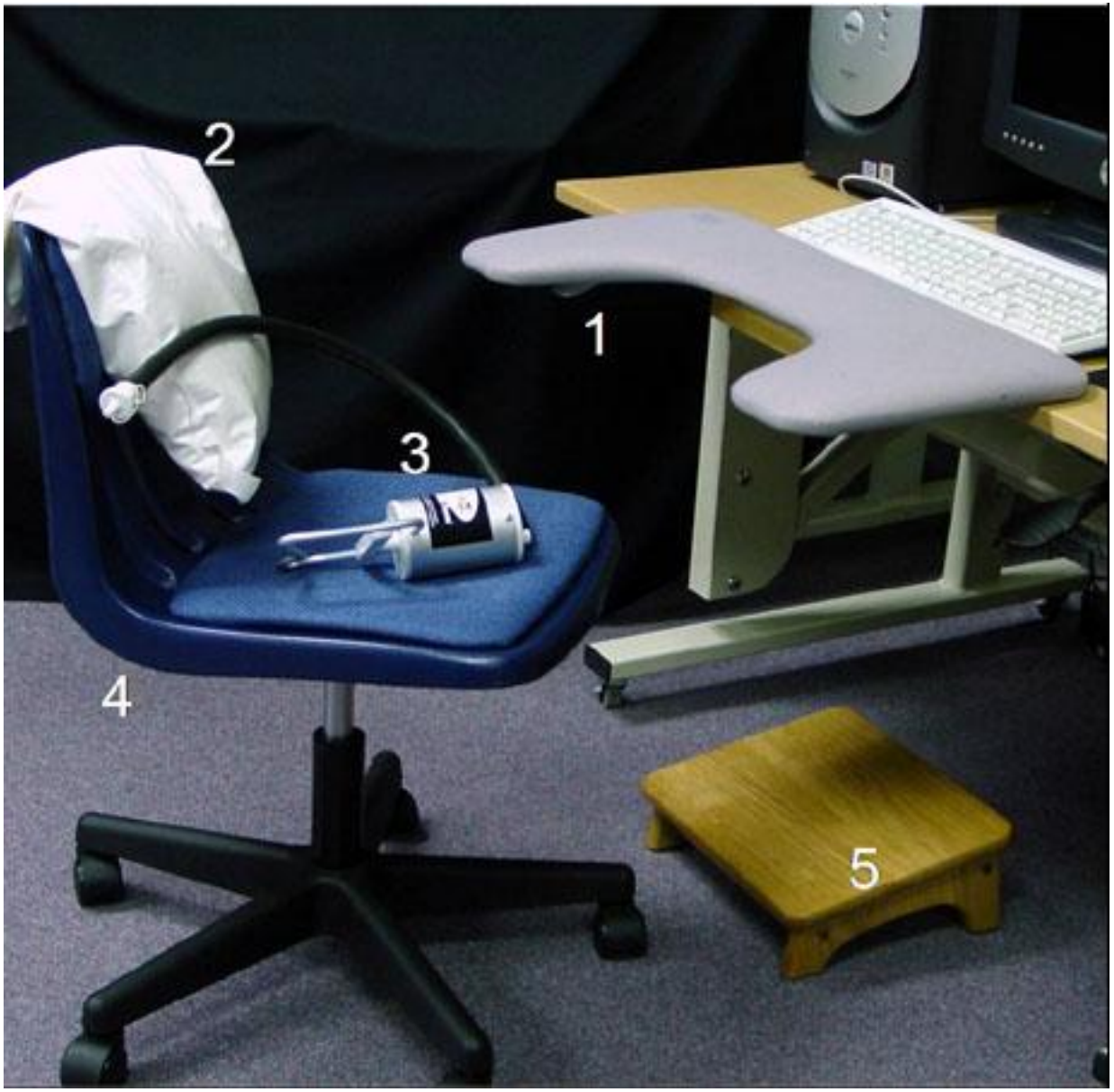
- Postural management equipment
- Equipment for active exercise
- Wheeled mobility
- Equipment for ADL
- Protective devices
- Prosthetics and orthotics.

Postural management equipment

- These activities and interventions may require the support of postural management equipment such as **special seating, night time support and standing supports**.
- Other types of mechanical AT, **such as adapted tricycles, orthoses and walking aids**, may be used as part of a postural management programm

Shown with optional tray


2
3
1
4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- The equipment selected for an individual should provide a **symmetrical position, even load-bearing under the area of support, a neutral or anteriorly tilted pelvis with neutral joint positions** and a stable base that provides a starting point for movement

KEY POINTS

Postural management equipment should provide:

- A symmetrical position
- Even load-bearing under the areas of support
- A neutral or anteriorly tilted pelvis
- Neutral joint positions
- A stable base as a starting point for movement

Assesment for postural management equipments

- The assessment should include a thorough physical examination looking at **range of motion, level of physical ability, biomechanics and the postures adopted and achievable**.

- Postures should be assessed both in a **static position and dynamically** as some children require a different level of support depending on the activity they are performing

KEY POINT

- The physical examination should include assessment of range of motion, level of ability, biomechanics and the postures adopted and achievable

- For example, a [illegible] to sit in a symmetrical p[illegible] **static** [illegible]lvis anteriorly tilted, the shoulder girdle protracted and the chin tucked with the arms resting at their sides.
- As soon as he tries to lift an arm to reach a toy then his post[illegible] **dynamic** [illegible] asymmetrical with his pelvis pos[illegible] his arm that is not reaching may be used to balance or prop.

- A tool such as **the Chailey Levels of Ability** (Pountney et al 2004) should be used during the assessment to provide a baseline measure, give guidelines for the type of equipment required and measure the effectiveness of the equipment on the child's posture .
- The assessment should include discussions with a child and family in order to choose equipment that will fit in with a child's priorities and lifestyle.
- Outcomes of what the equipment should achieve should be decided and then used to measure the effectiveness of equipment

KEY POINT

- An assessment tool or outcome measure should be used during assessment so that the effectiveness of the equipment can be measured

MEASUREMENTS

- Once the choice of equipment has been decided then measurements will be taken from a child so that equipment of the correct size can be provided. The measurements must be accurate.
- often measurements are dependent on posture. For example, a child with **a posteriorly tilted pelvis** in sitting (with a correctable slumped posture) will have an apparent longer seat depth requirement. If the seat is supplied with the longer seat depth then the child's pelvis is likely to roll back into posterior tilt in order to use the back rest

SEATING

- Seating equipment is often the most important piece of postural management equipment that a child has as he or she is likely to spend a considerable amount of time in this position (for mobility and function)
- Good seating can have a dramatic effect on aspects of function such as propulsion of the wheelchair and access to switches.

- variety of seating options are available, including corner seats, forward-lean seats and 90/90 systems, and evaluation of these products needs to be made to ensure appropriate postures are achieved
- Seats may be simple, such as a wheelchair or simple wooden school chair, or complex, such as a modular adjustable seating system.

- Children may require a different level of support in seating depending on the activity they are doing.
- Some children are able to achieve a position but are unable to participate in an activity while in this posture, as all their attention is focused on maintaining their posture.
- When they begin the activity their posture deteriorates.

Functional seat

- functional seat may provide postural support and offers a child a **starting position for activities**. The ideal position depends on factors including disability, level of ability, comfort and body shape
- The child should be seated with the **pelvis** upright, the **femurs** horizontal with the hips, **knees** and ankles at 90º, the **spine** straight in the lateral plane and natural curves in the anterior posterior plane (slight lumbar lordosis and thoracic kyphosis). The **hips** should be neutral or slightly abducted

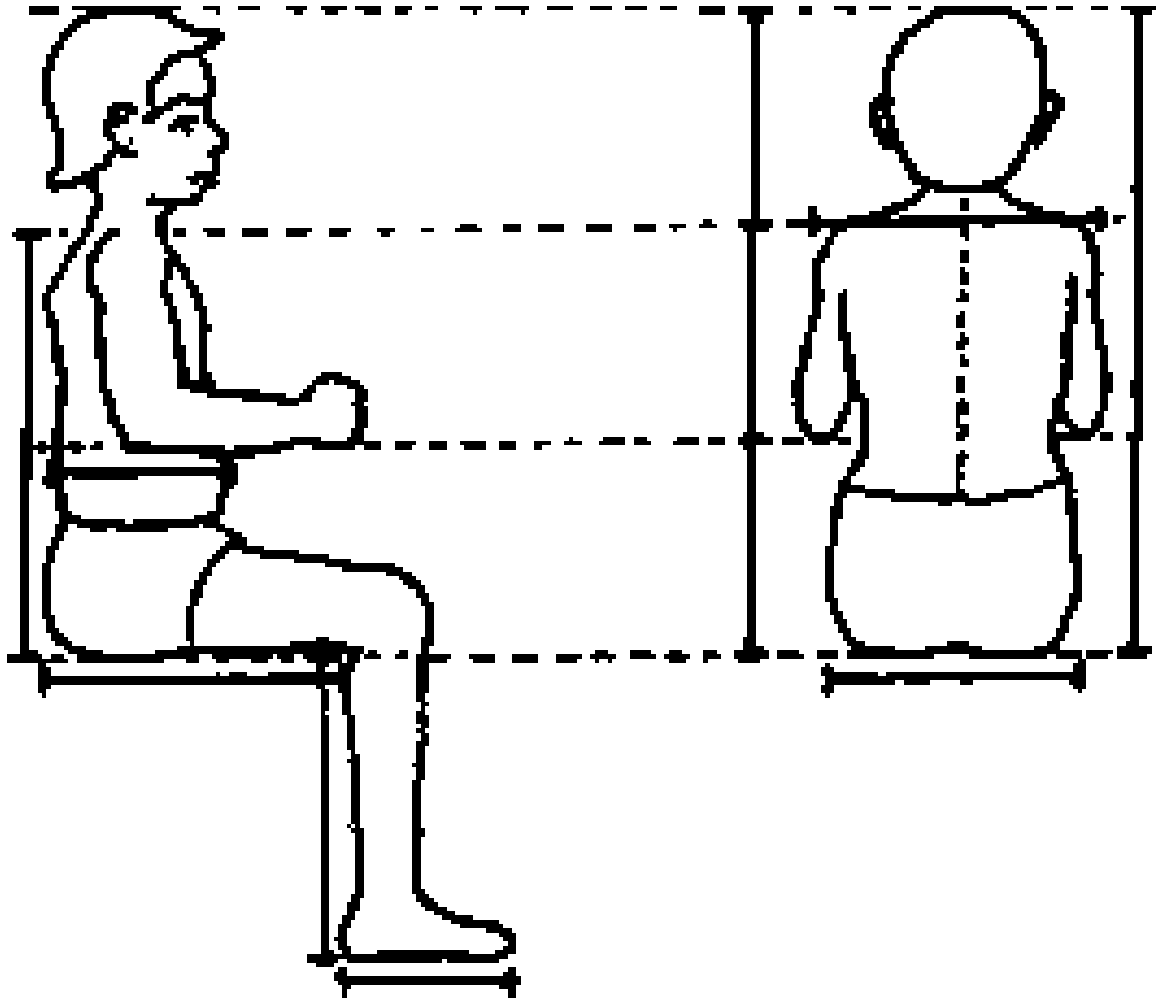
KEY POINTS

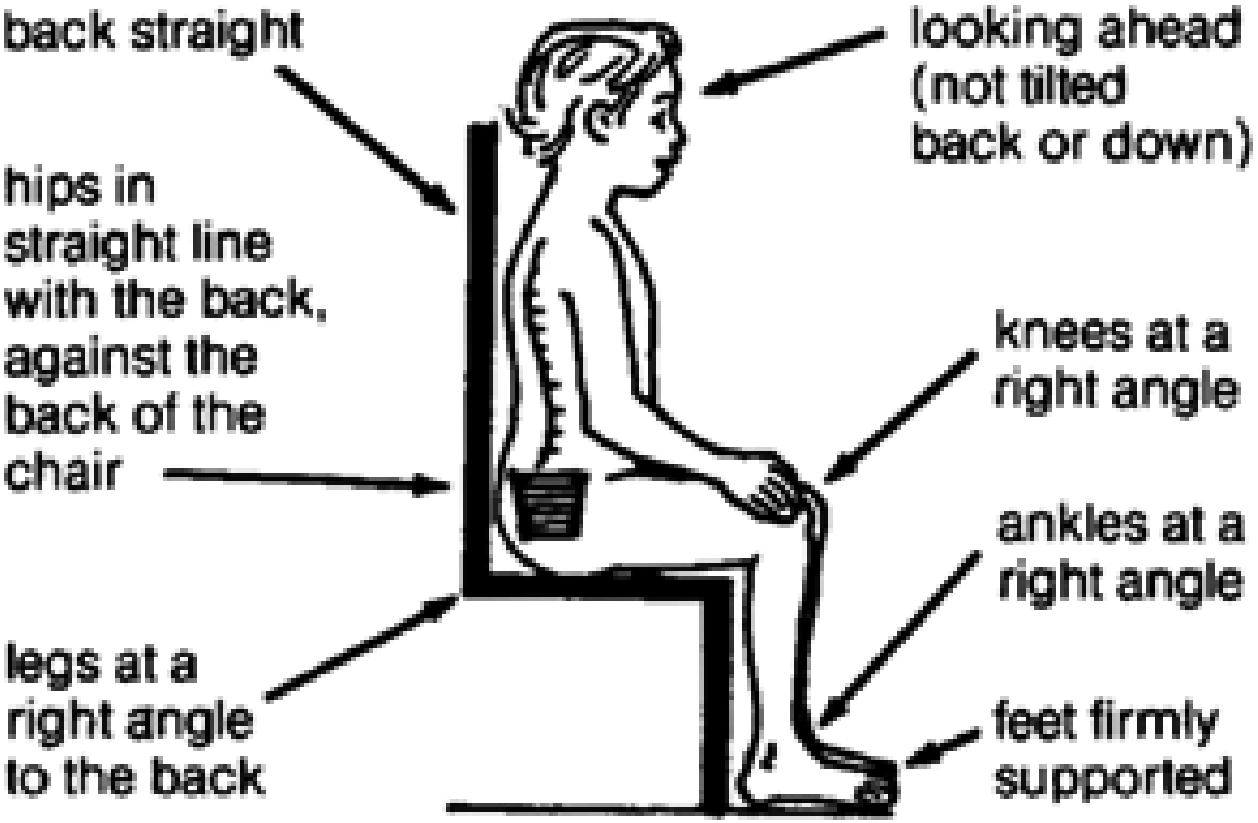
- Ideal seated posture
- Pelvis upright
- Femurs horizontal
- Hips, knees and ankles at 90º
- Spine straight in the lateral plane
- Natural curves in the anterior posterior plane
- Hips should be neutral or slightly abducted

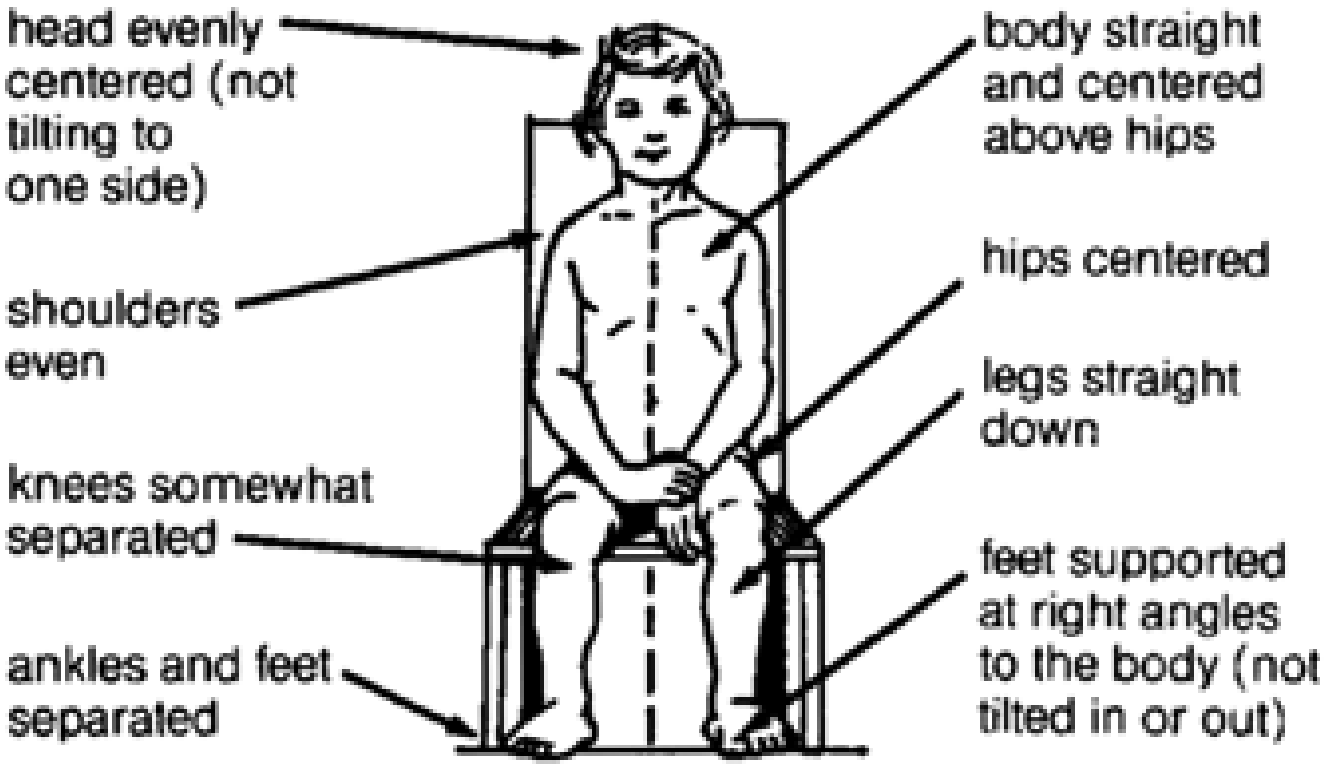
Children who are typically developing will be able to achieve the above posture but will constantly be able to move. They may choose to adopt this posture when concentrating on tasks such as writing at school

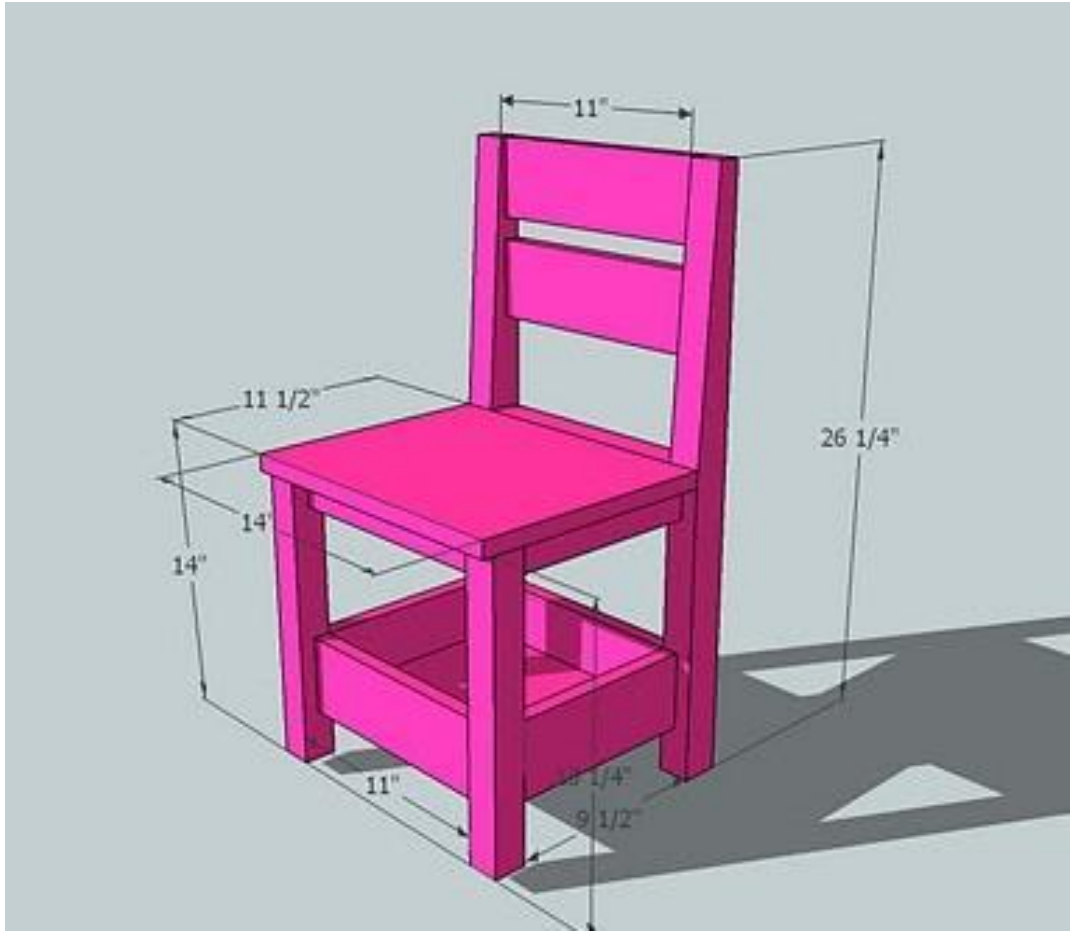

2"

MEASURING A CHILD FOR A SPECIAL SEAT




back straight
looking ahead (not tilted back or down)
hips in straight line with the back, against the back of the chair
knees at a right angle
ankles at a right angle
legs at a right angle to the back
feet firmly supported


head evenly centered (not tilting to one side)
shoulders even
knees somewhat separated
ankles and feet separated
body straight and centered above hips
hips centered
legs straight down
feet supported at right angles to the body (not tilted in or out)


11"
11 1/2"
14"
14"
26 1/4"
11"
9 1/2"

- A child with a physical disability but with a high level of ability may require minimal assistance to achieve this posture.
- An example of this would be a chair at the correct height to ensure the feet are placed firmly on the floor and a conforming top surface. They may require a back rest and some pelvic lateral support to encourage a symmetrical position

- A child with a low level of ability would require a much more comprehensive piece of equipment

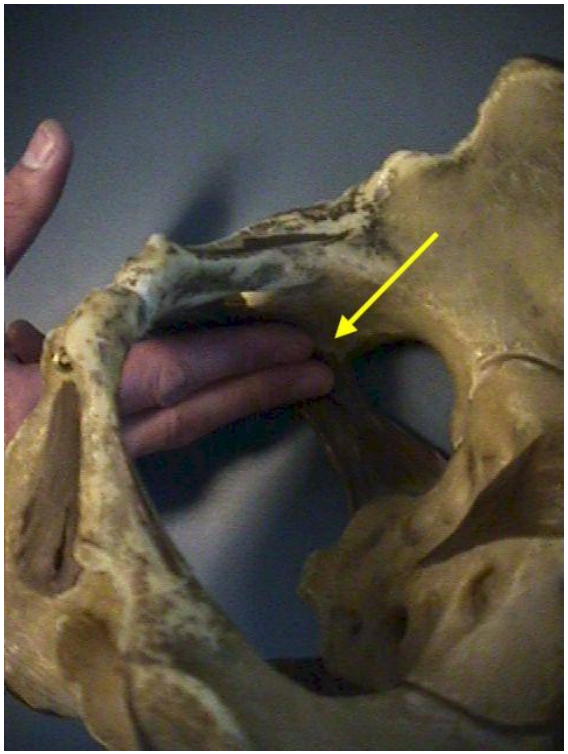
- When supplying seating for a child with a low level of ability, certain aspects of posture require particular attention.
- these include control of the **pelvis for tilt**, rotation and obliquity, control of the **trunk** anteriorly, posteriorly and laterally, and **foot** and head support.

- Control of the pelvis may be achieved using a variety of different methods such as using an **anteriorly tilted seat** to encourage an upright pelvis and reduce the pull on the hamstrings
- Another option is to use a seat **with a cushion with a pre-ischial bar, a ledge** that is designed to retain the ischial tuberosities and prevent them from sliding forwards, in conjunction with a sub-anterior superior iliac spines **(ASIS) bar,** a solid support located in front of the ASIS to prevent the pelvis rotating or moving forwards

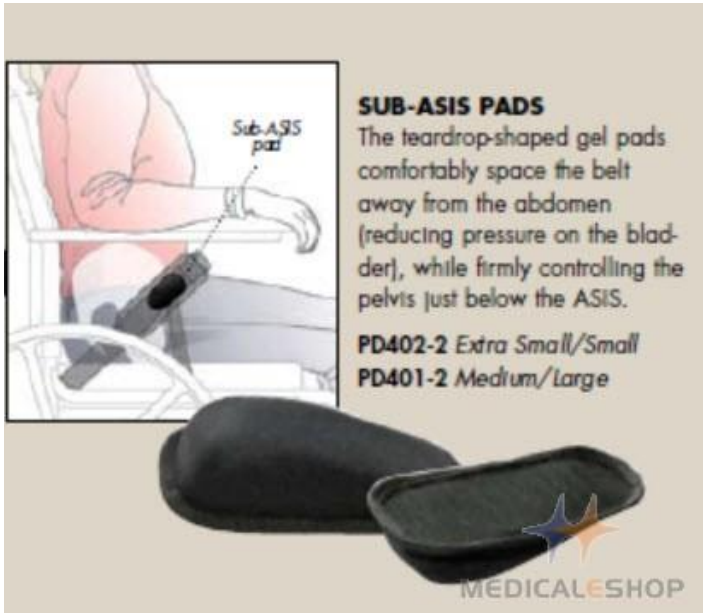
ANTERIOR TILITED SEATS

MoJo
Tilt & Recline

pre-ischial bar,



sub-anterior superior iliac spines (ASIS) bar



Early Positioning AT

- a seating system that has a horizontal area under the pelvis to ensure that the pelvis is horizontal without obliquity and the spine is straight laterally, a ramp to ensure the femurs are horizontal, a curved sacral pad to block the pelvis stepped back to a curved back rest to allow for the difference in pelvic and thoracic dimensions, lateral pelvic and thoracic supports
- A firm lap strap keeps the pelvis back in the seat and knee blocks work in conjunction with the sacral pad and pelvic pads to prevent the pelvis rotating or tilting posteriorly. In order to achieve this control the seat has an adjustable seat depth to ensure the correct seat length, adjustable footplate height to ensure the 90º angle at the hips and knees and adjustable width to ensure the pelvis is supported symmetrically and laterally.

FLOOR SITTING SEAT

- As part of their early development children learn to sit and play on the floor.
- Children with a physical disability, developmental delay or learning difficulties may not be able to adopt this position or if they can it is unlikely that they do so with a stable base and can release their hands for play.

- Some floor sitting seats are a simple planar shape and may provide support for children who have a good floor sitting posture but require boundaries to work within.
- For a child with a lower level of ability an appropriately prescribed floor sitting seat will provide a stable base with a good pelvic position

- This will enable a child to move the trunk and limbs and safely play on the floor in this typical developing position. In order to achieve this posture the seat requires a firm, curved sacral support

Relaxing seat

- For older children a comfy chair may be beneficial to provide a supported but relaxed position for leisure time.
- The seat should be adjustable in the seat depth and width as a minimum and provide some postural support.
- This type of seat is unlikely to be useful for children who require a high level of postural control as they are not supportive enough to achieve this.

LYING

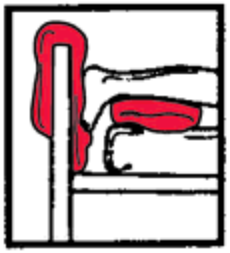
- Children sleep for up to **12 hours a day**.
- Providing a good posture whilst sleeping provides a substantial period of gentle muscle stretch while muscle activity is quiet
- Several studies indicate that periods of **between 5 and 7 hours** are required to change muscle length
- Postural support at night must promote good-quality sleep, which can be compromised by a number of factors, such as **nocturnal seizures, reflux oesophagitis and nocturnal hypoxaemia**
- Supine positioning can aggravate some of these conditions, and investigation and observation of these conditions must be carried out prior to allowing a child to sleep unattended in a postural support.
- A **sleep questionnaire** (Newman et al 2006) may assist in identifying sleep problems and overnight oximetry may be used to compare oxygen levels in different sleep positions

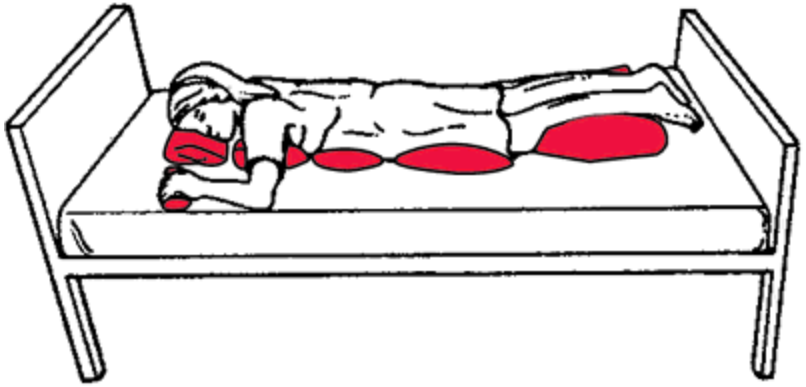
- lying support should provide
- a symmetrical position with the load-bearing areas shifted downwards towards the pelvis,
- anterior pelvic tilt,
- the knees in slight flexion
- and a protracted shoulder girdle.

- firm base alters the load-bearing surface,
- with the lumbar support encouraging anterior pelvic tilt
- and the knee supports providing slight flexion at the knee.
- The abducted, symmetrical hip position is achieved by an abduction block in conjunction with lateral supports and the pelvic strap.
- The head and shoulder girdle support promotes a protracted shoulder girdle, with the hands together and chin tucked

- commercial side-lying equipment is available for children who are not able to tolerate lying in prone or supine due to medical or postural reasons.
- In side-lying it is not possible to achieve complete symmetrical correction and some pelvic obliquity and rotation are inevitable

- Supine and prone-lying have the benefit of complete correction being possible and gravity assisting the symmetrical posture.





STANDING

- It is recommended that children should weight-bear for an hour four to five times a week in order to enhance bone and joint development but there is limited evidence for these recommendations.

- The posture that is achieved in a standing support depends not only on the ability of the child but also on the postural control offered by the support

- The child stands with the feet on a horizontal base with adjustable foot position;
- the femurs are supported vertically and the trunk support is angled forwards from vertical at the hips to enable the weight to be forwards over the base.
- The chest support is narrow and soft to enable shoulder protraction and movement and a tray for forearm propping or activities is placed at elbow height.
- A pelvic strap stabilizes the pelvis in a neutral/anterior tilt

Equipment for active exercise

Tricycles

Walkers

David Hart walker

David Hart walker made from an adjustable modular brace and a wheeled frame that supports part of the body weight providing a handsfree walking aid, and is suitable for children with cerebral palsy

Swimming aids

Wheeled mobility

Wheelchairs may be:

- (1) of a standard design and provide a basic seat and a method for mobility; or
- (2) designed for a specific purpose such as a high-performance wheelchair for a child who has a spinal cord injury and is very active; or
- (3) a specialist sports wheelchair for basketball or wheelchair racing.
- (4)Wheelchairs may have additional facilities such as a tilt-in-space or recline mechanism.

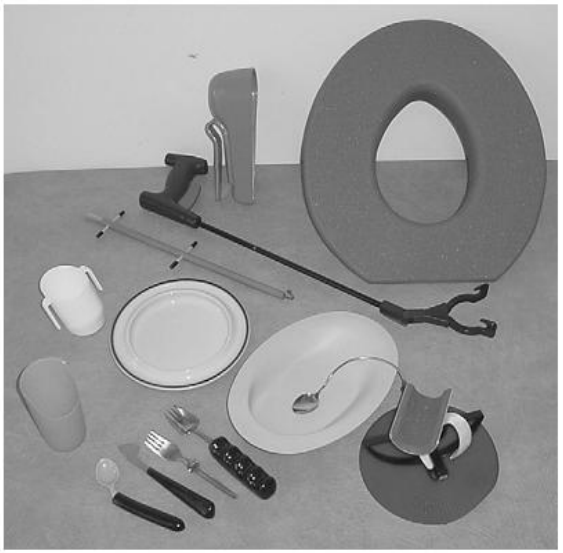
Equipment for activities of daily living

Personal care

Eating and drinking

Writing and drawing

Play



Dressing

shoe horns, sock aids and dressing sticks

Bathing

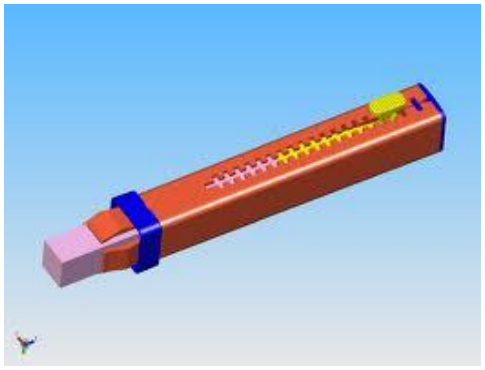
- long-handled sponge
- bath seat
- shower chair
- toothbrush holders
- long-handled hairbrush

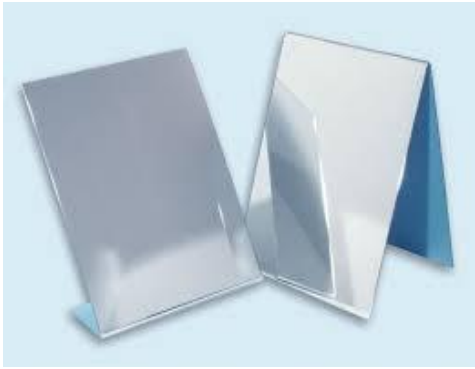
Toileting

- toilet seats

Eating and drinking

Writing and drawing





Play

Protective devices

- helmets,
- mittens
- devices to limit movement

EAT

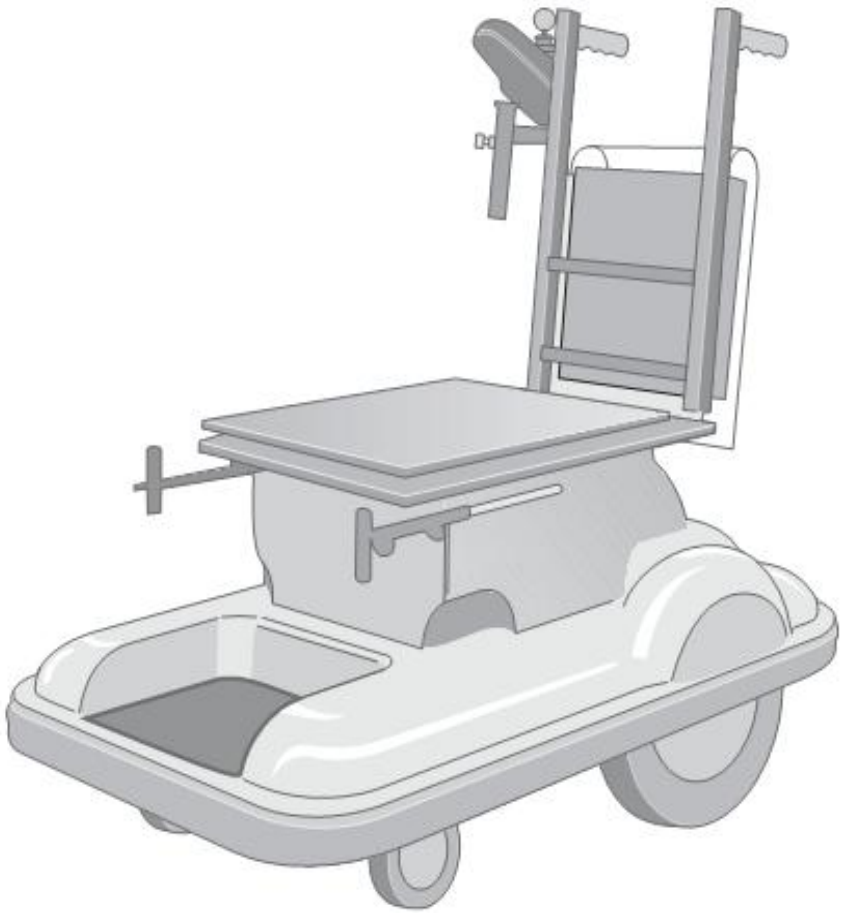
ASSESMENTS

KEY POINTS

Assessment requires knowledge of:

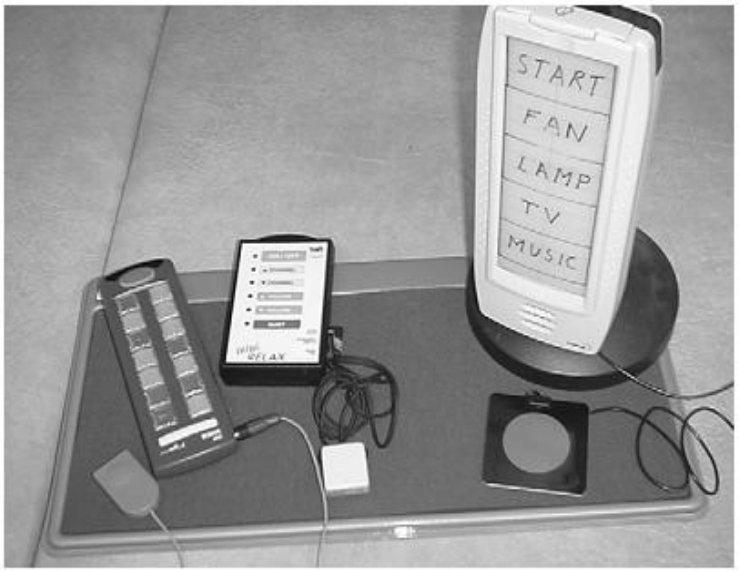
- Requirements of child and family
- Physical abilities
- Sensory abilities
- Cognitive abilities
- Support network around the child
- Range of equipment which map to child's abilities and child's/family's needs
- Learning needs of child in activity

POWER MOBILITY



ENVIRONMENTAL CONTROL SYSTEMS

- ECS allow children to control aspects of their home/ school environment that they would normally be unable to control



- Children who have only one reliable voluntary movement, such as voluntary eyeblink or movement of one finger, can access a switch controlling a scanning array of options which allow them to operate TV controls, audio equipment, toys, an alarm to call for.

- The devices can be similar in size to standard TV remote controls and they operate equipment using infrared or radiofrequency signals. The child controls which device to operate by scanning through a menu of options

KEY POINTS

Environmental control can enable control of function in the following areas

Communication

- Simple voice output capabilities
- Access to a telephone
- Intercom systems
- Calling or paging for assistance

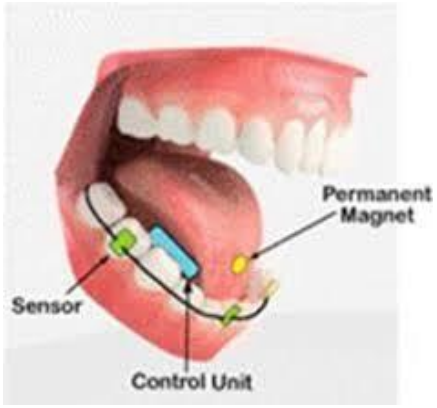
Comfort

- User can control operation of heating and cooling devices such as fans and heaters
- Operation of main overhead lighting and lamps
- Curtains
- Control of profiling beds and seats

Leisure

- Access to a computer
- Page-turners
- Television and music systems


TV
DVD
End Call
Door


Permanent Magnet
Sensor
Control Unit

THANK YOU

The end

Thank you