

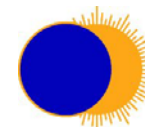
A Beginner's Guide to Postural Management

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Royal Hospital for
Neuro-disability

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Aims of this Presentation

Welcome

This afternoon we are aiming to give you an overview of postural management - what it is, the underlying principles, and to outline our approach to managing posture in the client with severe and complex Neurodisability.



Postural Management - what is it?

Postural Management (PM) is a multi disciplinary approach that has the potential to assist in enhancing and maximising an individual's abilities in a wide variety of ways including:

- Communication
- Taking part in activities including self care activities
- Enabling choice

It is a 24 hour approach involving the assessment and management of all positions that an individual uses i.e.. lying in bed, sitting and standing, and is part of the rehabilitation process or disability management programme

Tan WS et al (2009) Mortenson WB et al (2007) Ham R et al (1998) Levy I et al (2003)

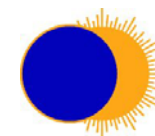


When would a Postural Management programme be needed?

If, after injury or because of disease, the individual finds it difficult to:

- Attain or sustain a good posture allowing him/her to move freely and take part in daily activities
- To sit without support
- To sit or lay comfortably
- Is at risk of changes to joints or tissue

He / she will need the PM approach.



What might have gone wrong?

Severe disability and the associated postural problems arise from brain injury and damage to the central nervous system and may lead to development of compensation strategies and postural changes.

The body becomes unable to effectively control posture and movement.

The injury or disease may also lead to movement deficits, weakness and subsequent impairment of balance

The whole picture is also often complicated by sensory deficits

So how does Postural Management fit in with disability?

We need to manage the individual's posture in order to:

- Improve and optimise the user's possibilities of taking part in daily life - physically, mentally and socially
- Stop the situation from getting worse, and losing skills, and minimise the chances of injury e.g. development of pressure sores
- Improve life quality

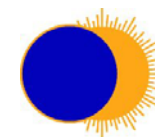


What other reasons are there for managing posture?

We also want to make sure that the individual is in the best position to:

- Be comfortable and as pain free as possible
- Move as freely as possible, with as much independent mobility as can be achieved
- Communicate, breathe easily and be able to eat drink and sleep without too many problems

If we do not help our individuals with complex disability it can all go horribly wrong !



What postures might you see?

- Most are associated with the position of the pelvis which is the keystone to the alignment of the body in sitting, influencing the trunk, head, leg and arm position
- In the absence of muscle control, the pelvis is free to rock forwards or backwards altering the posture and stability



The Pelvis



This is the text book position for the pelvis – but few of us use this for any length of time!



What are the underlying reasons for the altered postures?

The human body is made up of several different systems that work together to allow us to get on with our lives - we do not usually have to think about how we move about and undertake our daily tasks, or the position that we adopt to do anything.

As we grow our brains develop a pattern of learning and interaction with information being sent from many directions, enabling movements and responses to be automatic.

Disruption or damage to any of these systems can lead to changes in posture and the ability to do things.



The Body Systems

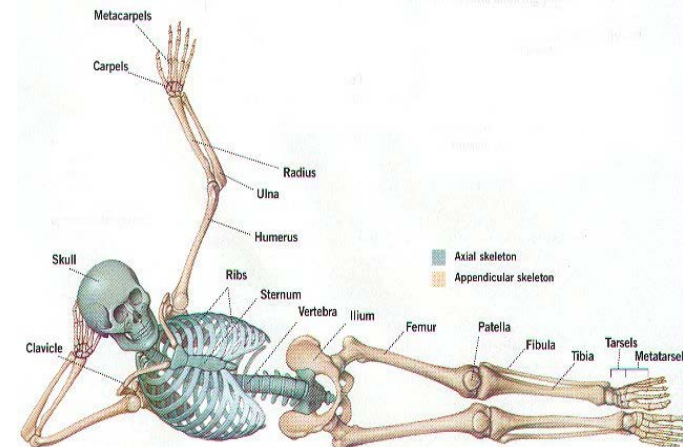
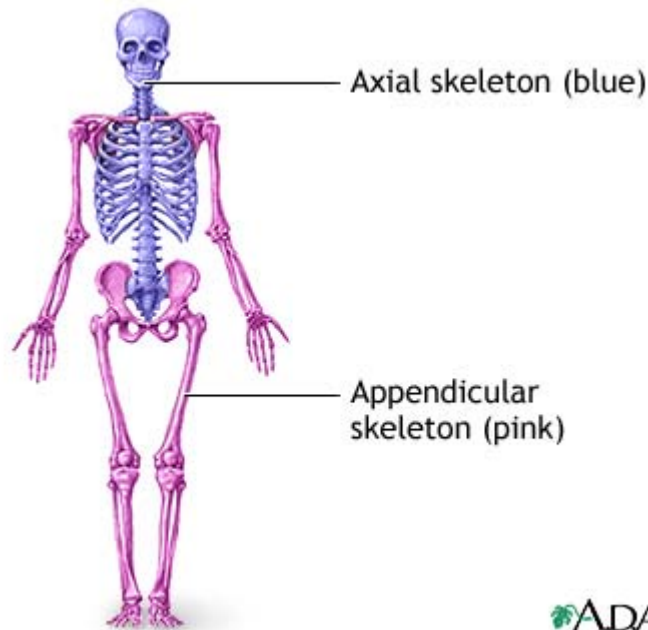
There are 3 main systems:

- The skeletal system forms the scaffolding
- The muscle system holds it all together and allows movement
- The nervous system measures what is going on with the body's position and controls its movement.

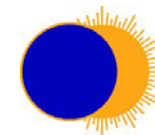


The Skeletal System

Bones, joints and ligaments - without muscles the skeleton will collapse on the floor!



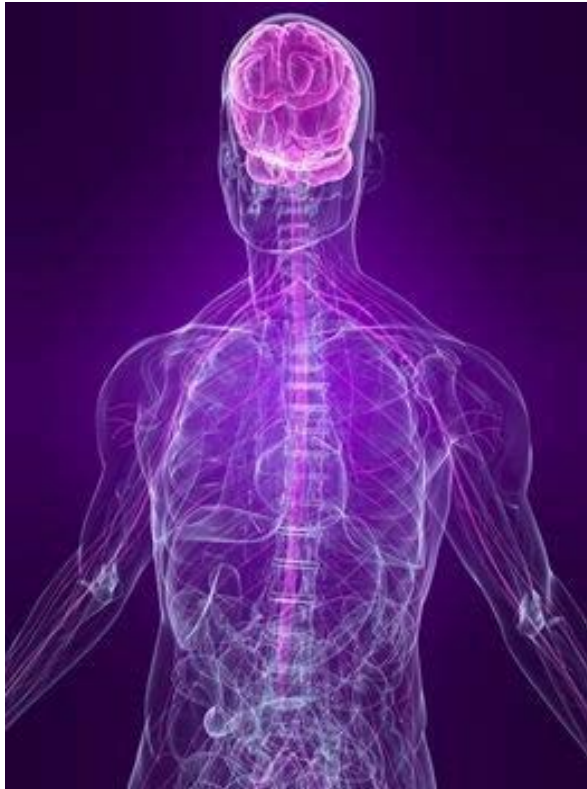
ADAM.



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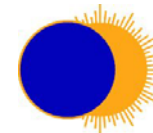
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The Nervous System

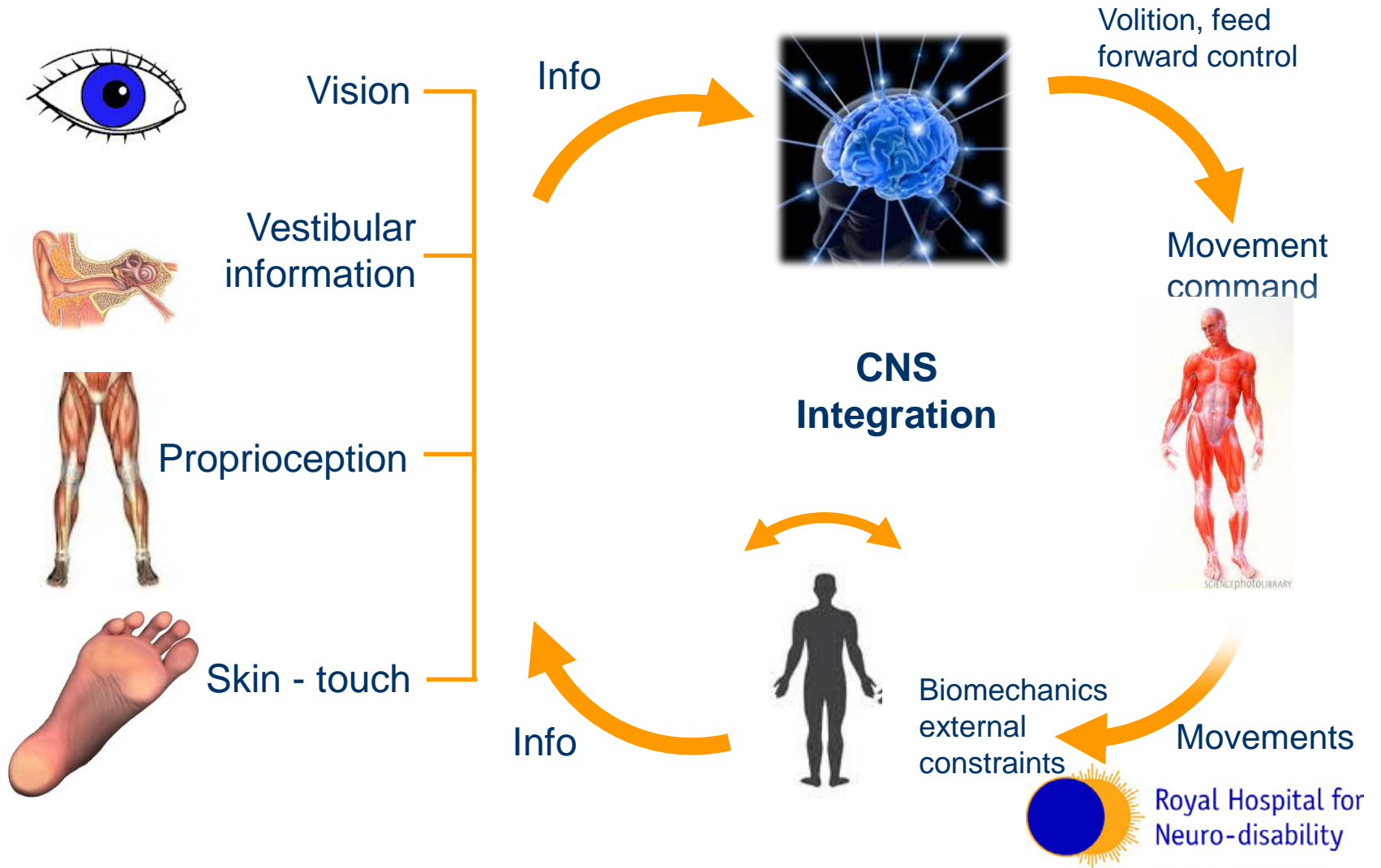


Complicated system of nerves wired together including the brain itself

In addition to recognising position and controlling movement it also analyses the sensory information coming in from touch, sight, smell, hearing and taste



Postural Control – Movement and Balance



The Brain

Damage to any part of the brain can result in changes to movement control and therefore posture

Key parts influencing this are

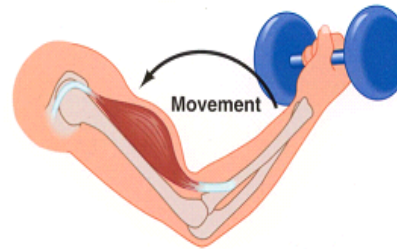
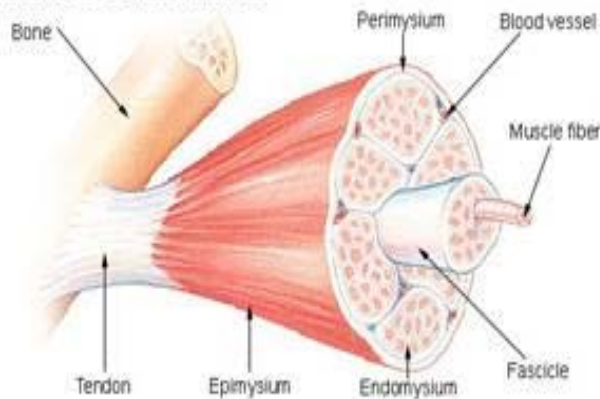
- Cortex
- Brain stem
- Basal ganglia
- Cerebellum



The Muscle System

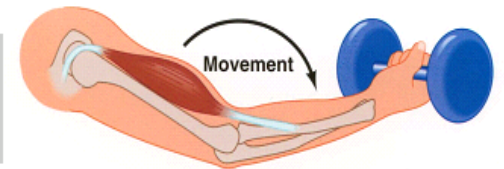
Each muscle is made up of fibres that will shorten (or lengthen) when they are stimulated by the nerves within the muscles, allowing movement - controlled by the brain

Structure of a Skeletal Muscle



Concentric muscle contraction—The bicep muscle is **shortening** while contracting.

Eccentric muscle contraction—The bicep muscle is **lengthening** while contracting.

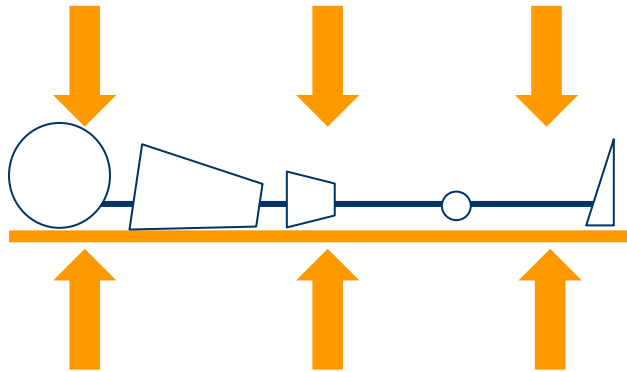


Use it or lose it?

If a movement e.g. straightening a knee - is not carried out regularly it may become stiff, and over a long period of disuse adapts by reducing the number of muscle units within each muscle resulting in a contracture – the presence of contractures will affect our ability to position the client effectively and comfortably

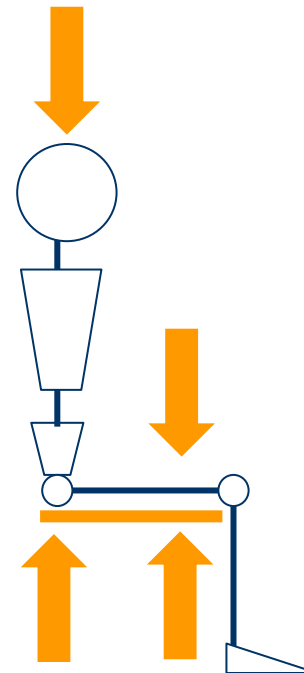


What effect does gravity have? – The Human Sandwich



The person acts as the filling being squashed between the two forces

Forces of gravity act as the top layer pushing down on the body



The supporting surface acts as the base of the sandwich with forces pushing up against the body

The Importance of the Surface

The surface on which the body is resting has an effect on comfort and position - if it is contoured to the shape of the body it will be more comfortable than a flat surface and will distribute the weight more evenly



Normal Sitting Posture



Neutral, upright position, "90-90-90".



Relaxation!

Factors Contributing to Functional Sitting

The factors that make it possible for individuals to use their skills in the sitting position are:

- Stable support surface
- Pressure distribution
- Ability to lean forwards
- Support of the back
- Freedom of the feet
- Security / safety



Do you need stability? - Yes!



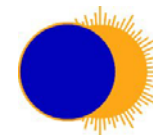
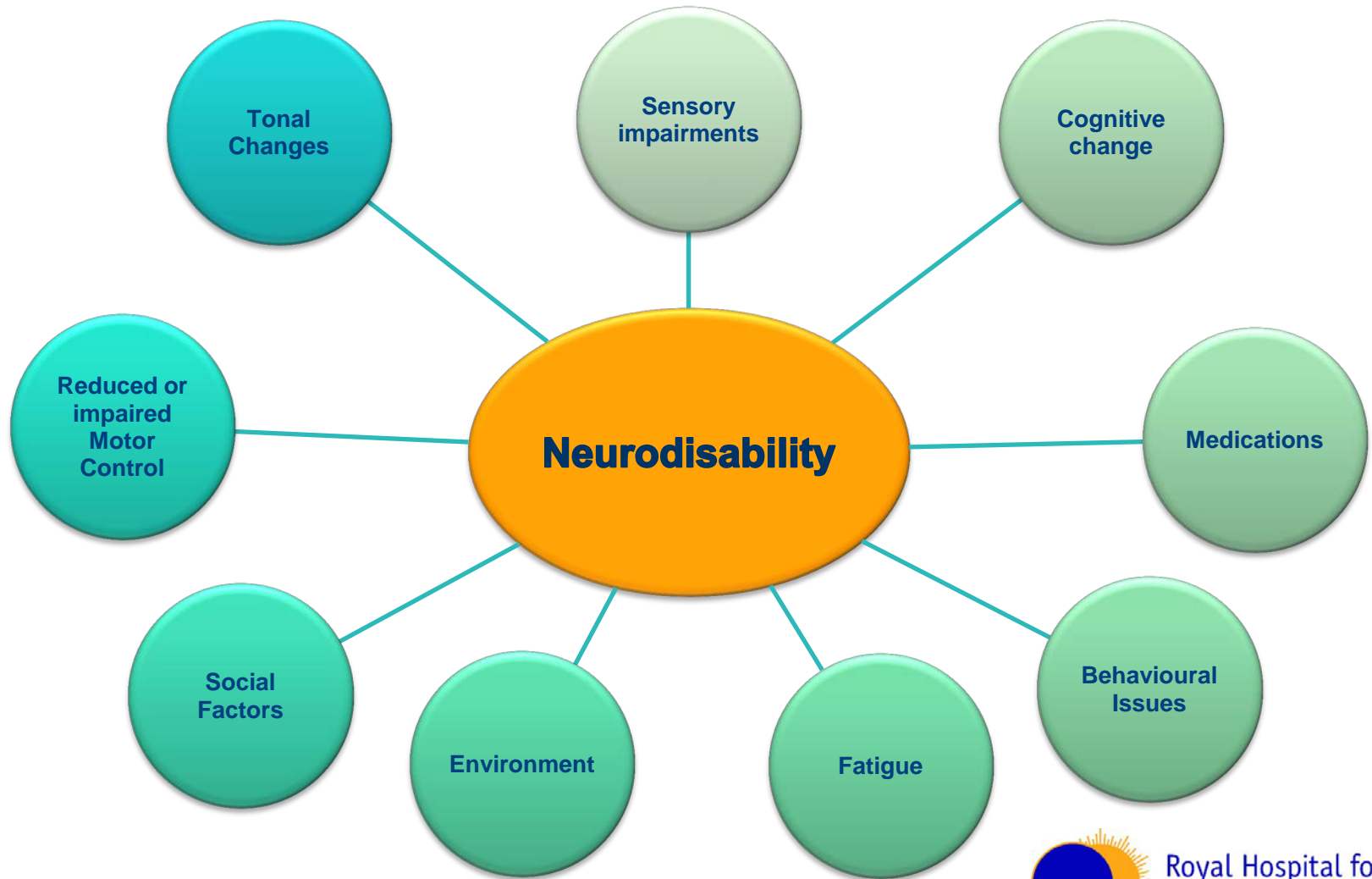
What could happen if posture is not managed?



If the effect of the injury is so severe contractures develop positioning and management of the posture becomes much more difficult to deal with as the flexibility of the joint movement is lost



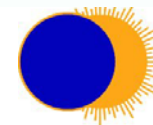
Simplistically – The issues to consider when planning a Postural Management programme



Wheelchairs

Three main types of wheelchair used at the RHN:

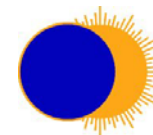
- Standard manual upright
- Tilt-in-space manual
- Powered



Standard Upright Wheelchair

- Simple
- Lightweight
- Cheap

- Little postural support



Tilt-in-space Wheelchair

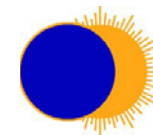
- Alternative positions – upright and tilted
- More posturally supportive
- More comfortable



Cushions

Many different types available:

- Foam



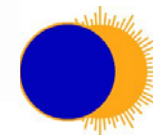
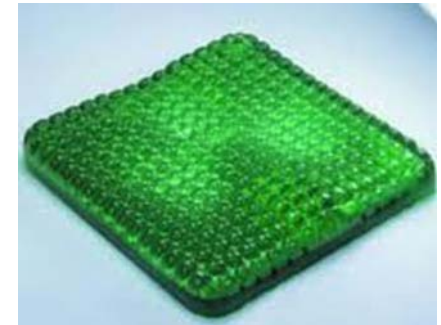
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Cushions

Many different types available:

- Foam
- Gel



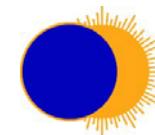
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Cushions

Many different types available:

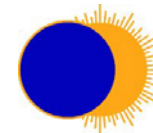
- Foam
- Gel
- Air



Cushions

Many different types available:

- Foam
- Gel
- Air
- Contoured



Other Adaptations

- Headrests
- Trunk supports
- Arm supports



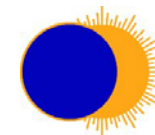
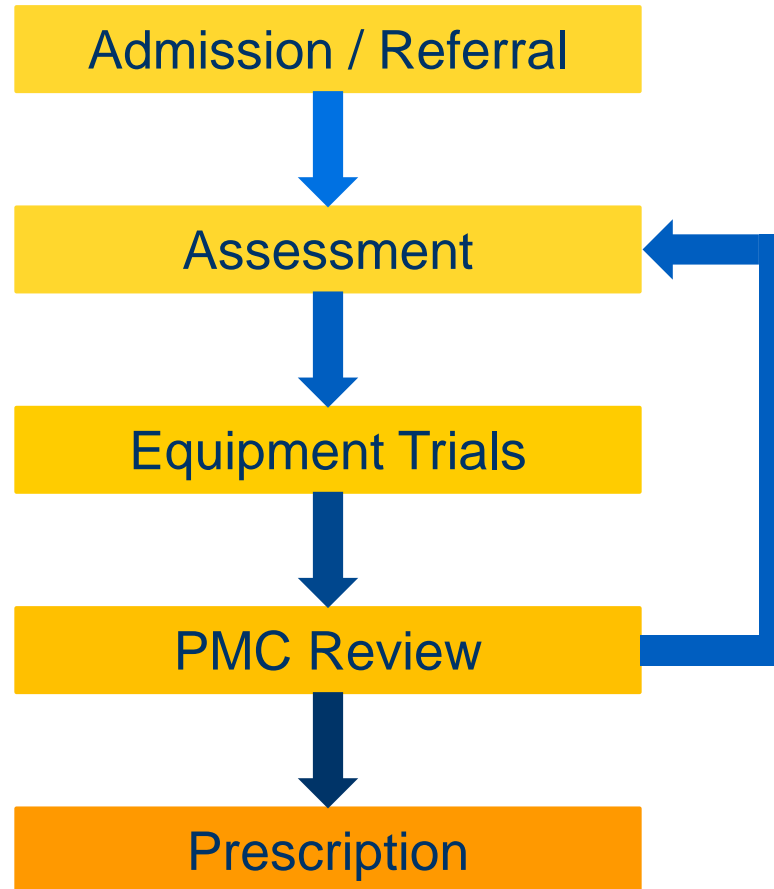
Custom Seating



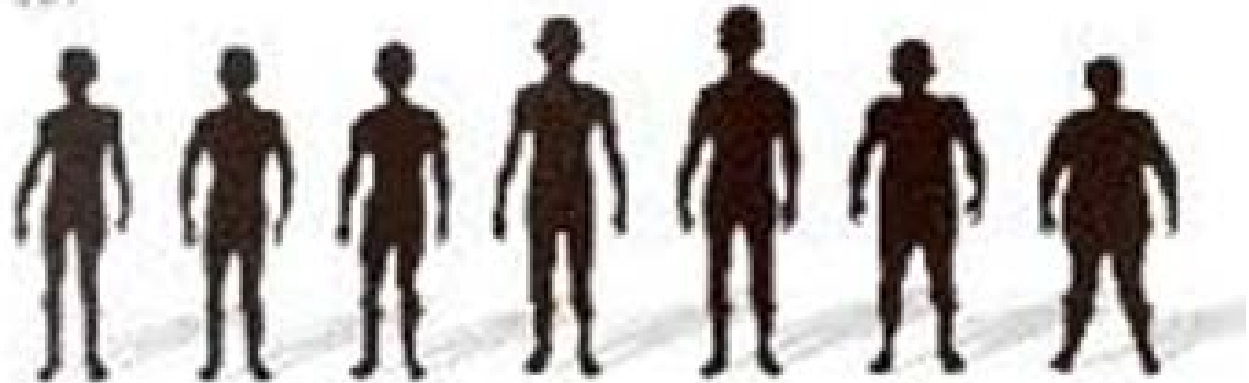
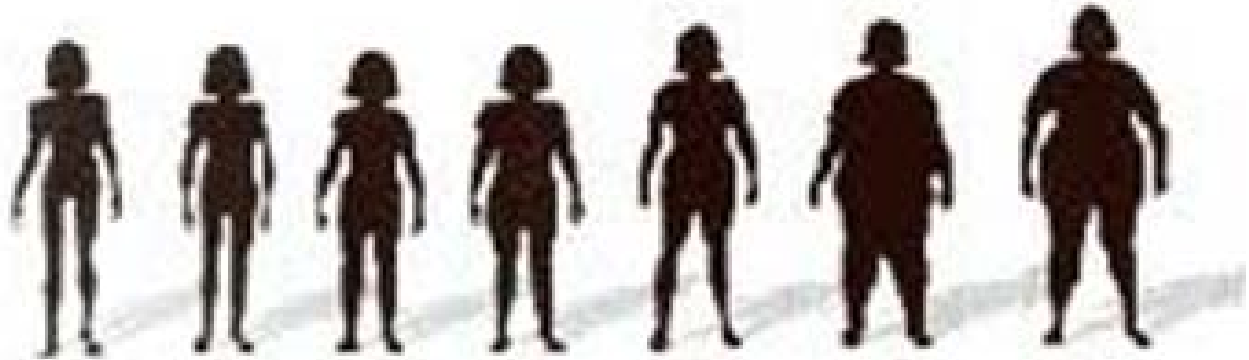
Custom Seating



The Assessment Process



Making the Right Choices



Other Factors for Consideration

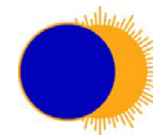
Secondary Diagnoses



Medication



Weight loss & gain



Other Factors for Consideration

Vision & Hearing



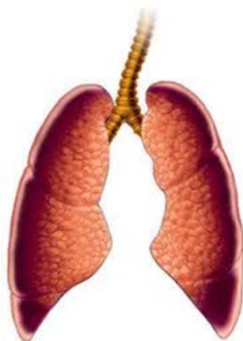
Cognition & Communication



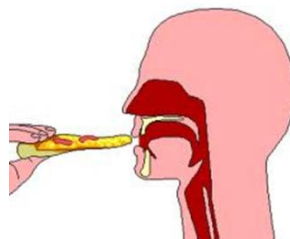
Transfer Method



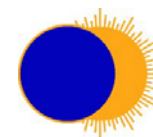
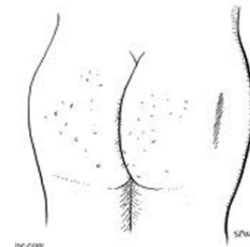
Respiratory Status



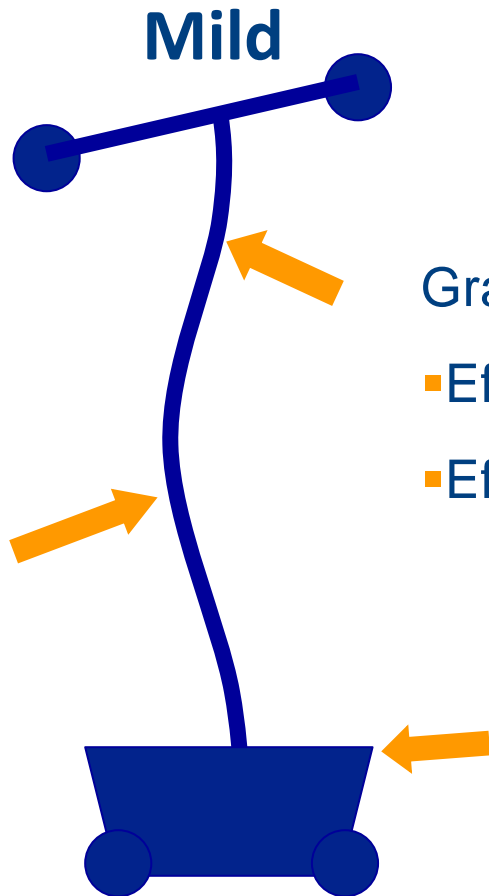
Feeding & Swallow



Skin Integrity

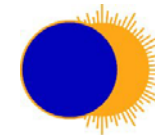
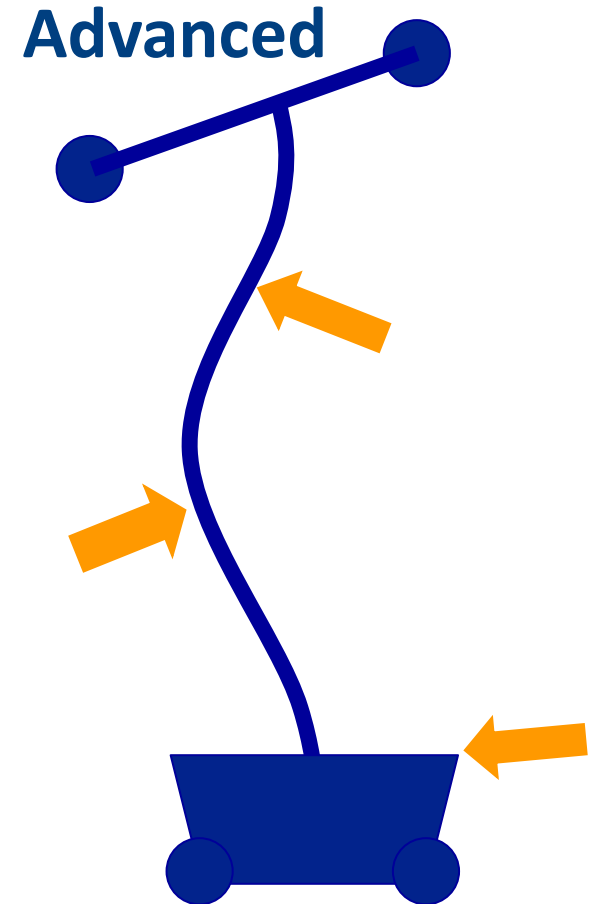


Spinal Curves – Support Required



Gravitational forces -

- Efficient
- Effective

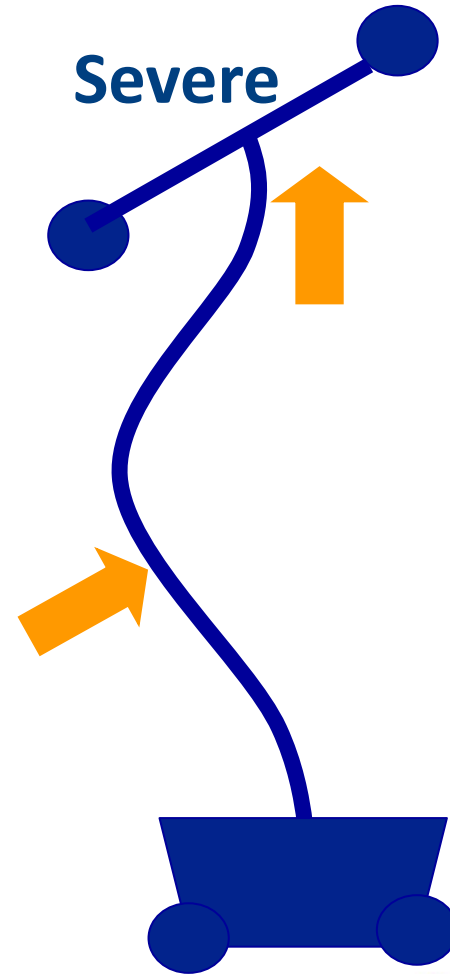


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Scoliosis – Support Required

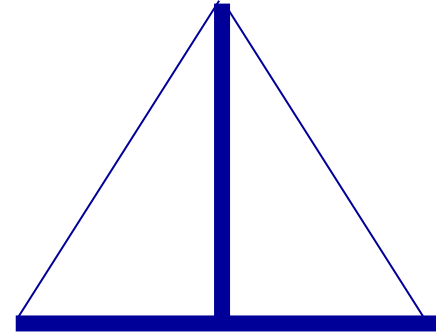
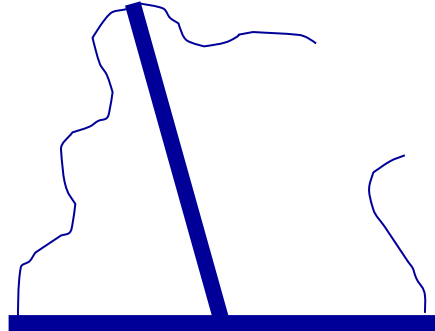
- Rotational forces more evident
- Lateral forces inefficient
- Longitudinal



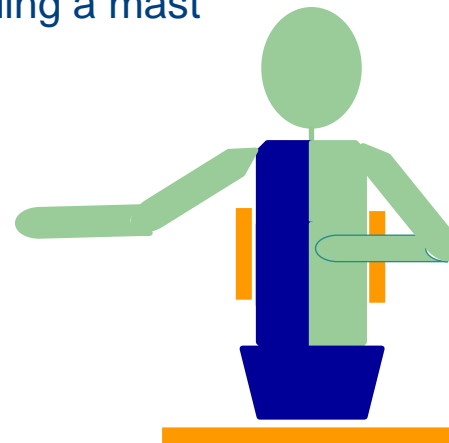
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Choosing the Level of Support



Increased function on the Right side disturbs equilibrium causing the patient to fall to the side of the movement in a manner similar to cutting a guy rope holding a mast



(Pope 2007)

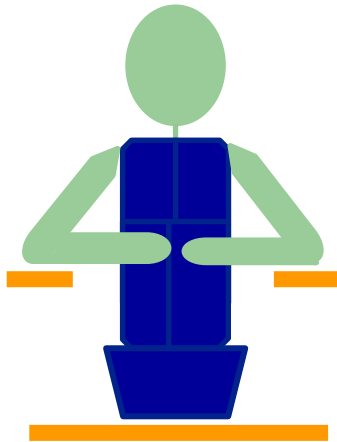


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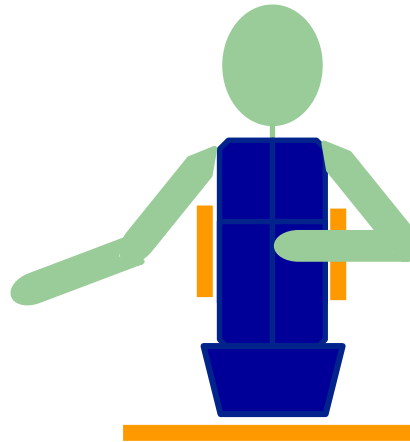
Choosing the Level of Support

Minimal functional movement e.g. switch access



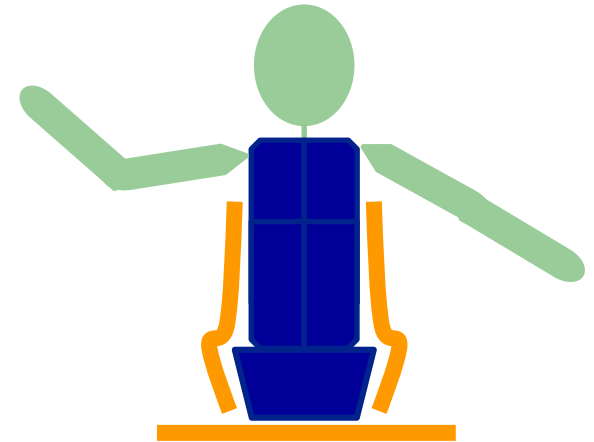
No proximal lateral support needed, shoulder girdle supported

Increased movement away from base e.g. computer keyboard access



Minimal proximal lateral support

Gross arm movements e.g. self-propelling



Maximum proximal lateral support



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Challenges to Wheelchair Provision

A wheelchair is an assistive mobility device -
Every user is unique, with their own set of needs and wishes, physical functions and environment.

The sitting position must allow the natural balance between functional stability and healthy activity achieving the most suitable user position in space.



Core Aims of Positioning

Take home messages - postural management helps:

- Encourage normal movement patterns, by re-establishing the memory of normal movement, and allowing freedom of movement
- Enable the individual to take part in everyday activities , make sure remaining abilities are used to the full, and enable the patient to make choices about activities.
- Help the internal organs work as well as possible
- Reduce discomfort or pain and fatigue
- Reduce the possibility of further changes to joints and spine, and help manage the spasms

Engstrom B et al (2002) , Ford P (2004) Cooper RA (1998) Ham R et al 1998,



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