Posture and Seating

Principles of posture and seating

1. Maximise surface area contact
2. Maintain or improve postural control
3. Provide a stable base of support
4. Decrease abnormal tone influences
5. Promote increased sitting tolerance
6. Enhance cosmesis

Identifying the appropriate wheelchair

Discuss with the client the goals for the equipment. This may include:

- Confirming the primary means of mobility
- What does the home environment look like?
- Will the client be driving?
- What type of transfer will the client be performing?
- What does the local environment look like, including the work environment?

Seating Considerations

Intrinsic Factors

- Neurological level of injury
- Sitting balance
- Age
- General health
- Level of physical independence
- Musculoskeletal concerns
- Pain
- Spasticity and tone
- Muscle wasting
- Skin integrity concerns
- Continence

Extrinsic Factors

- Pressure (vertical force due to gravity)
- Shear force (horizontal forces acting between a body and it's supporting surface)
- Personal care requirements
- Lifestyle (work, study, recreation)
- Financial issues and funding sources
- Demographics
- Care and maintenance of equipment
- Environment/moisture

Posture and Seating Assessment

A physical assessment of posture and seating should include:

1. Review of the current wheelchair, backrest and cushion
2. Assessment of the client in supine on a firm surface
3. Assessment in unsupported sitting
4. Decision making and plan for equipment changes or modifications

Mechanical Assessment Tool (MAT) is a posture and seating assessment that evaluates strength, range of motion, sensation, etc. The aim of the assessment is to establish if a postural deformity can be corrected with additional support (flexible) or if it cannot be (fixed), such as a contracture.

MAT Evaluation Form

- PA Hospital | HIMS | Health Informatics Unit | Forms Management - Form 1906 Physiotherapy SIU Posture Assessment

Pressure Redistribution Cushions

The pressure redistribution cushion needs to be measured to fit the individual and may differ slightly from the dimensions of the wheelchair. It is important to note that cushions have a particular way of being measured - the supplier or product website will have instructions.

The aim of cushion prescription is to find a cushion that allows the client to be as independent as possible without compromising the pressure redistribution that is required. The client's functional ability, postural needs, history of skin breakdown and sensation should be considered when selecting the medium of the cushion.

Common mediums include:

- Air
- Fluid
- Gel
- Foam

Different mediums have a different memory level, which is the ability of the medium to return to its original shape once the load is removed. They will provide a differing base of support for postural control and can also impact the independence, comfort or person's functional abilities. Pressure redistribution is related to the level of floatation achieved, which is associated with the degree of immersion of bony prominences in the medium to spread the weight. Shearing is reduced by ensuring the medium of the cushion moves with the body.

Backrests

Why are backrests so important?

- Prevention of pressure injuries
- Prevention of potential future skeletal deformity
- Provide balance and stability, which may help promote independence
- Enable vision and interaction in the environment
- Aid optimal respiration and digestion

- Provide comfort and alleviate or minimise pain
- Provide positive body image

Factors to be considered when choosing a backrest

1. Neurological level of injury
    - Sitting balance (a client with a higher level of injury may have more impaired sitting balance and require a taller and more supportive backrest)
2. Functional use or goals of the equipment
    - Ability to transfer
    - Propulsion
    - Reaching for items (i.e. on the floor, for brakes, controllers, etc)
3. Carer assistance
    - Repositioning requirements
4. Type of wheelchair
    - A power wheelchair or tilt in space wheelchair may require a higher backrest, with deeper lateral supports and a headrest
    - Additional lateral support may be required for a power wheelchair user for community access and negotiating uneven terrain
5. Postural changes
    - Fixed vs flexible postural deformity
    - Commercial product verses custom
        - Custom equipment may be required to accommodate a fixed postural deformity when commercial products are unable to fulfil the clients needs.
6. Pressure relief and redistribution
    - Skin integrity
    - Effect of gravity

Other resources

NSW Health Posture and Seating (MAT Evaluation Modules)

- Module 1 - Introduction to the spinal seating professional development program education modules | Agency for Clinical Innovation (nsw.gov.au)

MAT Evaluation Form

- PA Hospital | HIMS | Health Informatics Unit | Forms Management - Form 1906 Physiotherapy SIU Posture Assessment

MASS

- https://sway.office.com/p3ODjen1KaFxM8Wb
- MASS Recorded Webinars (office.com)

Product information websites such as:

- Sunrise Medical
- Permobil
- Invacare

Website

- Postural Assessment and Seating Systems for People with Spinal Cord Injury (health.qld.gov.au)

Reference

Reznik, J., Simmons, J. (2020). Rehabilitation in spinal cord injuries (1st ed.). Elsevier Health Sciences.