Welcome!

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Power Wheelchairs:
Critical Components and Accessories
to Enhance and Prolong Function

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Hosted by:
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Power Wheelchairs:
Critical Components and Accessories to Enhance and Prolong Function

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Critical Components vs Accessories

- Power Wheelchairs are designed to provide independent, safe, and timely mobility for individual
- However, it’s the critical components that provide the individual ability to utilize the wheelchair safely and functionally throughout the day
- Critical components are often medically necessary for function, safety, positioning, and access.
- Other accessories, that may not be “deemed” as medically necessary, can still provide additional safety and quality of life for the individual.
There is no one mobility base or seating system configuration that is appropriate for every individual!

It is as unique as the individual!
Best Practices

• Direct assessment/clinical trials
• Evaluation by knowledgeable/trained clinician
• Assessment by a skilled professional provider
• Document
  • What was tried and failed
  • What was considered and why something was ruled out
• Set short and long term goals
• Utilize evidence based practice
What are therapists looking for?

- Skeletal abnormalities
- ROM limitations
- Primitive reflexes
- Righting/equilibrium reactions
- Muscle tone
- Sensation
- Skin condition/integrity

- Nutrition/hydration
- Effects of medication
- Orthotics/Splints
- Motor planning
- Muscle endurance
- Pain
- Vision/hearing
- Anthropometric Measurements
Principles of Seating

Optimize function
- Establish stable yet functional upright posture
- Plan for changes in control, coordination, tone and/or movement patterns

Minimize orthopedic deformities
- Plan for changes in support strength, position and the effects of gravity on destructive postural tendencies
- Plan to accommodate for structural changes

Maximize weight distribution to decrease pressure
- Plan for changes in ability to weight shift
- Plan for changes in sensation
Principles of Seating

Maintain vital body functions
  • Plan for changes in cardiopulmonary function
  • Plan for changes in eating, swallowing, digestion, bowel and bladder function/control

Maximize visual, perceptual and cognitive abilities

Maximize comfort and sitting tolerance
Wheelchair Cushions

Cushions are used to provide:

• Comfort
• Positioning
• Reduce the effects of pressure.
Backrests

Specialty Backrests are used to:

• Provide positional support for a neutral pelvis.
• Provide lateral trunk stability.
• Allow attachment of lateral supports and/or headrests
Lateral Supports
Positioning Belts
Head Support
Power Tilt

- Decreases pressure on the sitting surface thus decreasing risk of pressure injuries
- Independent Repositioning for increased sitting tolerance/decreased fatigue
- Increased Visual Field
- Gravity Assisted Positioning:
  - Postural Control
  - Speech Generation
  - Breathing
  - Swallowing/Digestion
Power Recline

• Decreases pressure on the sitting surface thus decreasing risk of pressure injuries
• Improved bladder function
• Independent Repositioning for increased sitting tolerance/decreased fatigue
• Allows change in joint angles for range of motion and tone/spasticity management
• Increased Visual Field
• Gravity Assisted Positioning:
  • Postural Control
  • Speech Generation
  • Breathing
  • Swallowing/Digestion
Cautions/Considerations for Recline

Shear – friction force between the patient’s back/buttocks and the back/seat of the wheelchair
Power Tilt, Recline, and Power Elevating Legrest

First

Then
Power Elevating Legrests or Elevating Foot Platform

**Power Articulating Foot Platform**
- Smaller turning radius = more maneuverable
- Footplate flips up for a 1 step operation to transfer
- Increased access to functional surfaces

**Power Elevating Legrests**
- Allows independent positioning of each lower extremity
- Swing out of the way for safe transfers
Power Tilt, Recline, and Power Elevating Legrest

• 25°- 45° Tilt with 110°- 150° Recline provides the greatest pressure relief when used in combination

• Tilt before recline decreases shear

• Ease of independent or caregiver assisted repositioning

• Improves lower limb hemodynamic states (edema)

• Dynamic seating allows a variety of postures throughout the day to participate in or perform ADLs
Power Adjustable Seat Height

Transfers
Reach
Psychological
  • Eye-to-eye contact
  • Communication
  • Social engagement
Physiological
  • Strain from extension of the neck when looking up
Power Wheelchair Controls

**Proportional**
- Provides 360 degrees of control
- Provides Control of Speed - the farther away from center the control is deflected, the faster the device will move
- Stopping is completed by returning device to center or letting go

**Digital/Switch**
- All or nothing response- switch is “on or off”
- Each direction is controlled by a different switch
- Stopping is completed by releasing the switch
Power Wheelchair Controls
Proportional
Power Wheelchair Controls
Switches

Mechanical Switches

Fiber Optic Switches

Proximity Switches

Pneumatic Switches

Fiber Optic Switches
Tracking Technology

A feature on the motors that interface with the control module so that the speed of the drive wheels can change in relation to one another to:

• Maintain a straight course of operation
• Compensate for discrepancies in terrain, transitions and thresholds
• Minimized the need for excessive movements of the (hand, head, neck, chin, foot or other body part) to stay on track
• Compensates for veering when using non-proportional (switch) type controls
• Promotes safe, accurate operation of the w/c
Respiratory Support Accessories

Ventilator Tray  Oxygen Tank Holder
Transit Tie Down Options
Light Packages
Transfer Handles

• Transfer handles are devices that can be attached to the power wheelchair seat rail.

• This device is positioned in a way to provide an ergonomical advantage when pushing into a standing position.
Phone/Tablet Holders

• Allows the power wheelchair user access to their cellular phone or tablet at all times

• Important accessories for emergencies, controlling their home environment, and communication (work, school, or socialization)
Bluetooth and Infrared Capabilities

• Communication Devices
• Computers
• Control of Smartphones/Tablets
• Environmental controls/Home Automation
USB Charger

Allows the power wheelchair user to charge their cellular phone or tablet through the batteries of the wheelchair.

Removeable and plugged into hand control or display.

Hard wired.
Thank you!

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