

BRODA MODEL 48 PEDAL-TILT WHEELCHAIR

Feature 1: Pressure reduction positioning strapping system

Criteria: Individuals who present with one or more of the following conditions:

- A. At risk for skin breakdown or decreased skin integrity
- B. Outstanding bony prominence and/or musculoskeletal deformities/conditions
- C. Severe agitation or discomfort with typical wheelchair seating surfaces
- D. Decreased postural stability/control
- E. Decreased mobility in pelvis
- F. Misalignment in pelvis
- G. Involuntary and/or uncontrolled potentially harmful movements

Justification:

- A. Each strap conforms individually to the person's body, thus suspending the weight of the person across multiple points. This distributes the individual's weight more evenly and greatly reduces the amount of pressure (especially peak pressures). This suspending strapping system prevents a "bottoming out" effect which occurs with standard wheelchair seating surfaces. In short, the pressure reduction positioning strapping system greatly reduces the interface pressure (refer to attached pressure mapping study). Additionally, this strapping system allows for superior air circulation that helps reduce or disperse heat and moisture.
- B. Each strap conforms individually to the amount of pressure being applied. Therefore, if a user presents with a bony prominence such as having kyphosis or lordosis, the strap will "give way" or conform to the pressure point instead of creating a higher pressure which occurs with standard wheelchair seats. Also, for an even greater reduction of pressure, select straps may be removed or repositioned.
- C. The pressure reduction positioning strapping system provides a superior comfortable and less noxious feel than standard wheelchair seating surfaces. This is because the strapping system presents with higher: conformability, ability to adjust, ability to position and it provides a low interface pressure.
- D. Collectively, the straps provide an optimal "cradling effect" to a user's pelvis, which assist with midline posture. Also, the straps are ideally firm enough to provide necessary support to encourage proper pelvic positioning.
- E. Refer to justification A through D.
- F. Refer to justification A through D.
- G. The strapping system absorbs energy and the straps are smooth and safe.

Feature 2: Height Adjustable Armrests

Criteria: Individuals who present with one or more of the following conditions:

- A. Decreased muscle tone in upper extremity and/or shoulder subluxation or at risk for shoulder subluxation.
- B. Decreased postural stability/control
- C. Decreased ability to reposition upper extremity and/or severe discomfort or agitation with standard arm rests.

Justification:

- A. Adjustable armrest assists with proper height positioning for upper extremities. Having the upper extremity properly supported decreases the force of gravity by “unweighting” or supporting the arm (much like a sling) which is useful when managing shoulder subluxation or potential subluxation. Additionally, fixed armrests which are too high may result in harmful shoulder joint compression.
- B. Having upper extremities supported assist with proper postural trunk support by promoting a more midline position.
- C. Height adjustable armrest allows caretakers to adjust an individual’s arm throughout various heights, which is necessary for pressure reduction, edema control and/or comfort.

Feature 3: Seat Tilt

Criteria: Individuals who present with one or more of the following conditions:

- A. Decreased postural control
- B. At risk for skin breakdown and/or decreased skin integrity
- C. Musculoskeletal deformities/conditions and other medical conditions which prevents proper positioning when seated in a non-tilting wheelchair (i.e. kyphosis or lordosis)
- D. Decreased head/neck control and/or unable to feed self or be feed safely from a non-tilting wheelchair.
- E. Individuals who are at risk for falls or injuries from using a non-tilting wheelchair.

Justification:

- A. Tilting a seating surface in a posterior direction can reduce the effects of gravity on one's trunk/upper body, which facilitates a more functional and proper upright posture. Proper postural control also assists with greater and more functional use of the upper extremities. (A slumped posture decreases shoulder range of motion). Improper postural control can lead to increase peak pressure points.
- B. Tilting a seating surface decreases the effects of gravity which greatly reduces seating pressures overall. Also, varying the amount of tilt throughout the day allows for repositioning which changes the location of forces of gravity on a particular area, which is essential for pressure relief. Since the tilt mechanism of the Pedal Chair is achieved with a gas cylinder it infinitely adjustable between 0 and 18 degrees of tilt.
- C. The ability to tilt is commonly necessary for adequate positioning of musculoskeletal deformities/conditions. For example, an individual who presents with kyphosis is unable to position head and neck in an upright position in a non-tilting wheelchair, thus placing them in a non-functional position for essential tasks such as feeding or social interaction. Also, a person with sever COPD (chronic obstructive pulmonary disease) may experience difficulty breathing in a non-tilt in space. A tilt in space will facilitate a more "open" position which will allow the ribs to properly expand
- D. Tilting a seating surface in a posterior direction can reduce the effects of gravity on one's head and/or neck, which facilitates a more functional and proper upright head and neck position. A proper head and neck position is essential for safe feeding and swallowing. It is also beneficial to perform other various functional tasks such social interaction and performing various grooming tasks.
- E. Tilting wheelchairs can often eliminate the use of potentially harmful restraints such as a seat belt. It is safer than a non-tilt wheelchair for people who are at risk of falling out of a wheelchair. **The Pedal Chair is unique because its pivot point for tilting is located in the front of the chair. This allows for proper foot to floor placement which enables individuals to be positioned at the optimal ergonomically correct position for self mobility.**