

BRODA TILT AND RECLINE WHEELCHAIR Model 785

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: Adjustable, removable and swing away arm rests

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. Unable to or unsafe to perform stand pivot transfers or uses a sliding board for transfers.
- D. Decreased ability to reposition upper extremity and/or severe discomfort or agitation with standard arm rests.
- E. An upper extremity with a cast, sling or brace.

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 armrest 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. Swing away and/or removable armrests allow for safer transfers for individuals who transfer via squat pivot or require the use of a sliding board or “total lift” transfers. Fixed armrest tend to get in the way of the above mentioned transfers and can cause preventable injuries such as skin tears, abrasions etc. Also, fixed armrests, which are in the way of transfers, can cause unsafe transfers, which may result in a fall.
- D. 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.
- E. It is often essential to adjust, remove or swing away armrest so that do not interfere with slings, casts or bulky braces.

Feature 3: Height adjustable "oversized" foot rest with integrated 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 where the lower extremities make contact with the footrest.
- C. Involuntary, uncontrolled or violent movements in one or both lower extremities
- D. Abnormal muscle tones in one or both lower extremity and/or synergistic movement/pattern with the lower extremity.
- E. Severe agitation or discomfort with standard leg rests.
- F. Foot drop or at risk for foot drop
- G. Impaired or abnormal lower extremity sensation

Justification

- A. Each strap conforms individually to the person's lower extremity, thus suspending the weight of the person's legs across multiple points. This distributes the individual's leg 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 footrest. In short, the pressure reduction positioning strapping system greatly reduces the interface pressure. Also, the oversized design of the leg rest allow for the entire lower extremity to be supported which is also ideal for superior dispersion of weight/pressure. Additionally, this strapping system allows for superior air circulation that helps reduce or disperse heat and moisture, which is beneficial for wound care or prevention.
- B. Each strap conforms individually to the amount of pressure being applied. Therefore, if a user presents with a bony prominence the straps on the leg rests will "give way" or conform to the pressure point instead of creating a higher pressure point which occurs with standard wheelchair leg rests. Also, for an even greater reduction of pressure, select straps may be removed or repositioned.
- C. The strapping system absorbs energy and the straps are smooth and safe. Additionally, the oversized design helps maintain feet to remain safely on the footrest.
- D. Individuals with increased muscle tone in the lower extremity are at higher risks for increased pressure, especially peak pressures (i.e. a flexor withdraw movement causes the knee to flex which in turn could cause one's heel to draw up into a leg rest or even calf support.). The strapping system is a safe solution since it absorbs energy, reduces pressure and is soft, smooth and safe. Also, typically footrests that are hard may actually set off or stimulate an abnormal synergistic movement. Finally, the overall design of the footrest is ergonomically correct to facilitate proper positioning of lower extremities with low or flaccid tone.

- E. The pressure reduction positioning strapping system provides a superior comfortable and less noxious feel than standard wheelchair leg rest. This is because the strapping system presents with higher: conformability, ability to adjust, ability to position and it provides a low interface pressure.
- F. The design of the footrest places ankles in a neutral position (90 degrees) for foot drop control and/or foot drop prevention/treatment.
- G. Decreased or absent lower extremity sensation may interfere with individual's ability to feel excessive pressure caused from typical footrests or the need to reposition the lower extremity. This in turn may contribute to skin breakdown or excessive discomfort and/or agitation.

Feature 4: Tilt in space

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 785-550 wheelchair is achieved with a gas cylinder it infinitely adjustable between 0 and 45 degrees of tilt.
- C. The ability to tilt in space 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-tilt in space 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. Tilt in space wheelchairs can often eliminate the use of potentially harmful restraints such as a seat belt. It is safer than a non-tilt in space wheelchair for people who are at risk of falling out of a wheelchair.

Feature 5: Adjustable back recline

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

- A. Individuals with orthostatic hypotension and/or decreased cardiopulmonary function
- B. Individuals at risk of skin breakdown or decreased skin integrity
- C. Individuals with decreased postural stability/control
- D. Individuals who require the recline function to assist with toileting needs

Justification:

- A. Reclining a person assist with increasing unsafe orthostatic hypotension. Also, the recline function can be used as a therapeutic method for gradually increasing an individual's tolerance to become acclimated to seating in a more upright position. This also assists with increasing a person's overall cardiopulmonary status. With the back fully reclined, you can also achieve a true trendelenburg position.
- B. Reclining a seating surface decreases the effects of gravity which greatly reduces seating pressures overall. Also, varying the amount of recline 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 reclining mechanism of the 785-550 wheelchair is achieved with a gas cylinder it is infinitely adjustable between 0 and 90 degrees of recline.
- C. Reclining 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.
- D. The recline function allows for easier access to assist with toileting needs. (e.g. using a urinal or catheterization) This may have a profound impact on one's bladder management (e.g. reduce bladder infections or increase independence of bladder management.)