Wheelchair Cushions In-Service

Physical Assessment

Wheelchair Cushions

Wheelchair Back Supports

Goals of a Back Support System

Evaluating Products

Sunrise “Jay”
sunrisemedical.com

Roho
therohogroup.com

Invacare Infinity
invacare.com

Freedom Designs
freedomdesigns.com

AEL Seating
aelseating.com

Hudson
hudsonindustries.com

Otto Bock
ottobockus.com

Action
actionproducts.com

CANTON
(330) 478-4100 or (800) 686-5641

AKRON
(330) 753-8600 or (800) 589-2630

CLEVELAND
(216) 642-1447 (800) 589-6688

YOUNGSTOWN
(330) 743-7400 (866) 743-6400
### Physical Assessment: Posture-Movement-Function

<table>
<thead>
<tr>
<th>Client Evaluation</th>
<th>Related Health Issues</th>
<th>Mobility &amp; Function Approach</th>
<th>Important Seating Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory awareness and processing</td>
<td>Diagnosis/disability</td>
<td>Therapeutic Approach</td>
<td>Be comfortable</td>
</tr>
<tr>
<td>Perceptual and cognitive components</td>
<td>Breathing problems</td>
<td>Support surfaces shaped in a way that cues the sitter to align the body spontaneously.</td>
<td>The person must be comfortable, particularly if sitting for a long time.</td>
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<tr>
<td>Soft tissue integrity and postural alignment</td>
<td>Heart and circulatory</td>
<td>Accommodative Approach</td>
<td>Relieve Pressure</td>
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<tr>
<td>Joint motion, muscle strength, and postural tone</td>
<td>Seizures</td>
<td>Accept unchangeable conditions and make no attempt to modify the client’s condition.</td>
<td>Provide enough support to feel secure and safe.</td>
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<tr>
<td>Postural limitations and compensations</td>
<td>Bladder/bowel control</td>
<td>Protective Approach</td>
<td>Provide a stable support surface for the pelvis and thighs.</td>
</tr>
<tr>
<td>Development reflexes in the seating posture.</td>
<td>Nutrition/digestion</td>
<td>Functional Approach</td>
<td>Improve Function</td>
</tr>
<tr>
<td>The Pelvis: Rolled backward, or sliding forward, rolled forward, tilted or turned</td>
<td>Medications</td>
<td>Preserves function that limits the ability to perform the activities needed for daily existence.</td>
<td>Should improve the person’s ability to function and participate in activities</td>
</tr>
<tr>
<td>The Hips and Legs: Turned, spread open, turned to the same side, bent up, moving constantly.</td>
<td>Surgeries</td>
<td></td>
<td>To transfer into and out of cushion.</td>
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<td></td>
<td>Orthopedic consideration</td>
<td></td>
<td>Improve Bodily Functions</td>
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<tr>
<td></td>
<td>Orthotic intervention</td>
<td></td>
<td>If a person is sitting fairly upright improves blood flow and digestion.</td>
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<td>Skin condition</td>
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<td></td>
<td>Sensation</td>
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<td></td>
<td>Pain</td>
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<td></td>
<td>Seeing/hearing</td>
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<td>Cognitive/perceptual/behavioral status</td>
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</table>
Cushion Considerations

Properties of Cushion Materials

- **Density**
  - A greater density generally means a more durable material, but not always.
  - Low density materials will fatigue faster than high density.

- **Stiffness**
  - A distance a person sinks into the cushion.
  - Soft materials may bottom out, but failure to compress can lead to increase seating pressure.

- **Resilience**
  - The ability of a material to recover its shape after a load is removed.

- **Dampening**
  - The ability of a cushion to soften on impact.

- **Envelopment**
  - The degree the person sinks into the cushion and the degree the cushion surrounds the buttocks.
  - Good envelopment promotes stability and helps reduce peak pressure.

Checklist of a Successful Fit

- **Health and Physical Fit**
  - The physical interface with the equipment and consequences of using it.
  - Skeletal Alignment
  - Soft tissue integrity

- **Functional Fit**
  - The ability to function while seated in the equipment.
  - Seated transfer
  - Reach, lift and carry

- **Socio-economic Fit**
  - The ability to use the chair to accomplish daily tasks.
  - Acceptance
  - Affordability

- **Environmental Fit**
  - The equipment’s safety, durability, and transportability.
Wheelchair Cushions

- Foam
- Gel/Fluid
- Air Flotation
- Hybrid

Flexible Moisture Proof Bladder
Radio Frequency Seals to Prevent Leakage
Leg Abduction Post Prevents Leg Rotation and Abrasion
Optional Seat Mate to Prevent Hammocking
High Density Molded Urethane Foam for Positioning Support and Comfort.

Fluid Flow for Pressure Relief
Air Vents on Each Side to Evacuate Contained Air in the Molded Foam Base While Sitting for Comfort.
Foam Wheelchair Cushions

Foam comes in a variety of configurations, densities and layers to create the best pressure redistribution for the cushion. Not all foams are the same, so look closely at what type of foam you are choosing.

**Positive Attributes**
- Comfortable
- Easily customizable
- Even under extreme environmental conditions remains stable
- Great pressure-reducing characteristics in the ischial and coccyx area
- Decreased risk of bottoming out
- Lightweight and inexpensive
- Easy to clean and maintain, good for in facility use.
- Many are dual molded foam come with waterproof coating
- Three basic types, planar, standard contour, custom contour.

**Negative Attributes**
- Can be less durable than other mediums
- Requires protection from moisture/incontinence
- Foam quality is important
- Modest degree of positioning
- Has a tendency to lose its resilience over time.
- Life expectancy of a foam cushion is between 6-12 months.

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Invacare Essential  
Invacare Personal SeatVF  
Invacare Comfort-mate  
Hudson Elasti-Foam  
Hudson Comfort Guard 2  
Hudson Comfort Plus 3

Sunrise Soft Combi  
Hudson Convoluted Core  
AEL Flo-Tech Contour
Gel Wheelchair Cushions

Most gel cushions consist of an elastomer gel contained in a membrane. The gel functions much like air to equalize pressure over the seating surface.

Positive Attributes
- Can be cost effective
- Easy to clean and maintain
- Reduces skin temperature and moisture (a prerequisite for tissue breakdown)
- Excellent shear and pressure reduction
- Good option for tilt-n-space chairs
- Provides a more stable base than air cushions

Negative Attributes
- Heavy
- Can be affected by changes in external temperatures
- Unable to customize
- Increased risk of bottoming out
- Can not be repaired
- High viscosity means envelopment is poor.
Fluid Wheelchair Cushions

Fluid is a different material than gel and may better distribute pressure around bony areas. Fluid cushions can accommodate postural deformity, but may cause postural deformity if patient gets “stuck” in poor posture due to fluid shifting.

Positive Attributes
- Lighter weight than gel has a greater shock absorbing properties.
- Can accommodate mild/mod Deformity with variety secondary supports
- Envelopment can be good with pressure re-distribution.
- Firm foam base contoured to provide optimal pelvic positioning
- Easy to clean
- Absorb significant amounts of heat from seating surface.

Negative Attributes
- Ineffective at extreme temperatures
- Difficult to repair
- Requires maintenance
- Increased weight
- Can cause difficulty with transfers
- Can be unstable

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Sunrise Jay 2 Cushion
Sunrise Jay Deep Contour
Otto Bock Procontour ComforT
Otto Bock Cloud Cushion
Hudson Economy Gel foam
Air Flotation Wheelchair Cushions

Air cushions are constructed of individual cells that move independently, allowing each cell to twist, turn, and adapt to the contours and anatomy of the patient.

Positive Attributes
- Lightweight
  - approximate weight 3.5 lbs
- Superior pressure relief:
  - as the body is immersed greater contact area is achieved
- Low Friction and Shear
  - the slick surface combined with the independent movement of each cell reduces friction/shear as client moves
- Easy to clean
- Repairable

Negative Attributes
- High maintenance, MFG recommends a daily inflation check
- Sensitive to drastic changes in air pressure
- Can be unstable
- Difficult for transfers
- Easily over/under inflated
- Persons who lack sensation may not be able to feel cushion is under inflated.
- Can be punctured or torn.

Roho
- High Profile
- Low Profile
- Contour Select
- Quadro Select
- Mosaic
- Enhancer
Varilite
- Evolution
Hybrid Wheelchair Cushions

Provides a contour base to increase stability for transfers and provide positioning of the pelvis and lower extremities for enhanced seating posture while providing Air, Fluid or Gel for pressure management.

Positive Attributes

- Stability
  - The contour base increases stability for transfers in and out of cushion.
  - Solid base features deep leg contours and a seating zone to provide anti-thrust

- Skin Protection
  - Provides protection to the ischia, sacrum and coccyx area with the foam base.
  - Fluid or Air option optimal immersion for high risk of breakdown.

- Enhanced Sitting Posture
  - Improves positioning of the pelvis and lower extremities
  - Option wedges to accommodate hip limitations

Negative Attributes

- High maintenance.
- Expensive
Wheelchair Back Supports

- Adjustable Tension Upholstery
- Contoured Backrest
- Bi-Angular Backrest
- Foam-in-Place Backrest
Goals of a Back Support System

- Provides postural support to pelvis and upper body
- Increased surface contact for comfort and positioning
- Backrest height is important to maximized function
- Easy to adjust to accommodate user growth
Evaluating Products

- Try **multiple** surfaces to determine best fit
- Fit the consumer **NOT** the wheelchair