

Factors to Consider When Choosing Powered Seating Tilt, Recline and Standing Features for Pressure Relief and Postural Control

By Susan Johnson Taylor, OTR/L

Audience: Intended for clinicians, wheelchair users and other interested parties with moderate/advanced knowledge of Assistive Technology.

The ability to move independently to obtain pressure and postural relief is good for everyone. These features are found in everyday seating, like ergonomic office chairs in which the occupant can change their orientation (tilting, reclining) as well as change the shape of the seat and/or back. The last few years have also brought sit-to-stand desks, as ergonomic experts and others have recognized the need for people to be able to periodically move away from sitting.

In the Complex Rehabilitation Technology (CRT) world, this need is even greater, as many of the clients we see are physically not able to move away from pressure without external assistance. The consequences of this can be serious and include the development of pressure injuries.

In addition, there is a need to change position in space for balance and sitting tolerance which ultimately relates to the client being able to function and participate in acts of daily living. Sitting in poor postures that the client cannot regularly change can lead to deformity. The ability to move migrates from a convenience to a necessity. Both manual and powered wheelchairs can be configured to allow powered tilt and/or recline for pressure relief and postural control.

Tilt and recline manual chairs are built this way for those who, for physical or cognitive reasons, require a caregiver to operate the features. Powered wheelchairs allow independent operation of powered tilt, recline and elevating legrests through a variety of joysticks or switches, depending on the user's physical skills.

Many types of powered chairs also offer the additional feature of standing, which provides not only redistribution of pressure, but also a functional standing position.

While all of these features play an important role in pressure relief, weight redistribution and postural control, there are separate benefits and drawbacks of these features to be considered when selecting the best options for a client.

Each option provides a different approach to redistribution of pressure and helps to increase wheelchair tolerance and the ability to participate. Pressure relief protocols are very individualized and should be prescribed by the clinical team. As articulated in the table below, the various technology options can play a significant role. With a thorough evaluation, a client can be matched to the method that is most appropriate for them. The clinical team should refer to the funding guidelines for powered seating and standing functions from each client's insurance; but armed with the proper documentation of medical justification and benefits for the client, the case can be made for these highly beneficial technology features in the right instances.

For more details regarding these features, please refer to the RESNA position papers listed below. Go to www.resna.org, RESNA Position Papers under the Knowledge Center, then Position Papers/Provision Guides.

1. *Application of Wheelchair Standing Devices, 12/2013, latest update. Dicianno, B, et al.*

2. *Application of Tilt, Recline, and Elevating Legrests for Wheelchairs: 2015 Current State of the Literature. Dicianno, B, et al.*

| FEATURE | BENEFITS | DRAWBACKS |
|-------------------|--|--|
| Tilt | <p>Achieves pressure relief/redistribution by transferring pressure from buttocks to the back, while maintaining hip angles.</p> <p>Benefits those whose spasticity or abnormal tone is facilitated by changing of the hip angle, especially from flexion to extension.</p> <p>Best serves those who have multiple contractures/ deformities/ custom contoured seating, whose seating systems need to remain in position relative to the client during the pressure relief.</p> <p>Assistive technology, such as the wheelchair drive control or an augmentative communication device, are more likely to remain in place relative to the client as the client tilts back.</p> | <p>Can lead to urine backflow for those who use indwelling catheters.⁽¹⁾</p> |
| Recline | <p>Redistributes pressure over a large surface area.</p> <p>Provides a range of movement throughout the day for those who can tolerate it.</p> <p>Allows personal care such as catheterization, clothing management and diaper changes to take place with more ease and access.</p> | <p>Can cause shear, especially with those who have spasticity caused by opening the hip angle.</p> <p>Will not allow custom or custom contoured seating to remain in a consistent position relative to the client during pressure relief.</p> <p>Cannot be used in combination with elevating legrests for those with limitations at the knee.</p> |
| Tilt Plus Recline | <p>Can provide the best of both worlds. Some individuals require tilt for the reasons mentioned above, but need the extra degrees of back recline, once tilted, to achieve complete pressure re-distribution, to have access or for a caregiver to have access for catheterizing and clothing management.</p> <p>Greatest pressure relief/redistribution are when tilt and recline are used in conjunction with each other.⁽²⁾</p> <p>Wheelchair drive control is likely to remain in a position where the client can still access it.</p> | <p>Clients with severe contractures about the hips, knees and spine may not be able to tolerate even a small degree of recline.</p> |
| Standing | <p>Redistributes pressure over a large area.</p> <p>Allows the client to remain engaged with "eyes on the world."</p> <p>Provides changes in range of movement.</p> <p>Allows the client more freedom of movement and ability to participate in functional activities.⁽¹⁾</p> | <p>May not be appropriate for client whose body reacts with spasticity that pulls them out of position when going from a sitting to a standing, then back to a sitting position.</p> <p>May not be appropriate for clients with multiple, severe contracture.</p> <p>Cannot be used in combination with elevating legrests for those with limitations at the knee.</p> |



About the Author

Susan Johnson Taylor, OTR/L is an occupational therapist who has been practicing in the field of seating and wheeled mobility for 35 years, primarily at the Rehabilitation Institute of Chicago. Susan has published and presented nationally and internationally, has consulted on product development for manufacturers and has actively participated in a variety of research studies at the Northwestern Sensory Motor Performance Program. Susan is a member and fellow with RESNA, and in the past has served on the Board of Directors. She is a member of the RESNA/ANSI Wheelchair Standards Committee and the Clinician's Task Force. Susan joined the Numotion clinical education team in 2015 as the Manager of Training and Education.